

Electric Railway Journal

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New Developments in the Gasoline Car

THE tremendous development of the automobile in recent years has often given rise to the question, why are not gasoline motor cars used to a greater extent in suburban and interurban railway service? The reason is their initial and operating cost. Where the car service is at all frequent, no one has yet found any means of car propulsion cheaper or more reliable than electrical energy, which is capable of being generated in large quantities economically, is easily distributed and requires simple mechanism only on the car itself. When the period between cars becomes greater, however, the advantages of centrally produced power becomes less, so that on lines of light traffic there is undoubtedly a demand for an independent motor. For such service the gasoline motor seems much better adapted than steam because of the greater lightness and simplicity of the equipment. Automobiles are now so common that almost anyone can run a gasoline car, and there are so many mechanics who understand the construction of the automobile engine that it is not difficult to get repairs made. Several of the illustrations of Far-Western gasoline cars given in an article in this issue show bodies which are much more like those of an ordinary motor bus or suburban trolley car than that of a steam coach. For certain classes of service we do not see why cars of this kind should not be well adapted, and it may be that the development of gasoline cars of this type will open up a new field of transportation on rails, although such a field will be limited in extent.

French and British Tramways Have Their Fare Troubles, Too

"Trouble, trouble everywhere, and no fare increase to help."

THIS parody upon lines from Coleridge is not a jest at the seriousness of the financial situation now confronting electric railways in this country, but rather an observation in regard to the similar plight of companies elsewhere. As we are noting on another page, the East Parisian Tramways, whose experience is said to be typical for France, has been confronted with rising costs, but has not, like enterprises in other industries, been allowed to meet them with increased rates. Likewise, in Great Britain, the tramways have felt the need of financial relief, but some have been restrained by the statutory maximum. Others are uncertain as to whether more revenue can be gained from raising fares or lowering them, and, as shown by the recent annual conference of the Municipal Tramways Association, opinion is divided as to the wisdom of restricting the now liberal class concessions to workmen and children.

Thus in other countries than our own the attention of railway men is being given to the diminishing earning power of the industry and to the most advisable means of bolstering it up, and as here opinions in regard to method differ. These facts, however, only emphasize what we said last week—*i.e.*, that the time is ripe for a careful, scientific analysis of the whole fare question by electric railway men themselves. No source of data regarding any sort of fare increase, here or abroad, should be slighted, for only through an exhaustive study can there be laid for future electric railway fares a cost basis—the only basis sanctioned by modern business principles.

The Need for Co-operation in the Liberty Loan Campaign

THE principal issue in this country during the coming week is to make the sale of Liberty bonds a success. Readers of this paper are citizens before they are railway men, so that this issue will rank in importance in their minds until the campaign is closed even higher than that of increased fares. Railway companies can do much to promote the sale of these bonds, just as they did during the first campaign four months ago, by assisting their employees to purchase by the loan of credit on easy terms. Many, if not most, electric railway companies have already announced their willingness to co-operate with their men in this way, but the crucial time of the loan will occur during the week ending on Oct. 27. Those companies which have not already made an announcement to their men to this effect have yet time to do so, and those which have a plan of this kind in force can well review the extent to which the men have participated to determine whether renewed interest in it cannot be stimulated. The terms of the present issue are such as to make them appeal to the small holder. This was done intentionally as the records of the first Liberty Loan showed that of the 4,000,000 subscribers, 3,960,000 subscribed in amounts of \$10,000 or less, and the aggregate of such subscriptions was approximately \$1,300,000,000 or 65 per cent of the first offering. We are in this war to win. Many electric railway men have gone to the front or are in military training ready to go. Others are assisting the government in this country both individually and through association work, as in the compilation of data such as the Central Electric Railway Association has just completed. But these efforts will be of little use unless the government has the financial means to carry out its undertakings against the enemy. The interests of every electric railway company require that the last week of the liberty loan campaign should be crowned with success.

Personal Touch Plus Good Wages

TWO fundamental requisites in maintaining honestly good relations with trainmen and labor generally are a sense of personal contact between the men and the management and the payment of good wages. Neither one alone is conducive to a loyalty which will withstand the influence of unscrupulous agitators. The combination is necessary.

Good wages may hold the men on the job, but without a sense of the humanness of the corporation for which they are working the service they render will be indolent and furtively destructive to equipment and to the reputation of the company with the public, and their presence will represent a constant potential crisis needing only some plausible excuse to bring it into reality. On the other hand, the existence of very pleasant relations may induce a feeling of interest and pleasure in working for the company. But if the wages are low, agitators have a tremendous leverage with which to influence the men against the company, and while the men will feel reluctant to walk out against a friendly company, they will nevertheless do so when the lowness of their local scale in comparison with that of other companies gives an indication that more money can be got. There needs to be a man-to-man contact, plus good wages.

The personal touch is an indefinable something, usually simmering down to the personality of the "big boss," which makes the men feel that the company has some special interest in them, that it would be a friend indeed in case of trouble, and that they are glad to be working for that company and that man. Building and loan associations, pension systems, insurance plans, sick and accident benefits and hospital service, etc., are appreciated by the men (at least by the best element among them), and are worth while in helping to establish the interest of the company with its employees—

If there is a ring of sincerity and personal interest in the words and acts of the chief as these are related to the welfare work;

If there is no tendency to use this welfare work for publicity purposes and effect upon the public mind; and,

If there is no attempt to interpret these benefits in terms of wages, or, in other words, to put them forth as part of the pay to the men. Actually these benefits should be considered in any fair comparison of wages, but if stress is laid on them in that connection there is a tendency for the men, or at least some of them, to feel they would rather have the money.

Where these conditions to the success of welfare work have not been kept and friction has developed we are inclined to criticise the method of directing this work rather than to condemn the welfare work itself as a failure.

There is an obligation on the part of every employer to look after the welfare of his employees, and in this work the sense of obligation and not the selfish idea of influencing the men should be the predominating

motive. If a railway goes strongly into all manner of welfare schemes with the idea that this alone or principally will be a permanent cure-all for the troubles between company and employees, or if a railway grants an increase in wages, and assumes, therefore, that this removes the need for particular attention to the human side of the relations, that company had better conserve its resources for difficulties ahead. The motive for welfare work must be somewhat altruistic as well as selfish.

There is, in our opinion, much good to be derived from welfare work. If the motives are unselfish and the men realize this, the results will be more significant and more permanent. But the personal touch, plus wages, must not be neglected, and the welfare work must not be misused, lest it operate psychologically to antagonize rather than to conciliate the men.

Getting the Economy Idea Across

AT the conference of the American Electric Railway Association held in New York last week a medal was awarded to R. E. Danforth for a paper on economy which he presented at a meeting of the Public Service Railway Company section. In view of the fact that this paper was selected from among a number because in the opinion of the committee on awards it had of those submitted the greatest value to the industry, the paper itself and the topic which it discusses deserve more than superficial attention. An extended abstract of the paper is printed elsewhere in this issue, and it is worth a very careful reading. This paper is an attempt by a railway executive to interest his men by telling them in a rather intimate way what economy means in the case of the particular property on which they are employed. A frank statement of this kind cannot but result in stimulating a responsive co-operative spirit.

Mr. Danforth has given several such talks during the past few years, and at first probably surprised the men by his readiness to tell them just what it was costing to run the property. They are not surprised now, but they appreciate the confidence just the same. Mr. Danforth's plan happened to be mentioned at a meeting of another company section recently when one of the members arose and asked why the members of that section could not have the same kind of information. The general manager, who was present, replied that the management would gladly furnish them with full details of operating costs, and arranged to do so forthwith. The general manager is the best man in the organization to preach economy, first because of all officers he feels the necessity for it most keenly, and second because he knows the facts most intimately. It would seem to be a wise plan to utilize the company section organization for frank talks by the managers every few months somewhat along the line followed by Mr. Danforth. A little knowledge is a dangerous thing, but full information by employees of operating conditions on a property should be both safe and profitable.

Canadian Northern's Electric Terminal at Montreal

MORE than five years have elapsed since the Canadian Northern Railway commenced boring a tunnel under Mount Royal in Montreal, Quebec, for the purpose of connecting its 10,000-mile trunk line system with the business center of that city. War conditions have hampered progress on the electrification of the tunnel and its approaches, but at last the project is completed with the exception of a few months' work in the heart of the city. During these five years there has been a tremendous advance in steam railroad electrification, the Norfolk & Western Railway, the Chicago, Milwaukee & St. Paul Railway and the Philadelphia terminal of the Pennsylvania Railroad being the most conspicuous electrifications, although the extension of the New Haven system to New Haven should also not be forgotten. It is interesting to note that the electrifications mentioned are of three radically different types, but all are operating with excellent satisfaction. Moreover, progress in the case of each type has not by any means ceased. In the light of this threefold development, however, there seems to be no reason to believe that the arguments which led the Canadian Northern to adopt the 2400-volt direct-current system for the Mount Royal tunnel several years ago are not equally valid for this case to-day. It will be remembered that at that time the three-phase and single-phase systems were carefully considered and, in spite of the fact that the only high-voltage direct-current electrification operating under comparable conditions, that on the Butte, Anaconda & Pacific Railway, had been completed but a few months before, the general reputation of direct-current apparatus and the experience on the Butte, Anaconda & Pacific were such as to warrant the adoption of the same system in this case.

The fundamental facts favoring direct current at Montreal were, first, that power conditions in the vicinity made it economical to purchase energy in the local standard form, three phase, 60 cycles; second, that there were no heavy grades to be surmounted, and, third, that for the length of trackage which it was proposed to electrify 2400 volts was a pressure high enough for economical distribution, requiring but one substation. Since the railway's decision was reached and announced, much experience has been gained in high-voltage direct-current operation under steam railroad conditions at 2400 volts on the Butte, Anaconda & Pacific and at 3000 volts on the Chicago, Milwaukee & St. Paul. With this experience available the Canadian Northern's operating department can throw the whole load onto the terminal next spring with entire confidence that no unexpected difficulties will arise. Excepting a greatly increased traffic, commercial operation will not be substantially different from the smoothly running construction work now going on.

The high-voltage direct-current system is so new that it is still necessary to connect two electric generators in series to produce the desired voltage. Judging from analogous electrical development the time may come

when the full voltage can be produced in one machine, say in a rotary converter. The tendency, however, in all of this high-voltage, direct-current matter has been to make haste slowly, connecting in series generators or motors of proved reliability at lower voltages. Possibly it may prove economical in the long run to use two machines in series just as it has in some cases to use two or more in parallel.

The Canadian Northern at Montreal has been fortunate in this electrification in making it at least partly pay for itself by rendering a large territory, a tract which is owned by the railway company, available for suburban residence purposes. "Model City" beyond the mountain is already being built up in prospect of quick service to the business center next summer. Thousands of acres of delightful country will thus be brought within easy commuting distance of the city. The company's substation, located in what will be the heart of the new real estate development, was designed architecturally to fit into the surroundings. As far as appearance goes it might be a library or municipal building of some sort. It is a delight to the eye and will undoubtedly set a standard for the surrounding residences, as substations are doing in other parts of Canada and in the United States.

Cutting Off Coal to German Utilities in South America

UNDER the "trading with the enemy" act, which has just been put into operation, it is unlawful for any resident in the United States to trade with any person, no matter where he resides, who can reasonably be believed to be acting on account of or for the benefit of the enemy. We have been interested to note that, in the full exercise of this act, government departments are considering an embargo upon coal to German-owned utilities in South America. It is alleged that their earnings have been used to disseminate pro-German propaganda and also to establish large credits in South America and northern neutral countries for the purchase of supplies for Germany. In South America many of the tramways and other utilities have been financed principally by Germany, and it is said that no less than \$500,000,000 of German money is invested in utilities and factories in Uruguay, Argentina, Brazil and Chile alone. Hence, if the foregoing allegation is true, considerable aid is probably being rendered to the enemy through the operation of these enterprises. In the face of such a condition, it would be quite proper to suspend coal shipments to them. It could reasonably be supposed that the constantly increasing anti-German feeling in South America would make the governments there glad to take over, under post-bellum payments, any German-owned utilities that were obliged to default in fulfilling their franchise obligations. Such occurrences, too, might offer excellent opportunities for the needed introduction of more United States capital. The question of a coal embargo to South American utilities, therefore, seems to merit full investigation and probable action.

Gasoline Motive Power on Far Western Railways

Many Gasoline-Driven Motor Cars Designed to Operate on Rails Are in Service in the Far West—Widely Different Types Are in Use, but the Tendency Is Toward Small Size and Light Weight

ELECTRIC railways and steam railroads have a common problem in providing service at reasonable cost on lines through thinly populated territory, this condition obtaining particularly in the far Western States. Here some companies have rebuilt automobiles so that they could be operated on rails, while others have purchased gas-electric cars weighing 50 tons. Straight gasoline cars of even larger size are in use, and examples are to be found of almost every type and weight of equipment.

It is notable that, at first trial, practically none of the companies found the car that would exactly fit their particular requirements, and in many cases changes have been so numerous that definite data and operation costs cannot be compiled. However, since the use of such cars is so widespread, the ELECTRIC RAILWAY JOURNAL has secured statements from a number of motor-car users to the end that an idea may be given in regard to the economic possibilities of this form of rolling stock.

DETAILED COSTS FROM NEVADA ROADS

Among the most successful motor cars in service in the far West are two that are operated by the Nevada Copper-Belt Railroad. These are of Hall-Scott make.

One of them, according to information furnished by P. H. Cook, superintendent and traffic manager of the railroad company, has been in service since 1910. This is a wooden-frame, 36-ton passenger car with a 150-hp. six-cylinder engine driving through a shaft to the front wheels of the rear truck. The car is 54 ft. long, seats forty-eight passengers, and space for baggage is available in the engine room.

This was the only motor car used by the company

from 1910 until February, 1916, during which time it handled all the auxiliary freight and passenger business and covered about 200,000 miles, or an average of 3800 miles per month. As first put in service, it was not entirely satisfactory and required some strengthening. After this it gave good service in every way. During the last twelve months in service the distance traveled was 42,861 miles; the average gasoline consumption, 2.96 miles per gallon, and the average per pint of lubricating oil, 8.50 miles. During this twelve-month period repairs cost \$1,574, of which 75 per cent was labor. This was unusually high. The operating costs for the period, including fuel, oil, repairs, crew wages, and depreciation at \$70 per month, averaged 22.08 cents per mile.

This car served two lines. On one, a 14-mile run, there was only one stop, a maximum grade of 1 per cent and a maximum curvature of 13 deg. From Mason to Ludwig, on the other, a 24-mile run, there were two stops, a maximum grade of 3.27 per cent, and a maximum curvature of 16 deg. The daily run usually included three round trips over the 14-mile line and one round trip over the 24-mile line.

For two years carload freight was handled by this motor car over 0.9 per cent grades, as much as three cars of stock having been handled at a time, but company officials realize that such service puts a strain on the equipment for which it was not designed. During one month the company used the car regularly to handle from three to four cars of merchandise per day over the 14-mile line.

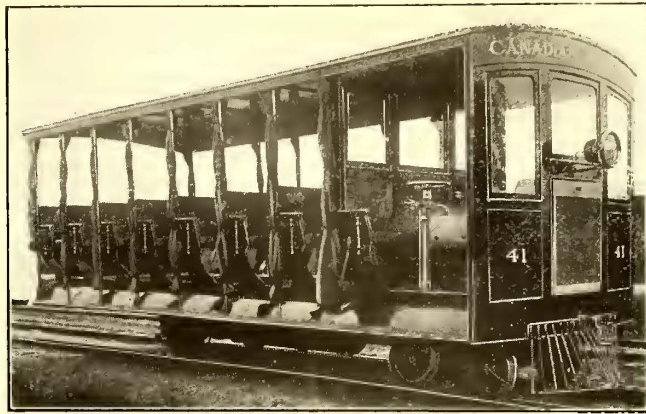
The second car purchased by the company was similar to the first except that it was 60 ft. long and weighed 40 tons. This car was built for another railroad in



WESTERN GASOLINE CARS—PASSENGER CAR THAT SERVES ALSO AS FREIGHT LOCOMOTIVE AND HANDLES ENTIRE SERVICE ON 21-MILE LINE



WESTERN GASOLINE CARS—MOTOR CAR WITH FOUR DRIVING WHEELS FOR MOUNTAIN SERVICE



WESTERN GASOLINE CARS—LIGHT-WEIGHT CAR FOR NARROW-GAGE MOUNTAIN ROAD OPERATED ONLY IN SUMMER

1913 and was bought by the Copper Belt line in 1916, since which time it has been in constant service.

In seven months of operation this second car traveled 24,280 miles and cost \$420 for repairs, most of which was in labor. The average run per gallon of gasoline was 3.082 miles, and the average per pint of lubricating oil 7 miles. These three items, plus the wages of two operators, gave a total average operating cost per mile of 16 cents.

LIGHT-WEIGHT CANADIAN PACIFIC MOTOR CARS

The Canadian Pacific Railway operates four gasoline-engine-driven motor cars on a 2½-mile branch line in Alberta. Two of these are for passengers and two for freight service. All four are equipped with 66-hp. Pierce-Arrow automobile engines. The passenger cars are designed to seat thirty-five and weigh, without load, 6.63 tons. The passenger car bodies were built by the railway company and the freight bodies by the American Locomotive Company.

The line on which they operate has a 3-ft. 6-in. gage, and the grades range up to 4.5 per cent, averaging 3 per cent, with a maximum curvature of 30 deg. The rear truck has only two wheels, the driving gear being attached to the front four-wheeled truck. The cars are equipped with Westinghouse air brakes, and auxiliary hand operated brakes are provided for emergencies.

These cars operate from June until November. In addition to passengers they carry construction materials and supplies, including large quantities of coal. The distance traveled daily during the season averages 80 miles per car, and the total annual cost for repairs on

all cars amounted to \$4,000 during the past year, as given by C. H. Temple, superintendent motive power, Western Lines, Canadian Pacific Railway.

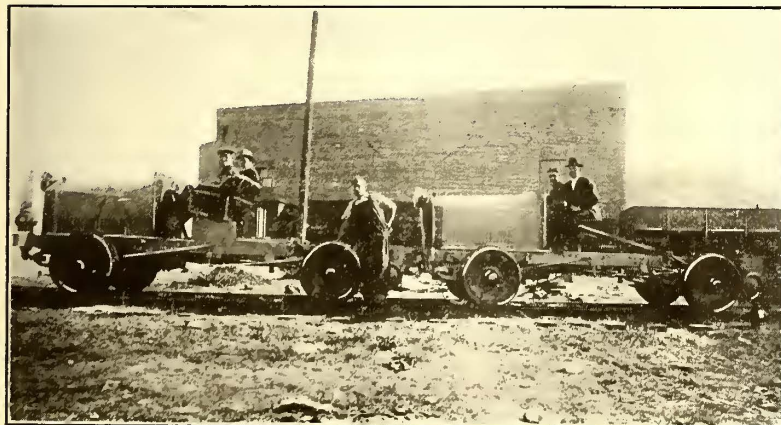
AUXILIARY SERVICE OVER STEEP GRADE

The Mount Tamalpais & Muir Woods Railway, operating between the town of Mill Valley, Cal., and the summit of Mount Tamalpais, elevation 2300 ft., recently put in service a gasoline motor car built specially for the local service in the town of Mill Valley, but also to make the trip to the summit on occasion. Ordinarily it makes nineteen round trips daily over a 1¼-mile run which calls for about ten stops per round trip. On this run the grades range up to 4.2 per cent and there is one 32-deg. curve.

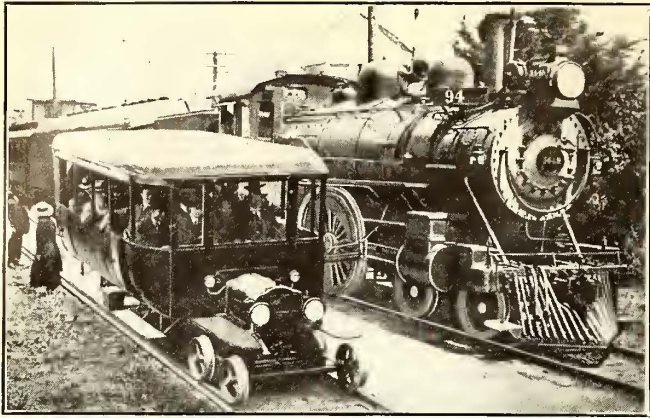
The car seats nineteen passengers and is equipped with a six-cylinder automobile engine made by the Kissel Company and rated at 65 hp. The drive is by means of chains from the main drive shaft to each of the four wheels of the rear truck. The car was designed by Harold S. Johnson of Mill Valley.

The heaviest service on this line occurs during the months of June, July and August. In these months last year one or two trailers were operated part of the time. The average total daily cost was \$8.64. This was divided as follows: Wages of two operators, \$6.50; fuel, \$1.18; lubricating oil, 20 cents; maintenance, 76 cents.

An interesting point about these figures is that the company was able to compare them with the corresponding costs of giving the same service with the steam locomotive (gear drive) and car (of the type used for the mountain trip) which were used prior to the con-



WESTERN GASOLINE CARS—SANTA FÉ CAR MADE UP OF SPECIAL BODY ON AUTOMOBILE CHASSIS



WESTERN GASOLINE CARS—DEMONSTRATION OF RAILWAY AUTO ON BRANCH LINE OF SOUTHERN PACIFIC SYSTEM

struction of the gasoline motor car. The cost of the steam train averaged \$23.24 for the months of February, March and April, 1916. This was divided as follows: Wages, four men, \$13.50; fuel, \$5.50; lubricating oil and waste, 50 cents; water, \$1.70; maintenance, \$2.04. Thus the company figures that the daily saving is \$14.60 per day.

MANY CALIFORNIA ROADS HAVE MOTOR CARS

A considerable number of motor cars weighing 30 tons or more have been put in service in recent years by smaller California railways. The Chowchilla Pacific Railway uses a 30-ton motor both for heavy freight cars and in passenger service. It is equipped with a 75-hp. engine and operates over 1 per cent grades. For the freight service the car has been found to be rather light for the work assigned to it.

Two Hall-Scott motor cars built for passenger and express service have been used for several years by the Holton Interurban Railway, their run being between El Centro and Holtville, a distance of 11 miles practically without grades or curves, and on a leased line of similar construction extending 15 miles west of El Centro. This company has decided that it is not profitable to operate these cars unless they can be kept fairly well filled. Where passenger business is somewhat limited it is believed a smaller car would be less expensive and would give equally satisfactory service.

A 70-ft. combination passenger and express car weighing 50 tons and equipped with an eight-cylinder, 250-hp.



engine was put in service August, 1916, by the Fresno Interurban Railway. It has been covering a 19-mile run out of Fresno on 3½ per cent grades with curvature up to 13 deg. On this run about twenty-five stops are made. The cost of engine distillate required by this car in regular operation is reported as 7 cents per mile.

During the fruit season last year the Fresno company handled between August and December over 1600 loaded and empty cars. This was accomplished without delay and without any other equipment other than the motor car. The cost of repairs has been found to depend largely upon the ability of the motorman to handle the car properly. Next to this, however, the secret of low repairs is believed to be constant care of equipment during service rather than special attention after the failure of some part.

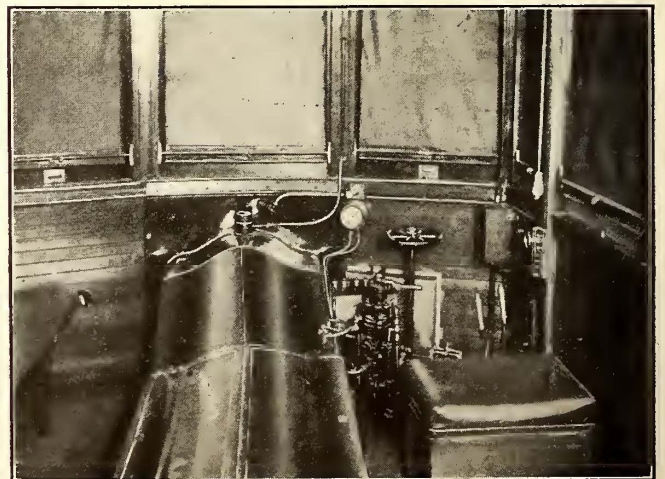
Another motor car, which might almost be said to be in a class by itself because it weighs only 10 tons, has recently been put in service on the lines of the San Diego & Southeastern Railway in southern California, and it is being watched with much interest by Western railways facing the need of similar equipment. Comment on this car appeared on page 747 of the ELECTRIC RAILWAY JOURNAL for April 21, 1916.

RECENT DEMONSTRATION ON SOUTHERN PACIFIC

On July 15, 1917, occurred a demonstration of a White railway auto on a branch line of the Southern Pacific Company between San Francisco and San Bruno. On this line the maximum grade is 3½ per cent, the heaviest on the entire Southern Pacific system. Twenty-eight passengers were carried on the trip and the operating expenses were said to be at the rate of 10 cents per mile, including fuel, oil, repairs, driver, interest, taxes, State license, insurance and depreciation. An accompanying illustration shows the auto operating beside a steam train making the same run at a cost of not less than \$1 per mile.

The chassis of this car is of standard White construction and it is equipped with a 30-hp. engine. A pony truck constructed under M. C. B. requirements was added. The weight complete is 2 tons. The car used in the demonstration has been purchased by the Virginia & Truckee Railroad, with headquarters at Carson City, Nev., which will operate it between Carson and Virginia City to meet jitney competition.

The Chicago, Milwaukee & St. Paul Railway has



WESTERN GASOLINE CARS—EXTERIOR AND INTERIOR VIEWS OF NORTHWESTERN PACIFIC SHOP-BUILT CAR

three cars of the General Electric Company's gas-electric type operating in the Puget Sound district. These cars weigh about 50 tons, have a seating capacity of about eighty and a length of about 70 ft. Two are of the center-entrance and one of the rear-entrance type. The car body is divided into four compartments, engine room, baggage room, main passenger section and smoking room. Officials of the road state that the center entrance type is the most suitable to the class of service being handled and that these cars are very popular with the public. The only change in design found to be necessary was an increase of cross-section for the crankshafts. As originally supplied the cranks were too light and broke in service. This defect has been remedied by the manufacturer.

Two of these cars are now on the regular run between Seattle and Everett. They double the 101-mile stretch of road between cities every day, maintaining a schedule average of 27 m.p.h. The average number of stops is 100 per round trip, while the maximum grade is 2 per cent and the maximum curvature 16 deg. The motors use engine distillate for fuel.

According to figures submitted by Frank Rusch, general master mechanic Puget Sound Lines, Chicago, Milwaukee & St. Paul Railway, under whose supervision the cars are operated, the average cost of the cars on the Seattle-Everett run amounts to 20.38 cents per car-mile. This total is subdivided approximately as follows: Wages of train crew, 9.86 cents; distillate fuel, 4.84 cents; gasoline for starting, 0.04 cent; lubricants, 0.96 cent; supplies, 0.1 cent; repairs, 3.77 cents; cleaning, 0.55 cent.

CARS FOR MISCELLANEOUS SERVICES

A novel form of gasoline-propelled car, which was built in the shops of the Northwestern Pacific Railroad in October, 1915, is shown in two of the accompanying illustrations, one of these being an interior view showing the forward end of the car with curtains lowered and giving an idea of the operator's position in the car. The equipment provides seating capacity for sixteen persons, the length over all being 17 ft. The power plant is a four-cylinder, 60-hp., 1907 model, Thomas automobile engine, and it gives a maximum speed of 35 m.p.h. Hand and air brakes are provided, the latter being furnished with compressed air by a chain-driven compressor operated from the shaft of the main engine. The weight of the car complete and ready for service is 11,200 lb.

On the Ventura County Railway a single gasoline-driven car serves as the entire equipment of motive power for the whole 21-mile system. This car is of all-steel construction and its considerable weight, due to a length approximating 50 ft., permits it to be used as a locomotive for handling freight. The car body, however, is provided with a large passenger compartment in addition to a baggage compartment and engine room. The drive is of the shaft type and is connected direct to the front pair of wheels on the rear trucks, this pair in turn being connected by chain to the rear wheels of the truck. This car does all of the freight and passenger business upon the line and it has even hauled a fourteen-car freight train. The work that is regularly done includes a considerable amount of switching, but it has been found that the car can conveniently handle

this work in addition to making regular runs in passenger service.

A wholly-different type of car has been used by the Atchison, Topeka & Santa Fé Railroad on its lines operating out of San Bernardino, Cal. As shown in one of the accompanying illustrations these cars have been made up by building bodies upon standard motor-truck chassis, the body design providing for a short rear platform and a rear entrance. The engines are of the six-cylinder type and develop 40 hp., giving the cars ample speed for the suburban service in which they are operated.

War Troubles in Paris

East Parisian Company Has Not Been Allowed to Make Needed Increase in Fares to Offset Various Burdens of Operation

WHAT *The Electrical Review* says is a typical instance of the difficulties with which French tramway companies have to contend under the conditions of the war is afforded by the experience of the East Parisian Tramways (Tramways de l'Est Parisien). The gross profits of this company in 1916 were less than in the preceding year, and it succeeded in equalizing the expenditures in 1916 only as a result of the gross profits which were realized on the manufacture of munitions of war.

While the normal working conditions upon which the fares fixed by the company's concessions were based have been completely changed, and while the sale prices in industry have increased at a rate corresponding to the advance in cost prices, the company is prohibited from making any modification in fares. The steps taken by the directors to secure a change on the part of the local authority which granted the concession have had no effect, and the intervention of the government has been manifested only in the direction of increasing the company's burdens by enforcing the grant of war bonuses to tramway workers. Such bonuses, it is contended, should have been simultaneous with the giving of permission to raise the fares.

In addition, the conceding authority, persistently ignoring the state of war, has applied the penal clauses of the concession contract by inflicting daily fines upon the company for the non-observation of the time tables in operation in peace times, whereas the present conditions render it impossible to adhere to these time tables absolutely. Moreover, despite numerous applications, the company has not yet been authorized to bring into operation certain advantageous arrangements in the concession contract which only require the fulfilment of certain formalities which were concluded some time ago.

The company has had to bear higher costs for materials, coal and labor. Although it was eventually empowered to extend the use of female labor in the working of the cars, it has not been possible to maintain the effectives without trouble, and the maintenance staff in particular has not been adequately reconstituted. The scarcity of specialized labor, and the impossibility of obtaining all necessary raw materials and spare parts for the maintenance of the rolling stock and tracks, have compelled the company to limit its efforts to the execution of the most urgent works.

Mobilizing the Electric Railways for War

Important Work Done by Central Electric Railway Association—Committee on Military Efficiency and Defense of Great Value to Government and to Railways as Well

THE magnitude and significance of the work of the Central Electric Railway Association committee on military efficiency and defense can scarcely be appreciated without a study of the map and the compilation of valuable data which have been made. The map cannot be legibly reproduced within the space limits of the pages of this journal, and the data collected are so voluminous that more than a summary and analysis of it, which are planned for a later date, could not be printed herein. In brief, the work of the committee was an attempt to place before the governmental authorities a definite picture of the capacity of the electric railways to assist in the great war transportation problems and thus to put the electric railways on the map, so to speak, as an important part of the nation's transportation facilities. It was quite the feeling of the committee, and not without concrete evidence, that the electric railways did not now enjoy that recognition, and that the authorities were not aware of the ability of these railways to be of tremendous service to them in relieving the existing congestion on the steam railway trunk lines. This realization perhaps gave added impetus to the work of the committee as it determined to make known the capabilities of the electric railways of the North Central territory.

The map and data compilation together form the most comprehensive inventory of the electric railway plants as a group that has ever been undertaken. They portray the minutest detail of track and roadway, trolley and transmission line, power house and substation, shop and rolling stock construction, equipment and capacity for practically all the electric interurban railways in the C. E. R. A. and surrounding territory in a manner which makes possible an analysis of existing conditions and the possibilities of greatly extending the utility of these roads in their present field. They also offer a means of determining the possibilities for greater standardization in all branches of the industry.

The committee of the C. E. R. A. under whose supervision the work was done was appointed by President C. N. Wilcoxon on motion of the association at the March 8 and 9 meeting in Indianapolis and comprised the following members:

Arthur W. Brady, president Union Traction Company of Indiana, chairman; Frank R. Coates, vice-president and general manager Toledo Railways & Light Company; John F. Collins, vice-president and general manager Michigan Railway; George Whysall, general manager Columbus, Marion & Bucyrus Railway; W. A. Carson, general manager Evansville Railways; Will H. Bloss, Ohio Brass Company; S. D. Hutchins, Westinghouse Air Brake Company, and L. C. Parker, Cleveland Frog & Crossing Company. Mr. Bloss was elected by the committee to serve as its secretary because of the vision and enthusiasm he had for the future of the electric railways. He has been very largely responsible

for the progress of the work of the committee and has devoted an immense amount of time and thought to it. All members of the committee, however, and the executive committee of the C. E. R. A., have closely cooperated and given much time to make the work attempted of significant importance to the government and to the railways.

HOW THE DATA WERE COLLECTED

Upon beginning its work, the committee endeavored but was unable to secure information from the military authorities as to what the government would want from the traction lines. In talking with army officers, it was learned that their principal interest was in the movement of troops and government freight and that they could not see where the electric railways would be of any great value to them. There was also other evidence manifest that they thought of the electric railway systems only as elongated street car lines. The committee was therefore forced to proceed under its own initiative and without direction or advice from army or government officials. Nevertheless, the results of its labor will certainly stand as a monument to the members because of the great value to both the government in case of future need and to the railways themselves now.

The first work attempted by the committee was the drawing up of a map which would show the physical properties of the various railway systems in the Central Electric Railway Association territory and also in a few surrounding states. The C. E. R. A. territory includes the states of Ohio, Indiana, Michigan and part of Kentucky, while the additional states included in the work of the committee comprised New York, Pennsylvania, West Virginia, Illinois and Wisconsin. Except for the case of Ohio and Indiana, which are made up on one tracing, the map is divided up by states and bound in atlas form, though arranged with register lines for pasting together if it is desired to have the whole map in one piece. By means of this map, all the electric railway lines from the Mississippi River to New York in the North Central states are shown. In gathering information from which to make up the map the committee was fortunate in having from the first the co-operation of C. F. Handshy, president of the Illinois Electric Railway Association, and many individual companies who were not members of this association or the C. E. R. A., but who were glad to serve this patriotic end and supply the information concerning their own properties.

The map is drawn up to the scale of 8 miles to the inch, which necessitated very arduous labor in taking care of the great amount of data which is found there, but also making it necessary to file even a greater amount of data which could not be provided for. The map shows, in addition to the traction lines, the loca-

tion of power houses, their capacity, the location of storerooms, machine shops, stock rooms, bridges more than 100 ft. in length, high-tension lines with their voltage, feeder systems with their capacities, location of substations, forts, military camps, storerooms and soldiers' homes. The lines of paralleling and intersecting steam railroads and the points at which they intersect with the electric lines are shown, as are also the track connections of the electric lines with boat lines on lakes and rivers. The portions of the lines which are double track are so indicated on the map, and the location and lengths of the sidings are given. In addition to the information pertaining directly to the traction lines, the high-tension lines of electric light and power companies, the location and capacity of central stations, water-power plants, and the substations of the different power companies on extensive systems were also placed on the map, so that practically the complete electrical information for the territory covered is shown.

Copies of the completed map will be supplied by the association to the proper persons at each cantonment, aviation field, military fort, the adjutant general of each state in the territory included, and to the proper officials at Washington without charge, for such use as they may find for the information therein contained. The executive committee of the association has also decided that maps may be secured upon order of the executive officers of electric railway companies, electric railway associations and similar officers of power companies whose lines are shown on the map, and to such other persons as may be directed by the president of the C. E. R. A. While this association has absorbed the cost of preparing the map, it was decided that a charge as given in the table below would be made for copies in order that it might be possible to keep an accurate record of its distribution, and also to guard against too large a distribution.

CHARGES FOR C. E. R. A. MILITARY MAP

Blueprint paper map.....	\$7.00
Blueprint cloth map.....	26.00
Blue line on white background, paper.....	50.50
Blue line on white background, cloth.....	67.50
Black line on white background, paper.....	58.00
Black line on white background, cloth.....	79.50

SUPPLEMENTARY DATA ALSO COMPILED

In addition to the information which is shown on the map, the committee has collected a vast amount of data which goes into minute detail on the various electric railway plants. These data sheets constitute what is really a mobilization record of cars, material, power-house equipment, and in general all apparatus and supplies used by the electric railways for the purpose of successfully meeting any contingency which might give rise to the destruction of existing plants or the inability to secure new supplies. The detail dimensions, clearances, types of equipment used, etc., for trolley lines, telephone lines, high-tension lines, third-rail, signal lines and complete description of signal installations, etc., are included. The detail data on track construction, including type and weight of rail, description of special work, bonding system and types of bonds used, special track tools available, number and location of gravel pits and stone crushing plants and their capacities, minimum radii of curves and whether single or double guarded, amount and location of grooved, girder-

type rail used in interurban lines, number of portable cross-overs available, width of devil strip on double track in city streets, and obstructions through cities or elsewhere to the movement of M. C. B. freight equipment over the tracks, etc., form a part of these data.

A general summary of the various equipment installed in the railway shops, giving the number of machines and capacity of each, description, floor space covered, floor area in various departments of the shop, amount of storage track under roof, capacity of each department of the shop and an itemization of special wrecking equipment and derrick cars with the capacity of each are included. There has also been collected a detailed summary of the rolling stock of each road, which includes a tabulation of the principal car dimensions, capacity in number of seated passengers or pounds of freight, type of truck, wheelbase, make, the details of motor and control equipment, axle dimensions, wheel dimensions, type of couplers, air brake equipment, etc. A similar summary of the city cars, the motors of which could be used for interurban service, was also made.

In the power-house summaries, there is a tabulation of the various equipment including the number, capacity, type, rating of generating units, turbines, engines, transformers, exciters, boilers, pumps, etc., and the capacity of coal bunkers, surplus coal carried, daily consumption of coal, etc., whether or not there is space available within the station for the installation of additional units, source of water supply, etc. A similar summary is made of the equipment in substations.

At points in villages or cities through which the electric lines pass, where there are obstacles to the movement of standard M. C. B. freight equipment over the electric lines, the committee has collected information providing a detailed plan for eliminating or overcoming this obstruction. For instance, a short radius curve in a city might be overcome by providing a short cut, frequently possible, by connection with a steam road track for a short distance through this city. In such a case the committee has collected data providing for the electrification of a certain section of the steam road track and the installation of the necessary track and special work, and has had prepared bills of material required to complete this work. The information also indicates where this material could be secured in the event that it was impossible to purchase it, the approximate time required to complete this work with present operating forces, the increase or decrease in mileage over the present line, etc. There is nearly always a local industry track or some other source of material near at hand which would supply the necessary amount of overhead, signal, bonding and track and roadway materials necessary in the event of emergency, and the location of such sources of materials and the amount available at each location, have all been tabulated. Usually a simple map showing the suggested cut-off around the obstacle accompanies the data sheet on such work.

All of these data are being accumulated and placed in tabular and other convenient forms for reference purposes and filed in the secretary's office of the Central Electric Railway Association. In the summarized data sheet, each railroad is given a key number which is carried through all the various divisions of the data for that road. As the cost of printing or duplicating this information for distribution among railway men

would be prohibitive, only the original copies will be made at the present time, but these will be available for reference purposes to members of the association or other railway executives as well as to military officials of the government.

When these data are finally completed, it will be a simple matter for the railway companies to provide quick relief from any emergency by commandeering equipment and materials from another plant not so badly needed to replace destroyed or broken down equipment, provided the necessary military or government authority was behind the order. The data and map show that by building an 18-mile section of line from Ridge Farm to Paris, Ill., or a 40-mile section of line from Danville, Ill., to Crawfordsville, Ind., together with a 32-mile section of line between Little Falls and Fonda, N. Y., an electric railway system would be completed whereby it would be possible to interchange rolling stock over electric lines from St. Louis to New York City, and plans have been prepared to show the cost and the material necessary for filling in these gaps should

they be needed in case of serious interruption or depletion of the steam road facilities.

This map and compilation of data will also be of great value to the electric railways themselves, since it is the first time that a complete survey of the electric railway plant and facilities has been made. It will be possible for the railways to see at a glance where power systems might be interconnected to the mutual advantage of companies, and also for any company quickly to learn where it might be possible to purchase an old type of equipment not badly needed in another company's plant to replace the worn out or broken down similar unit in its plant. It will also be possible to summarize by the process of elimination what the most commonly used types of equipment and supplies are, to the end that it will give a very definite help in promoting standardization work. There is no question but that the railways will find very extensive use for the map and data which have been prepared by the committee, and that if the emergency comes this will also prove of extreme value to the military authorities.

Three Electricians for Twenty-eight 2400-Volt D.C. Locomotives

The Experiences of the Butte, Anaconda & Pacific Railway in Maintaining High-Tension Locomotives Since 1913 Under Extremely Arduous Conditions Are Described in Detail

THE Butte, Anaconda & Pacific Railway is notable as furnishing the first proof that 2400-volt direct-current is ample to care for great tonnage, for it is doubtful whether any other railway in the world has so heavy a freight service per mile as this company's section between the copper fields of Butte and the great smelter at Anaconda. It is not uncommon to haul westward from Butte a train of seventy-five ore-laden cars, each averaging 68 tons or more. In May, 1917, the average train-load west on an average grade of 0.3 per cent and a maximum of 0.6 per cent was 4456 tons. The average eastward train of empties weighed 1519 tons. The heavy trains are run up to 15 m.p.h.

The same locomotives, but geared 28:80 (3.2) instead of 18:87 (4.83) to give a maximum running speed of 55 m.p.h., is used for the 26-mile passenger run between Butte and Anaconda. An average passenger train consists of three or four coaches weighing 93,000 lb. each and a 127,450-lb. baggage car. The run is made in one hour. Two trains are so operated that each locomotive covers 120 miles one day and 162 miles the next day, this being done to equalize the work of the train crews. This arrangement also makes a reserve engine unnecessary, because one locomotive is free at Anaconda after 2.30 p. m., while the other is open for attention every morning and up to 3 p. m.

The 2400-volt d.c. General Electric locomotives are too well known to require description. They now number twenty-eight, six new ones having been received during the spring of 1917. They are run singly for

passenger service and in tandem for freight service. The freight locomotives weigh 82 tons each, and the others 80 tons each.

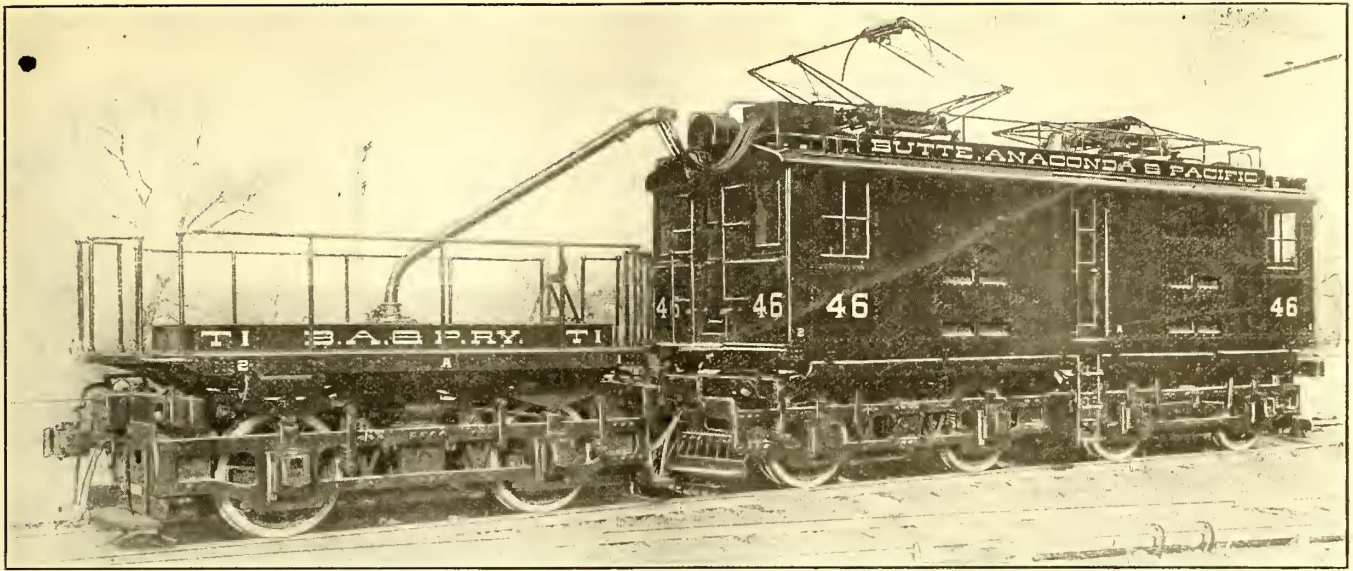
In addition, the company has had since 1913 three tractor trucks (called "calves" by the operators) which weigh about half as much as a locomotive.* Their use gives 50 per cent more tractive effort in switching and spotting service, at about one-third reduction in speed, when one is connected in series with a single locomotive. Their use has overcome the need for abusing resistor grids. Each of the eight motors per double unit is rated on the hourly basis at 320 hp., or 2560 hp. in all.

ONLY THREE MEN FOR ELECTRICAL MAINTENANCE

The electrical maintenance force of all the locomotives and tractor trucks comprises exactly two electricians and one helper! Furthermore, these men care for the car heating and lighting equipment and for the power, heating and lighting of the steam-electric locomotive and car shops. This force does all rewinding—in fact, only one commutator was ever sent to the factory, this being for a railway motor in the early days before commutator upkeep equipment had been installed. A number of machinists are employed, of course, for mechanical maintenance; but this force is less than half than with all-steam operation although some steam locomotives are still in use beyond Anaconda or are being repaired for sale.

Aside from being frequently operated, in these copper-boom times, beyond capacity rating, the locomo-

*See ELECTRIC RAILWAY JOURNAL, June 13, 1914.



FORTY-TON TRACTOR TRUCK ON B. A. & P. RY., COUPLED TO STANDARD LOCOMOTIVE TO INCREASE TRACTIVE EFFORT IN SPOTTING

tives must also contend with the possibility of leakage and short-circuits due to local flue dust which settles on both rheostat and contactor insulation.

Passenger locomotives are inspected electrically and mechanically every fourteen days, although this period could safely be raised to thirty days. A passenger locomotive which was out for three years was completely overhauled in four and one-half hours. Until lately freight engines were inspected electrically every thirty to forty days; but now forty days is the minimum interval between electrical inspections. Actually, not more than one hour is required per unit by one electrician and helper. Such a record is all the more remarkable when it is considered that these freight engines are often in practically continuous service with only thirty minutes' cooling time between changes of locomotive crews.

The overhauling period is really determined by the interval between renewals of wheel tires, say after mileages of 45,000 to 47,000. The examination of nuts, bolts and hub liners, aside from tires and brakes, is about all that is necessary mechanically. Even the tire renewals are not carried out completely, as drivers No. 1 and No. 2 get more flange wear than the others.

SOME EQUIPMENT RECORDS SUMMARIZED

The original type General Electric grade F pinions give 90,000 to 115,000 miles' wear. At least four times that mileage is expected from the double-drive gears, as not one gear rim has yet been worn out nor a tooth stripped. During the first year's operation tight keyways at top and bottom caused some broken pinions, but this difficulty was quickly remedied.

Ninety-five per cent of the contactor tips have run for four years and many of them are expected to give service for two or three years more.

The arcing horns in the arc chutes are just beginning to require replacement.

Not a controller finger has been changed.

The main motor brushes which are under a tension of 7 to 7½ lb. average 18,000 miles. Compressor brushes are just beginning to require renewal after four years.

No armature troubles of any kind have occurred between Jan. 1 and May 30, 1917.

No armature has ever fallen on a pole piece.

No other motor troubles have been experienced except a few flashovers, these having been due to the effect of rough cross-overs and not to overloading.

All motor brushes, which are General Electric grade D electro-graphitic, show no perceptible wear on commutators except a little on dynamotors due to the entrance of metallic dust. No commutator has been re-slotted.

Occasional cases of open circuit in grid resistors due to overloading constitute the principal cause of delays on the road.

The only replacement of original equipment was the installation of sturdier compressor relays within the first eighteen months. The location of the air compressor governor caused some of them to chatter.

The Hyatt roller bearings for the pantographs out-wear two to three contact tubes; and each tube is good for about 50,000 miles.

No lightning trouble is experienced although lightning is common in this territory. Each locomotive is protected by General Electric electrolytic arresters consisting of ten aluminum cells in series placed in the cab between the main fuse and the choke coil in the line leading to the main switch.

Equipment defects are so few that they are not classified by transfer from the daily log. To quote Electrical Superintendent Bellinger, "Days and days go by, when we never have to put a thing in this book."

The following table covers mileage costs for January, 1917, a particularly heavy month, based on the operation of 83,702 miles by all classes of equipment. The maintenance costs include damage from accidents.

	Cents per Mile
Electrical equipment (including machine shop and materials and depreciation).....	9.400
Locomotive engineers	8.032
Engine house, electric (including wiping and housing)....	1.267
Electrical energy	17.674
Lubrication	0.405
Other supplies	0.576
	37.363

A Plea for Team Work

The Effect of the Present Business Situation on the Operation of the Public Service Railway Is Clearly Stated—Train Men Are Told, in a Heart-to-Heart Talk, How They Can Improve Conditions

By R. E. DANFORTH

Vice-President and General Manager Public Service Railway, Newark, N. J.

This is an abstract of the address for which Mr. Danforth received last week the medal awarded annually by the American Electric Railway Association for the best paper or address given during the previous year before a company section. It was delivered at Camden on March 22, 1917, at a meeting of the company section of the Public Service Railway. In his talk Mr. Danforth quoted some figures on costs of supplies to the Public Service Corporation which are omitted from this abstract because they were published in large part in Vol. 48, page 1227 of this paper. His comments on the way in which the men can help the railway to save and on the general economic conditions are of general application and should be of value to the men on every electric railway system.

IT has been my practice to talk to the boys in Newark at least once a year about the operating expenses of the railway, and the members of the company section there have been looking for such a talk this year. The necessity for economy has struck home rather forcibly this year because of the war. We are already feeling the effect to a very marked degree. Most of the European nations have been buying on an immense scale foodstuffs, clothing, shoes, automobiles, railroad locomotives, cars and supplies. In fact, everything we produce or manufacture in this country has been going abroad by the boat load. This has meant busy times in this country. Factories that formerly worked eight or nine or ten hours a day have been working twenty-four hours a day and even at that have been unable to keep up with their orders. This has made, in one sense, good times. Every man and every woman who wanted work could easily get a job. The establishments manufacturing munitions have been getting big prices for their output and have been paying big wages. They could afford to pay big wages, and in order to fulfill their contracts within the time specified they have been compelled to bid high for labor. The result has been that our company, as well as all other railways, has lost good men because they could earn more than the railway companies could afford to pay them. As a result we have been handicapped, and although we have carried more people and have had more business, we have paid pretty big prices for all our railway and other supplies.

A most serious effect of the war has been the curtailment or cutting down of constructive work. By that I mean there are fewer people manufacturing or otherwise producing articles that are of general use to the world. The loss is due to the fact that millions of people are engaged in destruction instead of construction, and that there are millions more "non-producers" to be fed than in normal times. Have you ever stopped to think that with fifteen millions or more of men serving with the armies in Europe, none of whom is producing anything to eat, the whole burden of production falls back upon the rest of us? This is a tremendous economic loss, and we are forced to pay for it. Then

the destruction of millions of dollars worth of materials, whole cities wiped out, railroads and buildings destroyed and even farm lands rendered worse than useless constitute a further loss that we cannot help but feel. All this naturally adds to the cost of living.

While conditions are unsatisfactory here they are very bad in Europe. Thousands of old men, women and children are practically starving and are only being kept alive upon the charity of Americans and others. There are children in Europe who don't get in a week as much food as one of your children get at a meal. All of this has to do with us in a way. With the price of potatoes up three or four times what it normally has been because of the shortage due to excessive demands and also to the lack of acres and acres of farm land in Europe which had formerly been used to produce them but are now battlefields or trenches or totally devastated, you and I are directly feeling one of the effects of the war.

As to the future. When the war is over, practically the whole of Europe will be filled with starving people. What is left of the armies will be back at home, with the miles and miles of ruined country to struggle with and work back to tillable soil. There will be a great many individuals, particularly those now engaged in the munition plants, who will be making materials of peace. They will manufacture articles to send over here to our markets at prices far below any our manufacturers can meet. Where our mechanics in the shops and manufacturing establishments are making \$3 and \$4 per day, over there workmen will be glad to work for 50 cents a day, and they will turn out much more than our men do, in order to hold their jobs. They have learned how to work fast, and they have had to work fast to protect their countries. Such are the men we shall have to compete with; men who will work for a meagre living to try to capture American trade. Our boom times will be over. A great many men who are making big money to-day will be walking the streets looking for any old kind of a job. It will be hard to get a job, too, because so many will be looking for the few that will be available. It will be a general scramble for a chance to make a living.

We have in this country today a great many persons

whom I call spendthrifts. And they are not the wealthy. They are wasters. Men who two years ago supported their families, had what they needed, sent their children to school and got along on \$60 per month, have gone to work in munitions plants and have been making \$150 per month and have been spending every single dollar of it. After two years of spending \$150 per month, when the factories close, don't you think those fellows are going to get a good hard bump if they have to take a job at \$1.25 per day? During the temporary boom times they have not acquired the habit of saving, and they are going to pay for their thoughtlessness or indiscretion. Many of these people you know. A lot of them are your neighbors. You see their families wearing expensive clothing, including \$12 shoes. They go to the movies every night. Some of them are buying automobiles. It will be a rather hard drop when they have to come down to where they were a few years ago. Rather a gloomy picture, I admit, but I have been thinking very deeply about the subject for a long time and have been watching the trend of the times. I am amazed at the foolishness of the American people. Neighbors of mine who only two years ago I saw walking to and from the train now ride in a limousine with a liveried chauffeur. They made their money manufacturing war materials. Whether they will be able to keep that game up I don't know, but they certainly have taught their families habits that will be hard for them to break if the occasion requires.

So far as the railway is concerned, we still have to carry passengers for 5 cents. We haven't been able to go up to 10 cents or 15 cents to keep pace with our neighbors in the manufacturing business. Our employees are paid a rate of wage which is all the business can stand and which it will be hard to maintain for many years unless prices of materials come down. Now, granted that other men are making big pay just now on account of the war, when the war ceases who will be in the better position? The railway man will have his job and his pay—the other fellow will be idle. Trolley cars will keep on running whether or not the shops close down. We may not carry so many people, but people will still have to ride. Our pay will go on, and the prices of food stuffs and all other supplies are bound to come down. That is going to put us in a position of being able not only to live comfortably but to help out some of the poor and needy of our neighbors in this country and the others across the water, so that I say the man is wise who sticks to the job that has fifty-two pay days per year; the job that does not close for two weeks or more for inventory and does not shut down every time some foreign nation ships in a lot of material that can be sold cheaper than it could be made in this country. This war is not going to last very much longer. As I size it up we shall have pretty busy times and things will stay just about as they are this year and next, but along about 1919 they will begin to slow down, and you will experience the beginning of a period of readjustment that will lead to hard times. I would advise those of you who are fortunate enough to have any money left at the end of the week after you pay your bills, to save it.

Now, you might ask what has this to do with the railway business? It has a great deal to do with it. If our business is to keep this railway going with the conditions as I am outlining them to you tonight, we must

save every penny we can, and I have asked you to save your own penny first so as to get in the habit of saving the company's penny. Your bread and butter and mine depend upon Public Service. Public Service must make good, serve the public, earn money to pay its bills (our wages included) and when hard times come, be strong enough to weather the storm. Now I am going to try to give you a little idea of the conditions affecting our business.

HOW THE RAILWAY IS AFFECTED

We had a very good increase in business last year—about 9½ per cent over the preceding year. The operating expenses went up 9.93 per cent—almost 10 per cent—so that they were a little ahead of the earnings. We had not begun to feel high prices last year because contracts made at former low rates helped us out. Our car miles increased 5.8 per cent; car hours increased 5.9 per cent, which indicated the cars were slowed down a little bit and that we did not keep to our former schedule. Wages of platform men, raised on July 1, last, increased operating expenses about \$175,000 for the six months period. The cost of operating per car mile was 20.374 cents which is about one-third cent a mile more than we had hoped it would be, and ½ cent more than the year before. We carried 451,700,000 passengers, which is almost 1,250,000 a day. In 1915 it cost us \$1,289 a mile for track maintenance. This year, because we could not get the men to do the work, we only spend at the rate of \$897 per mile. I have heard the track men say they have noticed the difference in the track bolts and in some of the paving. The power consumption on the basis of kilowatts per car mile was 3.867. The year before it was 3.75, so that there was an increase in the current consumed which amounted to about \$50 per year for every motorman on the road. Let me be clear. The increase was not in the cost of current but in the increased quantity used at the same cost price; \$50 per year—just a little bit of slackness in the matter of coasting, because it would be no trick at all for every motorman on the road to save \$300 per year if he used his controller right. By that I mean not to keep the power on the notch and then shut off and slam on the air, but shut off the power and coast the car before it comes to the braking point. If Public Service could effect such a saving in power bills it would have more money for the payrolls. Just bear that in mind.

Now, as to the matter of accidents. Accidents increased 15.70 per cent while the number of claims went up 28 per cent. These figures mean that more people made claims on the company, the ratio of increase in claims over accidents being almost two to one. Automobile accidents have gone up in numbers very rapidly. In 1908, throughout the State we had only 336 automobile accidents. In 1916, eight years later, we had 3936, or eleven times as many such accidents. The amount of money spent in settling those accidents has been tremendous. The Southern Division, last year, I am very glad to say, showed quite an improvement in the matter of accidents. The number came down to a marked degree, but not as far as we had hoped to see it. It was, however, a very satisfactory improvement for the year. The automobile accidents increased in 1916 over 1915 from 2700 to more than 3900. The Claim Department paid in settling such claims nearly \$97,000 more than it had paid the year before. This emphasizes one

of the serious problems which you and I have to consider. The number of automobiles running up and down the highways is growing every year, and no matter how reckless the owners or the drivers of such machines are, we must be extremely cautious and careful to avoid colliding with them. Many drivers of automobiles are reckless. Some of them have no road sense and are not fit to run a wheelbarrow. Our cars operate on rails and we cannot dodge the automobiles. All we can do is to stick to our rails and avoid hitting them if possible, and at that it is usually a pretty hard matter to prove that the motorman was not at fault and that the "other fellow" was. Bad as it is at best, you make it worse for the claim agent if you do not furnish him with the means of good witnesses.

To give the same amount of service in 1917 as was given in 1916 will cost \$1,025,000 more than last year. I have not included in this estimate damage claims, increased cost of power and taxes. I have just covered the things that had to do with the running of the railroad.

As to power, the same element of increase in wages and cost of materials applies there as it does with the shop and track. And what couldn't I say about the high price of fuel and the alleged reasons therefor! As you know, coal is scarce. One reason for the scarcity is that several hundred thousand foreigners went back to the old countries to fight and left us short-handed at the mines. Then the steam plants and factories working overtime—some of them twenty-four hours a day—are using two or three times as much coal as they ever did before. Again, we are shipping coal abroad and, on top of all this, coal cars which formerly were used for nothing but the hauling of coal from the mines to the market are hauling steel and munitions and materials of all kinds; hauling them to seaboard to be loaded on ships. Sidings are jammed with freight cars, many of them coal cars, which lie there week after week waiting for ships to haul the stuff away. All this time such cars are out of service, and the result directly affects Public Service and all other large users of coal. If the company should be compelled to keep up the rate it has been paying for coal it would stand to lose about \$3,000,000 in a year. The railway uses 40 per cent of the power generated, and the increased cost of coal would mean \$1,200,000 out of the railway earnings. Last year our revenues were \$18,255,000; our operating expenses, \$11,577,000. This year we shall probably take in \$19,500,000, and we are going to spend \$13,250,000 for operation. What is the answer to all this? Three things: First, let us stop all waste; second, spend no money needlessly, and third, let us go after new business. You all know there is plenty of room on the cars in the middle of the day that can be put to use.

HOW THE TRAINMEN CAN SAVE

As to the first item—there are thousands of dollars wasted. Every department has different methods of wasting and you can make a very large saving by stopping it. For instance stop wasting power by coasting. You can save \$150,000 per year if every motorman does his best. It sounds like a big item when you talk about it and you may say "what is the use of coasting when somebody else does not?" but you have to coast mighty little to save the amount I mention. A saving of \$150,000 would bring back the kilowatts to what they were last year.

Take no chances; avoid accidents, and you can easily save \$100,000 a year. But this means constant attention to duty; it does not mean sizing up every pretty girl that passes on the streets. We must pay more attention to what to many might seem like little items, such as conductors starting cars with doors open so that somebody attempts to board the car after it starts and is thrown; or motormen starting cars with a jerk. Our general claim agent tells me that one of these so-called "little" accidents cost us \$7,500 when a woman was thrown getting off a car. It does not seem possible that we could cause so much damage, but carelessness comes easy and costs much. If you just keep your eye on the car you can avoid a lot of these accidents.

Stop loafing. There are 7000 men on the property, and every man could do one-fifth more work than he has done without hurrying the least bit. To be conservative let's call it one-tenth more. Each man can save an hour every day. It costs us more than \$5,000,000 a year in payrolls. Nine men could do the work of ten if they would and make up for some of this shortage of labor. Shopmen all know that wherever there is piecework a job is done two and one-half times as fast as the same job would be done by day workers and the pieceworkers are not any more tired than the others. This shows that where the man is working for himself he keeps pounding away all the time he is on the job. It is easy enough to lose one hour a day, and it is just as easy for motormen and conductors to do their little bit in saving by just speeding up 10 per cent. Why we have gone back almost 10 per cent on our schedule on this property in the last year and most of you know the time can be made up if the crews will only try.

In the waste of materials in the offices, shops and car houses, I could, if I had the time, tell you where \$10,000 could be saved, while the transportation department could, by united effort on the part of every man, make a further saving in wasted time, wasted car hours, missed fares, and fares on the sidewalk, which would amount in a year to \$1,000,000.

You notice I speak of those people on the sidewalk who would ride if the cars were on time and the crews courteous and agreeable. You go into a store, and if the clerks are grouchy and inattentive, you go out and don't want to go back again. If, on the other hand, the clerks are bright, courteous and agreeable, you are pleased to go back again and buy again. We are in the commercial business—the same as the store and the same conditions in getting and keeping business apply to us. Let's keep that in mind.

Now concerning expenditures: It cost us \$1,300 last year to maintain a mile of track and \$450 to keep a car up. To maintain switches and crossings last year cost us \$48,000. Taking the items together it shows that maintenance cost us \$600 per mile of track which is more money than the average steam road spent in the maintenance of its whole right-of-way. As track materials increased about 60 per cent in cost, we are going to pay \$1,000 per track mile next year. Now we can cut this \$600 or \$1,000 materially by being careful in the matter of putting the special work in the ground; careful about slowing down and careful in running cars over special work. Flat wheels also make needless expenditures. Car wheels ordinarily run 45,000 miles. We are getting only 25,000 miles out of our wheels because

the tread has to be ground off or because the flanges have been broken by fast running over special work. To grind out a flat spot the size of a silver dollar takes 5000 miles off the life of the wheel, and every time you flatten a wheel it means \$5 lost. During the winter I think the flats on the property are costing \$1,000 per day. Most of you know how easy it is to flatten a wheel and how easy it is to cut down these useless expenses. I shall ask you to cut down.

HOW TO DEVELOP NEW BUSINESS

Concerning the third item, that of going after new business. We are a live and going concern; we cannot stand still; we must either go ahead or go backward. Our responsibility to the public is to furnish safe, convenient and adequate service. But we must make it so convenient to the public that the public will ride on the cars instead of walking or using their own automobiles at much greater cost to themselves. Wages go up; prices of materials go up; taxes jump up, and the population increases very slowly. If we want an increase in business faster than the population bring it we must go after it, just as John Wanamaker does. We must advertise, and if we advertise we have got to deliver the goods just as Wanamaker does. Just think of the thousands of people who daily walk to and from work, or downtown shopping and home again. We need their nickels; we should try to get them. Our best "ad" is in having comfortable cars, running right on time, operated by good-dispositioned, good-natured, courteous trainmen. I want you all to help make our lines popular. Talk them up. Don't knock the company, nor your business, nor the line. Certainly don't knock your fellow employees. If you will boost the concern that you work for and boost the line, the friends you talk to will do their share of boosting. Just as soon as you get the public boosting the company, you will increase the number of riders. I know because I have had it tried. Some years ago I was connected with a company which operated in a town where everybody was damning the railway. How they did pound it. It was criticised by people and the press. Nothing was satisfactory. Everybody was pounding. The men had the blues, they were disgusted. I got them together and told them to start advertising by telling their friends that conditions had changed, that cars were keeping better time and the service was better. It was not long before we had the most popular railroad in that state. It was just that 'boost' spirit put into practice that brought about the change in public sentiment. It would have been just as easy to start somebody knocking and upset the whole business. In that particular town the receipts were doubled in four years. We had 800 trainmen and it was the exception when we hired as many as 100 men in a year. And we paid 22 cents an hour. I say to each of you: Be A Booster. Let us all strive to make this company of yours and mine secure against any trouble that might come and let us build it up as the greatest street railway in the world, not only in property but in the hearts of its united workers."

The Levis (Quebec) County Railway has extended its freight service and is now delivering freight to any part of Levis for 10 cents per 100 lb. with a minimum charge of 10 cents for each consignment.

British Companies Need Higher Fares

Delegates at Municipal Tramways Conference Discuss Upward Revision of Fares and Restriction of Class Concessions

THAT electric railways in the United States are not alone in their need for increased revenues was well illustrated by the papers and discussions at the annual meeting of the Municipal Tramways Association of Great Britain on Sept. 20-21. The Mayor of Blackpool, where the conference was held, stated in his opening remarks that sixteen tramways in the country were not able to turn the corner financially, and that twenty systems made a profit of no more than 6d. per 100 passengers.

According to a joint paper on "Tramway Finance," the usual rate stipulated in the acts of Parliament is 1d. a mile, and in some cases this rate is in operation. How, then, could the revenue be increased? By lowering the rates more riders might be attracted, but this could only be done by reducing the penny zone to a half-penny one—a course to which the authors were most strongly opposed—or by lengthening the zones. In either case a considerable increase in the number of passengers carried would have to take place before the previous revenue could be obtained, and local conditions must decide whether a sufficient increase would take place to insure a larger revenue. The only alternative was to increase the rate per mile, which would require the sanction of Parliament. This question, it was said, was receiving the attention of the executive councils of the association and the Tramways and Light Railways Association. Many undertakings which had been charging less than the statutory limit had increased their fares, with satisfactory results.

The paper stated that workmen's fares were subject to a maximum of ½d. per mile, and undertakings which charged that rate could not increase the revenue from this source without statutory authority. Even where a profit was shown on the whole, it might be found that the early morning passengers were being carried at a loss, and the passengers paying the usual fares were contributing to make up this loss. Moreover, in some instances children's fares were on too liberal a scale. Many concessions had been granted to various sections of the communities, and these should be withdrawn.

On the subject of expenditures the authors said that much energy could be saved by careful driving and systematic inspection of electrical equipment of cars. Car meters, with careful examination of the records, were strongly recommended. Some system of standardization of wages, with a properly constituted authority to settle differences and disputes, was also deemed desirable. Furthermore, it was held that the utmost economy was necessary in maintenance and repairs, but that provision should be made to repair the permanent way in the near future.

In a paper on "Differentiation in Fares," the writer pointed out that tramways—at least, in London—were meeting with keen competition in respect to speed and fares, coupled with enormously increased expenses. Differentiation in fares in favor of bona-fide workmen was compulsory, although it meant running at a loss, and such services were kept down to the minimum by the companies which first took up tramway work as a business enterprise. Municipalities, however, had in-

creased them and reduced the fares, so that in London there was a continuous stream of workmen's cars between 3.30 and 8 a. m., and special cars between noon and 2 p. m., and again between 5 and 7 p. m., to cope with this traffic. A rate of 10 miles for 2d. (in one case 19 miles for 2d.) seemed to be about the average. Temperate comment on this state of affairs, the author remarked, was difficult.

Moreover, many tramway systems allowed all passengers boarding cars before 8 a. m. to purchase return tickets at workmen's rates, which involved a loss to the undertakings. Other concessions had been granted to school children, blind people, etc., and the whole system of differential fares and free traveling was utterly wrong. The only true basis for fixing fares, it was asserted, is the cost of providing the service rendered, all who avail themselves of that service being required to pay on a uniform scale. All municipal tramway undertakings, therefore, ought to raise workmen's fares to the legal limit, cancel all free passes and withdraw all special rates, or else have the municipality buy at full value tickets for the favored classes.

The discussion on these papers was of a varied character. One speaker said that everything had gone up except rain, fresh air and tramway fares, and he would abolish the fare precedents that were restricting the companies. In Glasgow, it was stated, a reduction in fares or increase in zone lengths had made the traffic go up by leaps and bounds, while in Walthamstow the abolition of workmen's halfpenny fares had been the means of turning a deficit into a profit and had set an example which was followed throughout the London area. Opinions as to the success of workmen's fares differed, some speakers alleging profits and some losses. One delegate blamed present concessions upon weak-kneed management in the past.

International Railway, Buffalo, has worked out a plan of routing workmen cars during the morning and evening hours when factory labor is going to and from work so that this traffic may be divided from main arteries of travel and at the same time made more convenient for the men themselves. It was found that it was possible to relieve the main lines considerably and at the same time make distinct improvement in the service rendered.

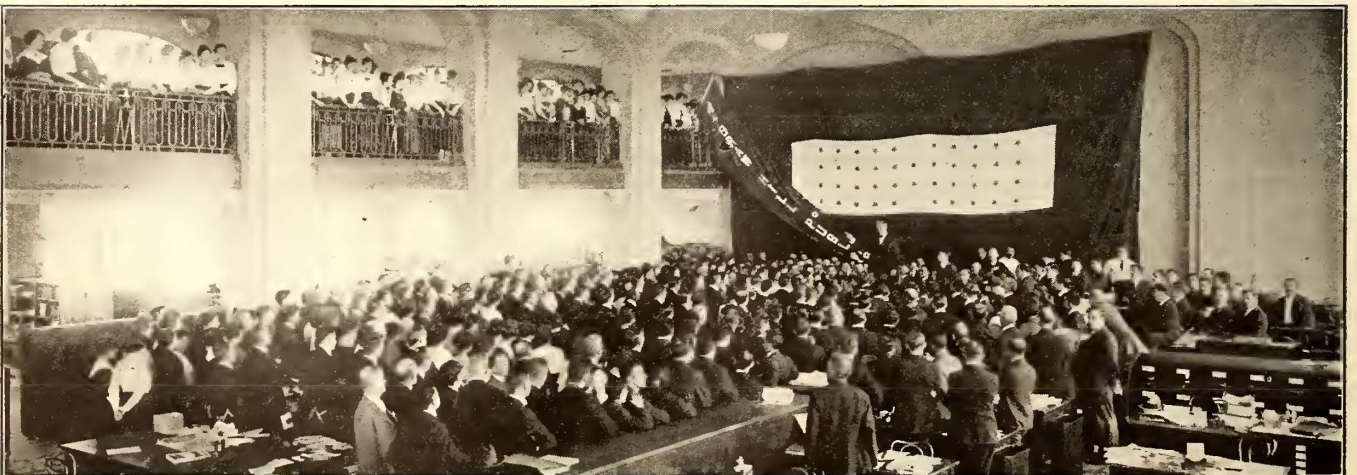
Municipal Tramwaymen at War for Great Britain

A report submitted to the members of the Municipal Tramways Association of Great Britain at a recent convention showed that for eighty-four municipal authorities replying to queries, the number of tramway employees at normal times was 55,208, and that 29,268, representing 53 per cent, had joined the forces. The amount paid to dependents totalled £1,437,603, or an average allowance per man of 11s. 4½d. per week. The amount collected on the cars for various national and other objects was £84,509, and tramway employees had contributed £38,170 to various relief funds. On seventy-six systems women conductors were employed, the number totalling 11,757, and on eighteen systems there were women drivers numbering 611. Twenty-six undertakings employed auxiliary drivers, male, these totalling 564.

Liberty Loan Meeting at Publishing Office

A MEETING to stimulate subscriptions to the present Liberty Loan among the employees of the McGraw-Hill Publishing Company, Inc., was held at the office of the company at Tenth Avenue and Thirty-sixth Street (the Hill Building), at noon on Oct. 9. Arthur J. Baldwin, vice-president, explained the purpose of the loan, the need of the government, the conditions under which bonds could be obtained and the importance of a general subscription and also said that the McGraw-Hill Publishing Company would help to finance any purchases made by its employees by allowing them to pay for the bonds in installments. At the time of the Liberty Loan campaign last June, 425 employees subscribed for bonds, the aggregate amount of the subscriptions being \$110,000. Application has been made by the company for \$300,000 of the present issue of bonds in order to be ready to take care of subscriptions of this kind.

An interesting feature of the meeting was the unfurling at the end of the room of a "service flag" with forty-two stars, showing that forty-two members of the force had entered military service. Since the meeting, further calls to duty have necessitated the adding of four stars.



LIBERTY LOAN MEETING AT OFFICE OF MC GRAW-HILL PUBLISHING COMPANY ON OCT. 9. THE SERVICE FLAG WITH FORTY-TWO STARS INDICATES THAT FORTY-TWO MEMBERS OF THE ORGANIZATION HAVE ENTERED THE MILITARY SERVICE

American Association News

Sections Taking Up Active Work Again and Showing Keen Appreciation of Conditions Imposed by the War
—Public Service Section Passes 400 Mark in Membership

Committee on Increased Revenue Meets

On Oct. 16 a meeting of the committee on increased revenue for electric railways met at the office of J. G. White & Company in New York City with Chairman J. K. Choate. Plans of procedure were discussed and some definite steps were tentatively decided upon. Details of these cannot be announced yet, but another meeting of the committee will be held in a few days to lay out the work more definitely. The meeting was attended by J. D. Mortimer, North American Company, New York, N. Y.; M. C. Brush, Boston Elevated Railway; J. H. Alexander, Cleveland Railway; Dr. Thomas Conway, Jr., University of Pennsylvania, Philadelphia, Pa.; E. B. Burritt, New York, N. Y., and the chairman.

Economy Again Discussed at Newark

The first meeting of Public Service Railway company section was held on Oct. 18 with an attendance of nearly 200. The principal speaker was R. E. Danforth, general manager. In addition A. J. Van Brunt, director of safety education, showed and explained a new film, "The Price of Hurry," and other moving pictures of company scenes. Secretary F. J. Davis stated that the membership is now 402, divided among departments as follows: Transportation 182, mechanical 37, auditing 31, engineering 52, distribution 24, claims 39, and general, 37. This is an increase of sixty-eight during the year, 130 men having joined and sixty-two having resigned. The average attendance at the eight meetings held was 170.

The following were then elected to office for the coming year: President George L. Walsh, claim department; vice-president, F. J. Davis, auditing department; secretary-treasurer, H. M. Ehlers, transportation department; director for three years, J. R. Cameron, transportation department; director for one year, S. G. Harvey, maintenance of way department.

Resolutions were passed expressing appreciation of the honor accruing to the section through the award of the company section medal to Mr. Danforth, and of the work of the retiring officers.

In his address Mr. Danforth reiterated the points made in his Camden paper abstracted elsewhere in this issue, and then proceeded to apply to local conditions the lessons already being taught by the war. He outlined the ways in which Public Service is assisting in the war, more than 200 men being in service to date. The war will bring tremendous burdens upon this company for in addition to the loss of men and increases in costs of materials which are general the railway must furnish unprecedented service to the war supplies factories which are concentrating in its territory. At Newark, Camden, Gloucester and other centers great numbers of workers must be transported to and from their work, and it will tax both the steam and electric railways to the limit to care for them.

Mr. Danforth scored the men who will leave perma-

nent jobs with an essential public utility for a transient one at a slightly higher rate of pay, throwing abnormal burdens upon those who remain to try to furnish the transportation which is an essential element in the winning of the war. He pictured the plight of such men when the war is over and there is a plethora of workers and a reduction in work to be done. This brought up the necessity for economy in money, time and energy in order that as individuals, as employees and as an organization the burdens of the war may be carried by those at home "behind the lines."

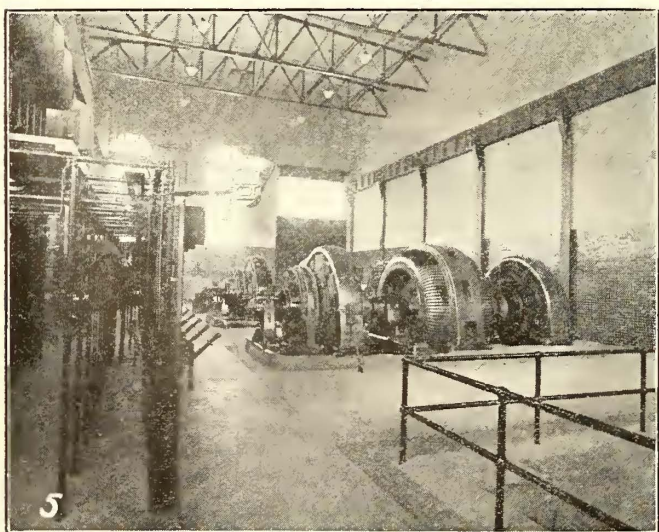
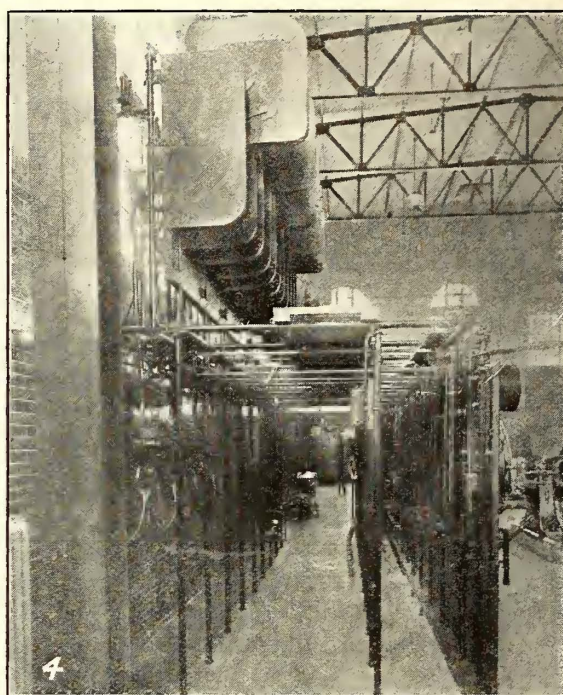
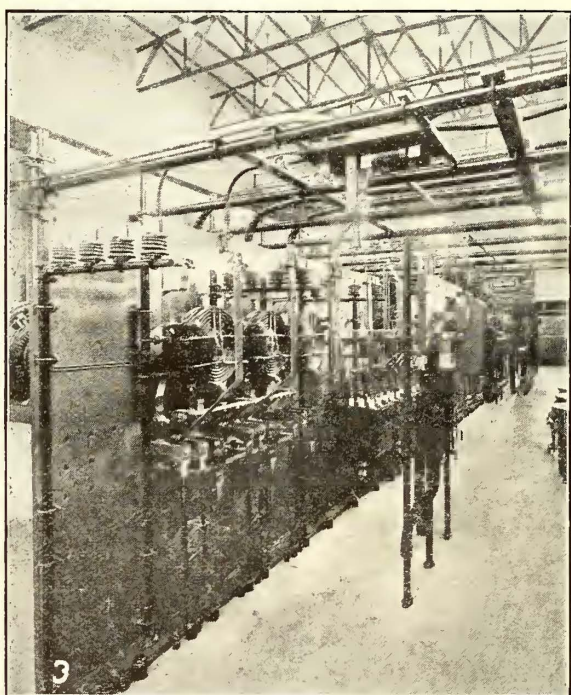
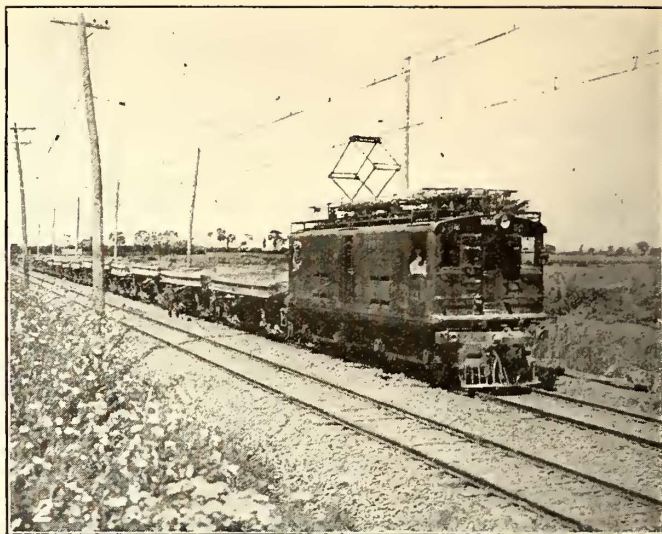
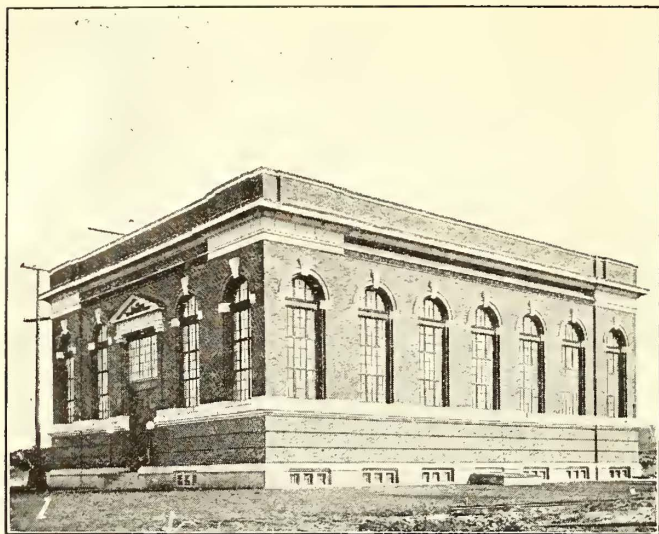
The speaker paid a tribute to the men in the organization who had already by practicing the principles of conservation enabled the company to make a creditable record in the face of tremendous obstacles. He also paid his respects to the jitneys, which he denominated "transportation pirates" for operating upon streets furnished with car tracks. On these streets, he said, the railway is under contract to furnish all needed transportation and is required by the utilities commission to do so. However, this competition must be met by co-operation among all departments in making the service so attractive that people will patronize the cars.

In the discussion of Mr. Danforth's address N. W. Bolen, general superintendent, emphasized the idea of co-operation in a practical way by explaining that if loyal men would explain the real conditions of employment in the railway and other industries, and the duty which each man owes to the public, there would be fewer men leaving the service.

Section No. 8 Elects Officers

The Capital Traction Company section held its first meeting of the season on Oct. 11 with an attendance of ninety members and guests. The principal business was the election of officers for the ensuing year. Elon von Culin, superintendent of traffic, was elected president of the section, and William H. McCarty, master mechanic, was elected vice-president. J. E. Heberle and A. Wilkinson were re-elected as secretary and treasurer respectively. A. H. Sparshott was elected a director.

Major R. C. Marshall, U. S. Quartermaster's Department, gave a very interesting talk, illustrated with slides, on the construction of cantonments for the National Army. Major Marshall has been closely connected with this work and was able to give a comprehensive review of the problems involved. To point out the magnitude of the achievement, he presented figures to show that the total expenditures in each of the months of August and September were greater than the amount expended in building the Panama Canal during any one year of its construction. Corcoran Thom made an appeal to employees of the Capital Traction Company to buy bonds of the second Liberty Loan. J. H. Hanna, vice-president of the company, said that steps would be taken leading to the formation of a Capital Traction Company Liberty Bond Club.



1—Exterior of the substation.
 2—Locomotive with train of dirt cars.
 3—Rear of switchboard from alternating current end.

4—Rear of switchboard from direct current end.
 5—General view of substation interior.
 6—View of substation interior selected to show face of switchboard.

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

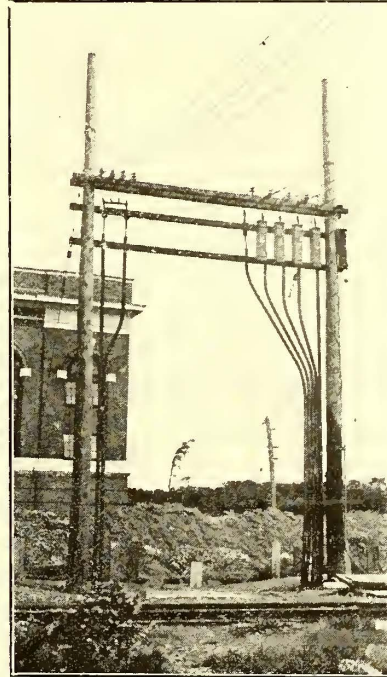
Progress on the Mount Royal (Montreal) Terminal Electrification

All but Short Stretch of Track Now Electrified and in Use in Construction—Passenger Service Into Montreal Promised for Next Summer

Since May, 1917, the new Mount Royal tunnel of the Canadian Northern Railway at Montreal, Quebec, has been operated electrically in construction work, and at the present rate of progress passenger service into the heart of the city will be inaugurated next June. The substation at the north portal of the tunnel is entirely finished and the operators have completed a period of training under practical conditions. At the same time the locomotive crews have been broken in through handling the locomotives at the head of dirt trains so that when commercial operation begins there should be no hitch in handling traffic smoothly from the start. The accompanying pictures show the appearance of the completed portions of the electrification. The incompleting portion is a 2000-ft. cut from the southern portal of the tunnel to the passenger station, the dirt from which is being hauled by the electric locomotives through the tunnel to a fill at Cartierville, 10 miles from the terminal. This fill is at the end of the electrified section, and is on the site of what will be an important freight yard. It is possible that the city cut may be roofed over later, but it will probably remain open for some years.

In articles published in the issues of the *ELECTRIC RAILWAY JOURNAL* for March 4, 1914, page 572, and Aug. 15, 1914, page 295, W. C. Lancaster, now electrical engineer of the Montreal Tunnel & Terminal Company, explained the circumstances surrounding this project. He outlined the results of studies made to determine

the best system of electrification for this terminal, leading up to the decision to use direct current at 2400 volts with an overhead contact system. He also gave details of the rolling stock. During the three years that have elapsed the work has gone forward as rapidly as war conditions would permit, the tunnel having been completed in March, 1917. Five passenger locomotives, quite similar to those in use on the Butte, Anaconda & Pacific Railway, have been delivered and the

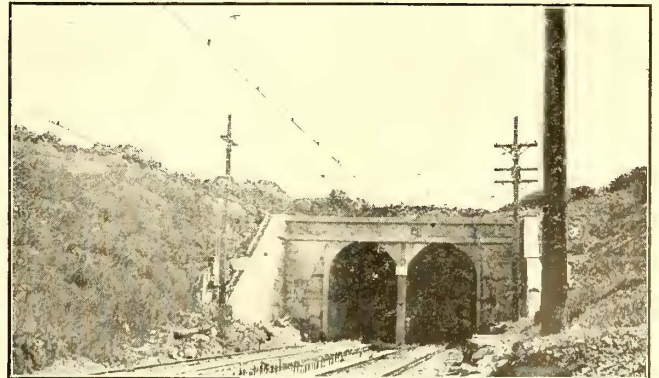
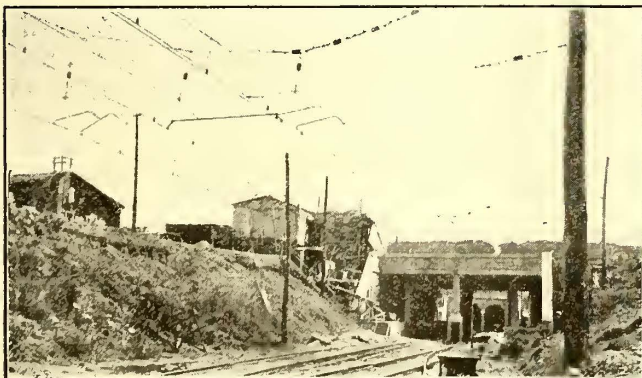


TRANSMISSION LINE TERMINAL STRUCTURE AT MOUNT ROYAL TUNNEL SUBSTATION

overhead construction is complete excepting at the Montreal end, and this will be placed next March.

It is planned to give details of the design of the overhead in a later article. The illustrations, however, indicate its general appearance.

There is but one substation in the electrified zone, located nearly centrally in it at the portal of the 3 1/3-mile tunnel under Mount Royal. This is housed in a



TYPICAL OVERHEAD CONSTRUCTION NEAR WESTERN PORTAL OF MOUNT ROYAL TUNNEL, CANADIAN NORTHERN RAILWAY

beautiful brick building designed to harmonize with the residence neighborhood of which it will one day form a part. The building is divided longitudinally into two main sections, the motor-generator room and a group of smaller rooms and galleries for the alternating current busbars, switches, transformers, etc., used in connection with the motor-generator sets, the signals and the distribution of lighting and alternating-current power over the system.

Energy is purchased from the Montreal Light, Heat & Power Company at 11,000 volts and 60 cycles, three phase. Two synchronous motor-generator sets, rated at 1500 kw. each, are used to transform the power to the 2400-volt, direct-current form. Each set contains two 1200-volt, separately-excited generators connected in series. A foundation has been provided for a similar future set, and the building can readily be extended if further enlargement is necessary.

A group of motor-driven exciters, partly discernible on the background of the interior views, provides excitation for the motors and the generators.

The switchboard stretches lengthwise of the motor-generator room, with the standard instruments and switches. It is characterized by simplicity and accessibility. Photographs have been reproduced to show the details of rear arrangement at the direct and alternating-current ends of the board. It will be noted that the direct-current circuit breakers are mounted in an elevated position with a runway in front supported on the pipe panel braces.

In the isolated switch compartments the equipment is placed in the usual brick chambers, the single and double-throw disconnects being placed overhead, however, where they can be conveniently operated by means of hooks.

SUBSTATION OPERATING RESULTS

While the duty on the electrification so far has not been very heavy, the records obtained give some measure of the ultimate steady operating costs. Six operators working in three shifts are required. Four locomotives are used regularly in the excavation work, with an additional spare, and one more locomotive is on order. The dirt trains now being hauled comprise twelve cars each, weighing 31 tons fully loaded. The locomotive weighs 85 tons.

The first four months of 1917 were occupied in getting the equipment into running order. The cost of operating the substation since that period has been as follows:

Month	Labor	Supplies	Repairs
May	\$587	\$50	...
June	583	28	...
July	592	20	...
August	607	16	...
September	586	26	\$6.00
Average	\$591	\$28	\$1.20

The output of the substation in kilowatt-hours during the past five months has been as follows: May, 144,580; June, 188,620; July, 199,250; August, 188,370; September, 172,000.

LOCOMOTIVE MILEAGES AND COSTS

The locomotives made a mileage of 834 between January and April in preliminary operation. During the same period a total of \$1,044 was spent upon them, \$322 for labor and \$722 for materials. Motors which

were moist from standing out in cold weather had to be dried out, frozen air brakes required repair, fire extinguishers, safety-first signs, coolers, etc., had to be added. Since April the repair and inspection costs have been as carried in the accompanying table:

Month	REPAIR AND INSPECTION COSTS—MT. ROYAL TUNNEL LOCOMOTIVES							
	Air Brakes		Mechanical Parts		Electrical Parts		Supplies and Inspection	
	Labor	Mate-rial	Labor	Mate-rial	Labor	Mate-rial	Labor	Mate-rial
May	6.40	...	47.89	2.07	28.88	...	79.43	9.79
June	49.86	...	95.71	191.79	21.81	...	145.56	48.71
July	16.60	6.57	70.67	112.53	32.15	19.46	193.57	68.53
August ..	13.15	49.38	64.23	33.92	111.25	14.36	190.72	145.04
September.	12.92	1.25	23.30	0.60	43.84	26.23	224.33	85.83

Setting Wood Poles for Seventy Cents Each

An Analysis of the Cost of Each Step in the Process Obtained by Time Studies Made on a Northern New England Job

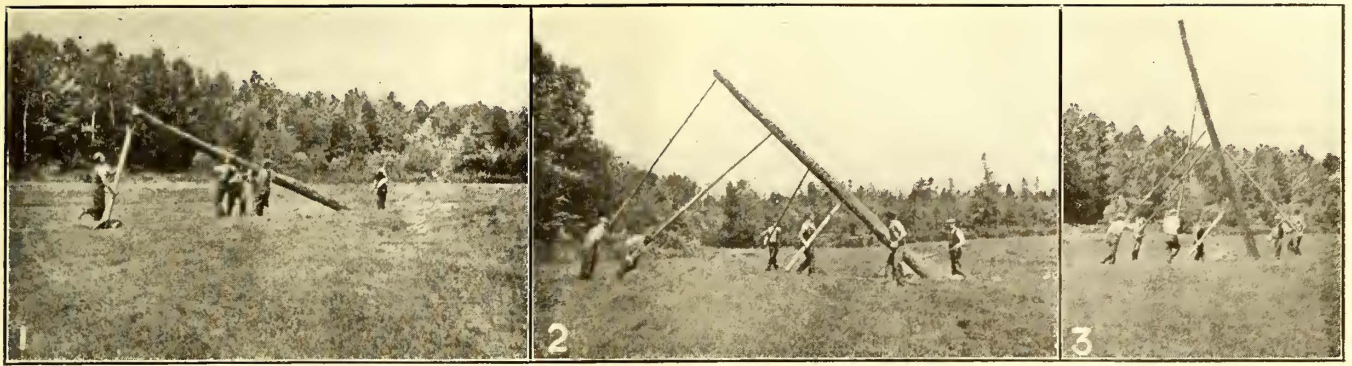
BY ALLAN C. HASKELL

Principal Assistant Engineer Construction Service Company, New York City.

Observations have been made by the writer on the time required to set the poles on a 25-mile line in Northern New England. The time studies are on the setting of the poles only, the land having been previously cleared where necessary, the holes dug and the poles hauled and placed one beside each hole. The resulting costs are useful in that they can be used as a basis of comparison with other jobs, no matter for what purpose poles are being set or in what locality, so long as the conditions approximate these which I shall describe. An extra cost can be added for cartage and distributing depending upon the local methods and lengths of haul under consideration.

The poles were of cedar and 30 ft. long. The crew engaged in the work consisted of a foreman and six other men. All were well trained, young and industrious, the majority being native-born. Five of the six men were employed in the actual setting of the poles and the sixth did miscellaneous work, such as going ahead to bail water from the next hole, carrying forward certain of the tools, banking the poles after they were set, Fig. 6, and clearing up the cut-off tops, shavings, etc., around them.

The men first arranged the pole in such a position that when raised it would slide into the hole properly. The foreman then held an iron bar tightly on the side of the hole farthest from the pole, and as the latter was raised it slid along the bar without raking off the edges and side of the hole as it went in, Fig. 1. The pole was raised by hand by four of the men as far as possible and, as they raised, it was propped and held by the fifth. Pikes were then used to hoist the pole until it dropped into the hole, Figs. 2 and 3. The pole was then centered in the hole and aligned. The latter operation was accomplished by bracing the pole with the pikes, four men standing around the pole, 90 deg. apart as shown in Fig. 4. The foreman would first go about 30 or 40 ft. in a line at right angles to the pole line and by signalling with either hand indicate which way the pole should be adjusted to bring it into proper alignment. He would then take a position directly over the next hole beyond and get the proper alignment in that direction. The pikes were solidly braced so that



FIGS. 1, 2 AND 3—THREE STAGES IN RAISING A POLE WITH FIVE LABORERS AND A FOREMAN

once the pole had been properly aligned it would be difficult to jar it out of place.

In the process of backfilling four men used tampers and one shoveled, Fig. 5. The tampers were made up of rectangular pieces of solid iron of such size that they would easily fit in between the pole and the sides of the hole. While backfilling was going on, either the foreman or the sixth man or both would go ahead, bail the water from the next hole and carry forward such tools as were not being used. Then after the gang had moved on to the next hole this sixth man would go back and bank and clean up around the pole just set.

Abstracts from the time-study notes taken in the field and showing the method of gathering the data, follow:

9:10:00—Arrive at pole.	9:35:50—Arrive next pole (130 ft.).
11:00—Pole in position.	36:35—Pole in position.
13:40—Pole in hole.	38:00—Pole in hole.
18:15—Pole faced and aligned.	44:00—Pole faced and aligned.
34:30—Pole backfilled.	58:30—Pole backfilled.
35:10—Leave for next pole.	59:30—Leave pole.

10:00:20—Arrive next pole (130 ft.)
00:50—Pole in position.
01:35—Pole in hole.
05:25—Pole faced and aligned.
15:25—Pole backfilled.
06:30—Foreman goes to next hole and bails it.
10:20—Foreman finishes bailing.
11:40—Foreman goes back to last hole and gets scoop (280 ft. round trip).
16:15—Leave pole.

The complete field notes reduce to the table at the top of the next column, which shows the time in minutes and seconds required for each operation.

On this work the laborers were paid on the basis of \$2 for an eight-hour day and the foreman \$3.50. Therefore the cost of a man-minute = $\frac{\$2.00}{480} = 0.42$ cent, and

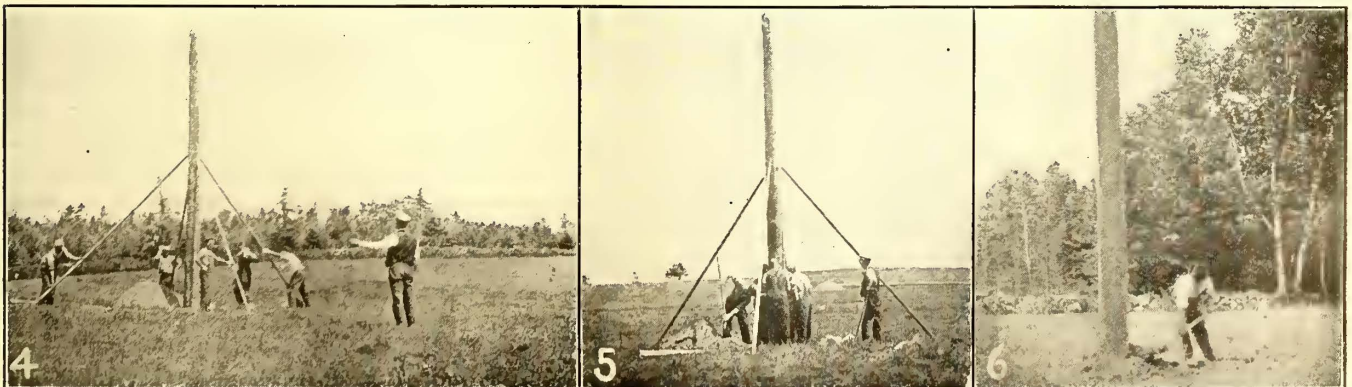
TABLE GIVING RESULTS OF TIME STUDIES IN POLE SETTING

Getting Pole Into Position	Raising Pole Into Hole	Facing and Aligning Pole	Back-filling and Tamping	Collecting Tools	TRAVELING TO NEXT HOLE		Miscellaneous Delays
					Time	Dist.	
1:20	2:05	3:00	16:10	4:05 bailing
0:43	1:22	2:25	20:25	0:35	0:20	65 ft.	
0:45	1:40	4:50	18:40	0:10	0:40	130 ft.	
1:00	2:40	4:35	16:15	0:40	0:40	130 ft.	
0:45	1:25	6:00	14:30	1:00	0:50	130 ft.	3:10 bailing
0:30	0:45	3:50	10:00	0:50	0:30	130 ft.	
0:15	0:35	3:25	12:45	0:30	0:45	130 ft.	
0:45	1:00	3:50	7:25	0:20	0:30	130 ft.	
0:45	1:00	3:50	8:10	0:25	0:30	130 ft.	
0:45	1:00	3:50	7:25	0:33	0:40	130 ft.	
0:00	1:22	3:55	9:00	0:40	0:50	130 ft.	
0:30	0:30	4:00	16:55	0:20	0:40	130 ft.	
0:25	0:55	3:30	15:30	0:15	0:50	130 ft.	
0:55	0:55	2:30	9:10	0:20	0:30	130 ft.	
0:10	0:48	1:00	0:33	130 ft.	19:30*
0:17	0:55	3:50	9:40	0:25	0:35	130 ft.	
0:35	0:57	3:28	6:40	0:15	1:00	260 ft.	5:00 ground wire
0:15	0:30	4:30	15:00	0:20	2:15	390 ft.	
1:35	1:03	2:37	14:50	0:10	0:40	130 ft.	
0:25	0:55	3:40	12:35	0:10	0:35	130 ft.	
0:55	0:53	2:40	14:20	0:20	0:55	130 ft.	
0:10	0:50	4:35	11:55	0:10	0:40	130 ft.	
0:30	0:25	4:10	11:25	0:20	0:45	130 ft.	
1:10	1:45	4:10	14:25	0:15	0:35	130 ft.	
0:15	0:35	4:05	8:55	0:20	0:40	130 ft.	
0:15	0:35	4:05	8:55	0:20	0:40	130 ft.	
Total:	26:52	91:15	302:05	10:23	17:28	3445 ft.	32:75
Average†:	0.65	1.12	3.80	12.59	0.43	0.73	1.39

*Delay caused by having hole dug larger to get proper alignment.
†Average time is in minutes.

the cost of the laborers for each operation was as follows:

Getting pole ready.....	0.65 × 6 × 0.42 =	1.6 cents
Raising pole.....	1.12 × 6 × 0.42 =	2.8 cents
Aligning pole.....	3.8 × 6 × 0.42 =	9.6 cents
Backfilling and tamping.....	12.59 × 6 × 0.42 =	31.7 cents
Picking up tools, etc.....	0.43 × 6 × 0.42 =	1.1 cents
Traveling.....	0.73 × 6 × 0.42 =	1.8 cents
Delays.....	1.39 × 6 × 0.42 =	3.5 cents
Total.....	20.71 × 6 × 0.42 =	52.1 cents



FIGS. 4, 5 AND 6—ALIGNING THE POLE, BACK-FILLING AND TAMPING IT AND BANKING AFTER IT IS BEING SET

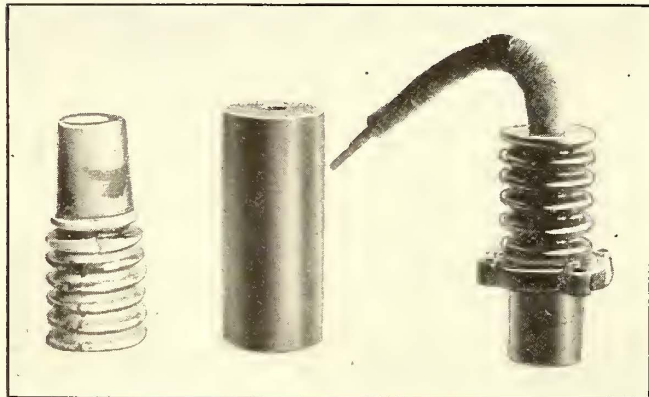
The cost of the foreman's time per minute was $\frac{\$3.50}{8 \times 60} = 0.73$ cent, or 20.71×0.73 cent = 15.1 cents per pole, making 67.2 cents per pole.

This total of 67.2 cents does not include any allowance for preparatory time, that is, for the time to get to the job, to get ready to begin work, etc. This, of course, is not the same on any two jobs. In some cases the men travel to and from work on their own time, sometimes on the employer's time, or to the job on their own and from it on the employer's, etc. And the location and arrangement of tools on the job make a difference in the length of time in getting ready to begin actual work. Whatever these conditions may be, it must not be forgotten to add an allowance for them.

On this particular work it was observed that week in and week out a very fair average for preparatory time was one-half hour per man per day, which would amount to 180 man-minutes and 30 foreman-minutes, and add a cost per pole of 3.3 cents, making a total 70.5 cents per pole.

Porcelain Insulators Fail on Spokane Locomotives

The porcelain insulators in the circuit breakers on the 6000-600-volt a.c. single-phase locomotives and the interurban motor cars of the Spokane & Inland Empire Railroad have caused considerable trouble by failure. This has been eliminated by the substitution of Bakelite Micarta for the porcelain. The central object of the



OLD AND IMPROVED TYPES OF INSULATORS FOR A. C. CIRCUIT BREAKERS ON LOCOMOTIVES

accompanying illustration is the cylinder of Bakelite, $3\frac{1}{2}$ in. x 8 in., just as it is received from the General Bakelite Company. In the railway company's shops it is turned in a lathe to the finished shape shown at the right, and a $1\frac{1}{2}$ -in. hole is bored through it. The leads are then drawn through and the hole is filled up with a mixture of litharge and glycerine. On the left-hand side of the illustration is one of the porcelain insulators that failed.

The welding jobs done in the repair of the engine cylinders of the German ships left in American ports at the outbreak of the war are additional proofs that cast iron can be electrically welded successfully. The work has been practically completed and the cylinders have withstood tests which indicate that the welded portions will certainly withstand the maximum service to which they will be subjected at sea.

Synopsis of Safety Code Commended Attention Called to Fact That "Signal Lines" Refer to Telephone and Telegraph Lines and Not to Block Signal Lines

BY C. L. CADLE

Electrical Engineer New York State Railways, Rochester, N. Y., and Chairman A. E. R. E. A. Committee to Consider U. S. Bureau of Standards' Safety Code.

A great deal has been printed in regard to the National Electrical Safety Code and the work of codifying the information obtained from numerous experiments and collections which has extended over a period of approximately four years. During this time thousands of dollars have been spent in collecting information from all available sources, and the result has been one of the most valuable documents ever produced from the standpoint of construction and operation in connection with the safety of the electrical industry.

It has seemed to some that this was an inopportune time to lay much stress upon such work, but from the standpoint of conservation the safety code is of enormous value to the country, particularly so when the country needs the best thought and energy of its ablest men. The synopsis, appearing in recent issues of the *ELECTRIC RAILWAY JOURNAL*, prepared by Dr. E. B. Rosa and W. J. Canada of the United States Bureau of Standards, gives an excellent outline in brief of the principal items touched upon in the code. The compilation of this summary for the benefit of the electric railway industry is particularly gratifying as it is so concise that the busy railway executive will have no trouble in digesting the principal items within a reasonable length of time. The writers deserve the most heartfelt congratulations, which we as railroad men extend to them.

For the convenience of those who are not familiar with the several headings, it will be well to call attention to the definition of the term "signal lines" as used in the code, which should be differentiated from the common use of this term in the electric railway field. Signal lines as used in the code refer primarily to telephone, telegraph lines and other similar lines used for communication. Block signal lines come under the heading of electrical supply lines and are treated as such throughout the entire code. Telephone and telegraph lines, however, may become electrical supply lines under certain conditions, these conditions being principally when they are carried on the same poles, or parallel and adjacent to electrical supply lines.

A great many railway, lighting and telephone companies have taken advantage of the valuable data which are exhibited in the printed copies of the code, using them in building of new electrical installations and reconstruction of old and not waiting for the completion of the tentative year's trial as proposed when the second edition was published in 1916. This edition was distributed widely through the country, particularly by the American Electric Railway Association which sent a copy to each member company. It is hoped that all men of the railway fraternity directly or indirectly interested in the progress of the electric railway art will avail themselves of the information contained therein. The second edition of the code is now on sale at Washington at the Bureau of Documents and should be used by every engineer of public service companies as a textbook as well as a guide to more safe operation.

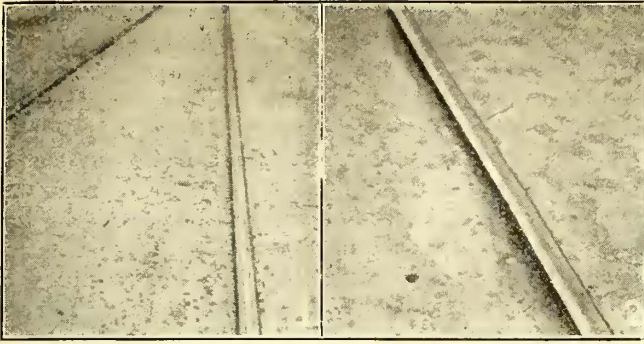


FIG. 1 AND FIG. 2—TWO SECTIONS OF RAIL ON THE SAME STREET, FIG. 1 HAVING INCLINE TIE PLATE CONSTRUCTION AND FIG. 2 WITHOUT THESE PLATES

Tilting Track Rails Reduces Car Nosing

Incline Tie Plates Used on Wood Tie Construction—Tilting Effect Can Be Obtained Also with Bent Steel Ties

BY P. NEY WILSON

Roadmaster Connecticut Company, New Haven, Conn.

On some of its reconstruction work the maintenance-of-way department of the Connecticut Company is using an incline tie plate which has the effect of tilting the rails to conform to the coning of the wheels operating over them. The inclination is one in twenty, bringing the top of the rail normal to the load. It is believed that flange wear will be reduced, thrust will be minimized and internal stresses in the rails will be reduced, thus producing a more favorable effect on the bending movement in the axles and reducing the tendency to overturn the rails.

A 5-in. 80-lb. A. S. C. E. T-rail laid with these tie plates is shown in Fig. 1. This rail has been in service one year under a schedule of seven and one-half minute headway. It can be seen from the illustration that the car wheels tread directly over the web and in the center of the head of the rail. Fig. 2 shows a rail of the same section and installed on the same street but without the incline tie plates. This clearly indicates that the wheels tread on the inside edge of the head of the rail thus abnormally loading it.

It might seem that the coning of wheels due to the wedge action created would tend to minimize nosing, and that in using the tie plate mentioned, nosing might be the cause of some trouble. However, from a practical standpoint the cars operate over the track under which the plates are placed with less tendency to nose than they do over the track without the plates. This is, no doubt, due to the fact that the wheels tread over the center of the head of the rail on a uniform wheel diameter whereas, with the rail in the usual position in relation to the car wheel there is a tendency for the car to nose on account of one wheel running close to the gage line of the rail on its largest diameter, the other wheel on the same axle running on its smallest diameter. This may readily happen with the usual gage-play between wheel and rail, and an oscillation is set up which causes side wear on the rail head, flange wear, and nosing.

A tilted track construction consisting of 7-in., 95-lb. T-rail with "Lundie" incline tie-plates and wood ties

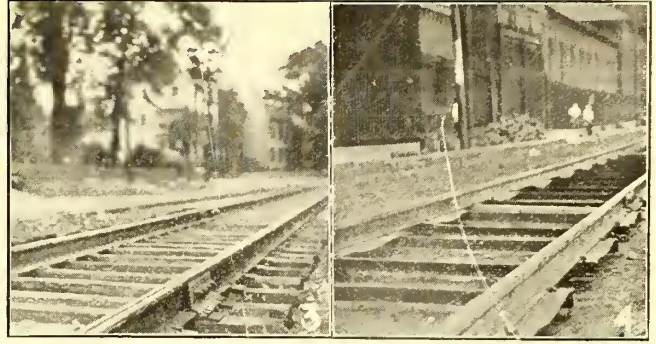


FIG. 3 AND FIG. 4—RAILS TILTED WITH INCLINE TIE PLATES AND BY MEANS OF STEEL TIES BENT TO GIVE A 1:20 SLOPE TO THE RAIL

is shown in Fig. 3. The worn line in the center of the rail head indicates that the wheels tread directly in the center. Fig. 4 shows a section of tilted track construction with 6-in., 100-lb. T-rail laid on steel ties. In order to obtain the tilting effect with the steel-tie construction it is necessary to have the channel ties bent at a point about 15 in. from the ends. This bending is done by a press which is especially adapted for bending both ends of a pair of channels at a time. The incline thus obtained is also one in twenty. A description of the use of steelties for tilted track construction in Cleveland, Ohio, was given in the *ELECTRIC RAILWAY JOURNAL* for Nov. 11, 1916, page 1029.

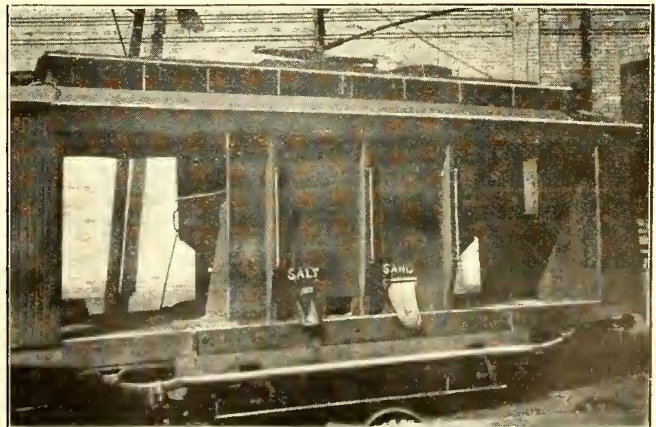
Sand and Salt Car Made from Old Summer Car

BY HENRY MEYER

Master Mechanic Beaver Valley Traction Company, New Brighton, Pa.

The Beaver Valley Traction Company has a large number of sand and salt boxes located at switch points, curves and other important points along its lines. For supplying these boxes the sand and salt car shown in the illustration has been constructed. An old single-truck summer car was used for this purpose, and bins for the sand and salt were constructed between the center three side posts.

To supply the storage boxes along the route the chutes at the side of the car are used. It is possible also to apply sand or salt from the car directly to the rail. This is done in case of sleet storms and other emergencies.



SAND AND SALT CAR OF BEAVER VALLEY TRACTION COMPANY

Two Men for 1125 Recorders and Thirty-three Terminal Clocks

The Total Cost for Labor and Material, Including Operating Supplies, Is Less than 1 Cent per Diem per Instrument

In the spring of 1914 the Third Avenue Railway system decided to adopt the Rico coasting recorder throughout after satisfactory experiences with 100 machines on its most congested line, the Broadway and Forty-second Street route. This brought the total number of coasting recorders up to 1125, in addition to which thirty-three Rico terminal clocks were installed at the different division points.

The cost of placing the coasting recorder on the car, including the relay which stays on the car when the recorder is transferred, was \$8.70, of which \$3 was for labor and the remainder for wire, conduit, bolts, grooves, pipes and fittings. In accordance with its usual practice, the manufacturer of the coasting recorder instructed the men who were assigned to the upkeep of

the fact that the railway was able to assign to this latter work two former wiremen, one of whom has since been raised to \$2.70 and the other to \$3 a day, making the total labor expense for 1125 coasting recorders and thirty-three terminal clocks only \$5.70 or about 1/2 cent per diem per instrument. It is customary for one of these men to spend all of his time on coasting recorders while the other devotes three days a week to the terminal clocks and general inspection. These men also have time for other jobs which their experience with small tools enables them to handle better than the ordinary shopman.

From the time that the instruments were installed a separate record card has been kept of each unit, substantially like the coasting recorder and terminal clock records reproduced.

No accounting charge is made to maintenance of the cost of the monthly winding of the clock movements and the quarterly renewal of the recorder tape, as this is a very small item which is absorbed into regular carhouse labor. The same holds true for the labor required in

Type <i>Coasting Clock</i> No. <i>20126</i>			
Form REC-50-1-14x			
Date	Defects	Repairs Made	By
1-19-15	Loose arm shaft	Soldered OK	Young
6-16-15	Adjusted balance wheel and fork		Davison
8-1-17	Winding arbor broken - worn 4th wheel - worn locks		
	Main spring broken - loose voice		Young

Type <i>Terminal Clock</i> No. <i>22</i>			
Form REC-50-1-16x <i>218th St. Broadway</i>			
Date	Defects	Repairs Made	By
4-11-15	Wound - cleaned and oiled		Young
5-10-15	4 min. slow	regulated	"
11-9-15	Torn ribbon	renewed	"
2-2-16	Cleaned and	regulated	"

UPPER PARTS OF CARDS USED TO RECORD REPAIRS TO COASTING RECORDER AND TERMINAL CLOCK

the coasting recorders and terminal clocks. In addition, instructions were issued to the carhouse foremen that the work by the carhouse forces would include the renewal of the tape, winding the clock movements and taking care of the relays and brake contact boxes, but that all repairs would be done at the shop.

The simplicity of the coasting recorder is indicated by

MECHANICAL DEPARTMENT

REPORT OF DEFECTIVE COASTING CLOCKS AS REPORTED BY THE TRANSPORTATION DEPARTMENT FOR SEPT. 6, 1917

	W. F.	K. B.	Yonkers	Eastchester	Harlem	Ams. Ave.	Grand St.	54th St.	Total
Paper stuck in chute.....	3	1	1	1	1	1	3	2	12
Fuse blown	1	1	1	1	1	4	1	1	11
Long brakes	1	1	1	1	1	1	1	1	8
Defect works	1	1	1	1	1	1	1	1	8
Relay stuck	1	1	1	1	1	1	1	1	8
Key way stuck.....	1	1	1	1	1	1	1	1	8
Brakes not releasing.....	1	1	1	1	1	1	1	1	8
Found O. K.	1	1	1	1	1	1	1	1	8
Contact stick broken.....	1	1	1	1	1	1	1	1	8
Wires burnt in relay.....	1	1	1	1	1	1	1	1	8
Totals	5	5	3	2	2	6	4	2	29

transferring a coasting recorder from a summer to a winter car or vice versa. Inasmuch as the relays are not removed, the transfer of a recorder simply means the removal of four bolts and the disconnection of two wires. This takes only twenty minutes twice a year and labor of less skill is required than if the relays themselves were transferred. Reports are submitted daily to the management of all equipment troubles, and to help in their analysis the mechanical department rearranges the figures as shown in the tabulation for Sept. 6, 1917. Eventually the totals for every month are transferred to the standard full-year form, supplied by the Railway Improvement Company. Analyses of these reports show the rarity of any troubles except those caused by faulty use of the coasting recorder by the motormen. As a matter of fact, the burning out of some magnets due to defective relays constitutes the only strictly electro-mechanical trouble worth mention.

On any large railway system there are always a certain number of men who are new, awkward or careless. This accounts for the fact that "paper stuck" is invariably the largest item on the list, although this trouble is more annoying than costly. A recent improvement in the paper chute has cut this item in half. Next in order of frequency is the blown fuse, which, in a sense, is the safety valve for the recorder magnet when there is any defect in the relay or wiring or when the controller is improperly reversed. When the relays were installed originally they required a separate hand-brake contact box to complete the recorder circuit only when the brakes were fully released. On account of the incorrect design and location of this box, trouble was experienced when the brakes did not release fully and in the winter when the contact box would break because of becoming loaded with mud and ice. This trouble was practically eliminated when the contact box

STATEMENT TO ASSISTANT GENERAL MANAGER OF COASTING CLOCK TROUBLE FOR AUG. 17, 1916

Division	Order No.	Trouble
Third Avenue Division	Out of order 951	Two amp. fuse blown
Broadway and Queensboro Bridge Division	Out of order 78	Tape stuck in chute
	Out of order 80	Balance wheel broken
Grand Street Division	Out of order 799	Paper caught in chute
Fifty-ninth Street Division	Out of order 824, 826	Tape stuck in chute
West Farms Division	No cars reported	
Kingsbridge Division	Out of order 592, 564	Stuck tape
	Out of order 435	Loose wheel
	Out of order 900	Relay out of adjustment
Yonkers Division	Out of order 111, 113	Relay out of adjustment
	Out of order 185, 116	Blown fuse
Eastchester Division	No cars reported	

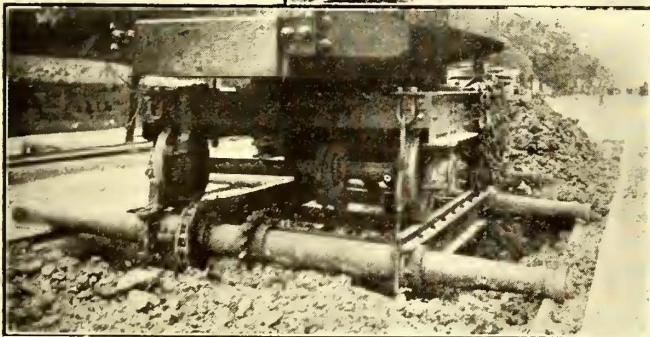
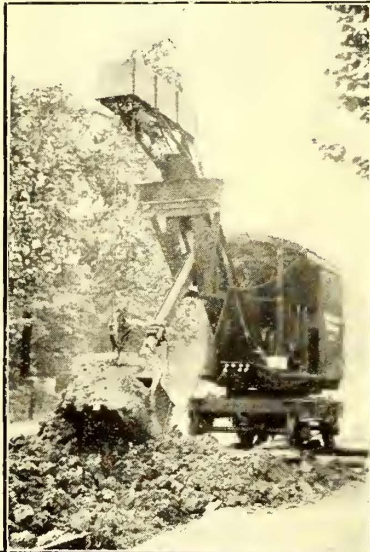
was combined with the relay. The manufacturer has since adopted this feature wherever applicable; in other cases an improved type of hand-brake contact box is used.

On the whole, the successful maintenance of coasting recorders is found to be simply a matter of the same periodical inspection that any other railway device requires and of reminding the motormen occasionally that they must handle all equipment with reasonable care. The amount of material required for replacement of worn, broken or defective parts plus all operating supplies like tape, and inclusive of the terminal clocks, totaled only \$1,116 in 1916, less than \$1 per recorder per annum or less than 1/3 cent a day. Thus the total labor and material cost of the coasting recorder is within 1 cent per diem per instrument.

Power Shovel Equipped to Move Along as It Digs

Mounting its steam shovel on electrically chain-driven rollers is the scheme used by the Pittsburgh (Pa.) Railways to do away with moving-up delays in its power-shovel track excavation. The illustrations show the shovel and its method of mounting. It is run up onto two short sections of rails, to which it is securely locked.

The rails are mounted on two long rollers, the ends of which run on the pavement on one side and on a temporary rail on the other. This temporary rail is laid upon the ends of the ties of the adjacent track, which is left in service while work is being done on the first track.

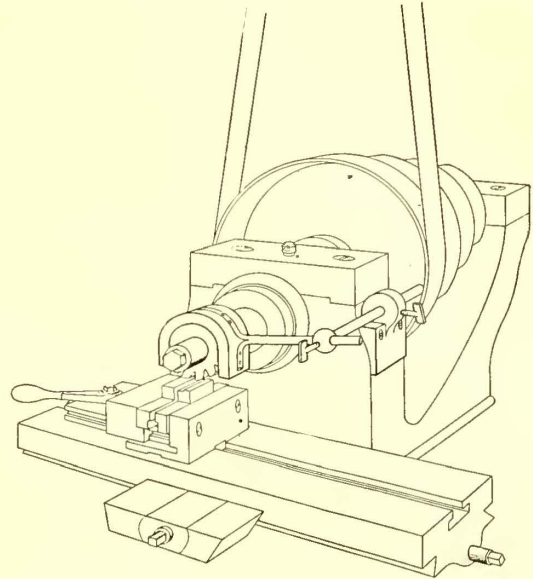


PITTSBURGH RAILWAYS' TRACK SHOVEL MOUNTED TO AUTOMATICALLY MOVE UP AS THE WORK PROGRESSES—ENLARGED VIEW SHOWING METHOD OF MOUNTING ON CHAIN-DRIVEN ROLLERS

The rollers are turned by a chain drive so geared that the shovel moves ahead as fast as the digging progresses. A capable operator will keep cleaned up as he goes, and he always has a full bite ahead without having to stop to move up. This equipment was developed under the direction of J. M. Larned, engineer maintenance of way.

Guard for Milling Cutters Recommended

For guarding milling machine cutters the National Safety Council in a recently issued bulletin recommends a device such as shown in the drawing. This

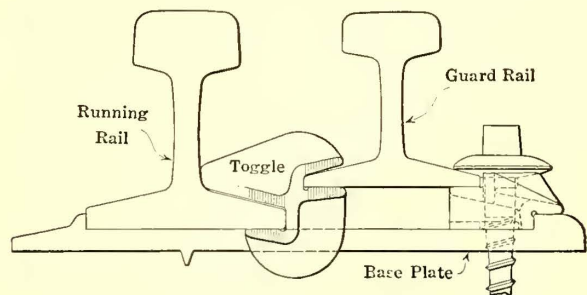


CUTTER GUARD FOR MILLING MACHINE

is of simple and inexpensive construction and consists of a tilting hood supported from the frame of the machine by two rods which provide for convenient adjustment.

Guard Rail Fastenings for Open Track Work

A guard rail fastening which can be used where tracks are not laid in paved streets is shown in the illustration. The design is very flexible in application since it permits bringing the rail heads close together



GUARD RAIL FASTENING FOR TRACKS NOT LAID IN PAVEMENT

without the necessity of shearing off the flange of the guard rail. It also allows the use of a guard rail whose section height is much less than that of the running rail.

The toggle pieces shown between the rail bases are placed between ties and serve both to support the guard rail and to keep it from tipping over. The base of the guard rail on the other side is supported on a cast-iron shim and is held in position by a screw spike. This fastening has been tried out with good results on steam railroad work, and it is also suitable for open-track construction on electric lines. It was developed by Thomas Maney, Monrovia, Cal.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Engineers Present R. I. Report

Company Is Said to Need Increased Revenues and Reduced Expenses—Intimation Regarding Abolition of Jitneys

Sloan, Huddle, Feustel & Freeman, railway engineers, in their preliminary report upon the financial condition of the Rhode Island Company, Providence, R. I., presented to the special legislative investigating commission, arrive at the conclusion that the company's revenue must be increased and the expenses, such as franchise taxes, be greatly reduced, before the railway problem in Rhode Island can be straightened out. Although specific recommendations are not made, the engineers intimate that jitneys should be abolished, fares should be increased in some way, and that the State and local tax assessments on the company, now aggregating \$534,623 a year, be greatly lessened by the necessary legislation.

The present report of the engineers is distinctly a financial one. It shows that for 1917 the total operating revenue was \$5,913,074 and operating expenses \$4,030,257. Taxes amounted to \$534,623 and rentals to \$1,165,586. Interest charges were \$267,291 and other charges \$11,056. The total charges amounted to \$6,008,813, and there was a deficit of \$95,739.

Since 1903 the company has paid dividends in only five years, 1909 to 1913, inclusive. The capital stock in 1903 was only \$2,000,000, and in 1917 it was \$9,685,500, having reached that total in 1910. The return on capital stock in 1917 was 0.23 per cent. The reproduction value of property owned and leased by the company is \$12,700,662, the figure being that used in the report of Ford, Bacon & Davis, previously filed with the commission by the company. These figures had been accepted by the other engineers for the time being.

Progress Made on St. Louis Drafts

The public utilities committee of the Board of Aldermen of St. Louis, Mo., drafted a recommendation on Oct. 8 that the mill tax now imposed on the United Railways be permitted to stand, and that an additional tax of 1 per cent of the company's gross receipts be exacted in lieu of the franchise and occupation tax. It is estimated that this will amount to a reduction of about \$75,000 a year in the total taxes paid by the company.

No specific extensions of line will be set forth in the reconstructed ordinance for the settlement of the differences between the city and the company, but a carefully worded clause will require a board of control to recommend all extensions needed for the betterment of service. Another clause will leave the way open for residents of outlying districts or promoters of subdivisions to pay the cost of constructing extensions to such sections and require the United Railways to take over and operate the lines. The committee has decided to reject the proposed extension of the company's franchises for fifty years and the present franchise will be validated until 1948—the term for which the company now asserts its franchises run. The partnership feature in the so-called Ordinance No. 1 will be eliminated, and the new ordinance to be recommended by the committee will be based on the so-called Ordinance No. 2, with amendments.

Unless unexpected objections develop to delay the plans of the committee, a final report recommending the passage of the new ordinance will probably be made to the Board of Aldermen by Nov. 15.

Chattanooga Strike Settled

Men Accept Terms Offered by the Company After Being Out Nearly Four Weeks—Provisions of the Settlement

The strike of the employees of the Chattanooga Railway & Light Company, Chattanooga, Tenn., was settled on Oct. 5 by the favorable vote of the men on terms offered by the company after days of negotiation. The strike lacked only a few hours of being in progress four full weeks.

The company made it plain on Oct. 1 that the last word had been said by it with respect to concessions. F. W. Hoover, vice-president of the company, returned to Chattanooga on Sept. 30. Commissioner T. C. Batterson communicated with Mr. Hoover at once and after a conference issued a statement to the public. Mr. Batterson said that he urged the company to agree to amending "its proposition of adjustment," submitted on the previous Wednesday. This contained eight articles, seven of which were agreed to. He suggested an amendment covering arbitration of differences. He said that Mr. Hoover contended that the first article of his proposition for an adjustment spoke for itself and needed no amendment. This was Mr. Hoover's last word before leaving town. Agitation for a settlement continued, however, and on Oct. 6 the end came in a favorable vote of the men on the settlement offered by the company.

TERMS OF SETTLEMENT

The first clause of the settlement provides that when the offer of settlement is evidenced by the signature of an employee thereto the instrument is to constitute a contract between him and the company. The rules and regulations then existing are to remain in force. Either party to the settlement is to have the right to terminate the relations of employer and employee upon two weeks' notice in writing to the other. In the case of the suspension or dismissal of an employee by his immediate superior, charges are to be furnished him in writing and the employee is to have the right of appeal to the company's general superintendent and vice-president, who are to give an impartial hearing. The present scale of wages will continue until April 7, 1918, at which time and on the same date each year thereafter there shall be a readjustment by a board composed of three bona-fide residents of Chattanooga, one of whom shall be appointed by the company, one by the employees and one by the two previously selected. The contract says that the obligations are reciprocal and the company agrees faithfully to perform its part with impartiality and without discrimination. The last section of Clause 9 of the settlement follows:

"This instrument has been signed by the company and when signed by an employee shall constitute between the company and him a contract for two years from the date of the last signature."

Mr. Hoover in a letter to O. B. Andrews, president of the Rotary Club, explained that the offer of the company was tendered to all employees who went out on strike on Sept. 7, but that the company reserved the right to reject some few who by reason of their conduct had made their future connections with the company inconsistent with good service. He said the men could return and execute the contract in the order of their seniority as shown by the records of the company.

In only one place in the contract is the word union used. That is where provision is made for arbitration if an employee dismissed from the service feels that such dismissal has been due to discrimination against him because of his affiliation or non-affiliation with a union.

In commenting on the settlement of the strike, the *Chattanooga Daily Times* of Oct. 6 said in part:

"At last the men and the company have reached an agreement for the settlement of their differences. We have no hesitation in saying that if the differences in the first place had been left to the conservative, level-headed, patriotic and intelligent men of the labor organizations in the city and not to noisy, radical and enterprising agitators, the trouble would have been composed long ago. In fact, there would have been no serious trouble and the city would have been spared the harmful experience through which it has passed and the consequent humiliation it has been made to suffer. The lesson is that the conservative, patriotic and sensible leaders of labor should be in the lead. Chattanooga will not again stand for the sort of agitators who have made this community hang its head in shame for the last four weeks."

Man Shortage in Cleveland

389 Men of the Cleveland Railway in the National Army—Service Curtailed Temporarily—President Stanley Discusses Employment of Women

The Cleveland (Ohio) Railway has posted notices in its cars stating that 389 of its employees have joined the National Army and that as a consequence many runs have been discontinued. The company, however, is endeavoring to give the best possible service under the circumstances, and it asks patrons to bear any inconvenience with patience until improvement can be made.

On his return from the conference of the American Electric Railway Association in New York, J. J. Stanley, president of the Cleveland Railway and the newly-elected president of the association, in an interview with a local paper, stated that the company has not yet decided to employ women as conductresses or motorwomen, but said that the time might come, however, when this would be necessary.

In a political address before the Tippecanoe Club on Oct. 10, F. Sanders, Street Railway Commissioner, said that two things were necessary to preserve the so-called 3-cent fare. One was the construction of subways in the downtown district to eliminate delays, and the other was the education of employers not to dismiss all their employees at the same time during the evening rush hours. He said that the peak load must be reduced. Operating expenses were increased by the delay of cars in the congested district. The only way to eliminate this trouble was by building subways, and the only concrete plan for obtaining subways was now before the people for their decision.

Mr. Sanders said that Mayor Davis averted a strike of street railway employees in 1916 and that this alone should entitle him to re-election. He claimed for himself the credit of having retained the low fare under the most discouraging conditions.

More Rapid Transit Lines by 1918

It is the hope of the Public Service Commission for the First District of New York, based upon reports of engineers in charge of subway construction, that it will be possible to place the Lexington Avenue subway and the Seventh Avenue subway in operation before the end of the year and to extend the operation of the Broadway subway from Fourteenth Street north to Times Square, also before 1918. If it is possible to carry out this program, it will mean an increase from four to eight tracks of the subway facilities north of Forty-second Street and the trebling of facilities for most of the distance in Manhattan, south of Forty-second Street. The Lexington Avenue and the Seventh Avenue subways are for operation by the Interborough Rapid Transit Company, while the Broadway subway is operated by the New York Consolidated Railroad, a Brooklyn Rapid Transit subsidiary. Engineers of the commission report that there are only three or four locations where conditions are such as to give rise to fear of possible delay and disarrangement of the program as outlined, but they believe that these conditions can be overcome and that the operating program outlined above can be carried out.

Strike Cases Passed Upon

Public Safety Commission Considers Cases of Men Involved in Recent Minneapolis Strike

The Minnesota Public Safety Commission has reinstated forty-four of the fifty-seven trainmen of the Twin City Rapid Transit Company, Minneapolis, Minn., whose discharges led up to the recent strike in that city and St. Paul. The resolution adopted by the commission at the conclusion of its consideration of the cases of these men was as follows:

"Resolved, that in taking this action, which concludes the work of the commission in connection with the recent street railway strike, both sides to the controversy be earnestly admonished to refrain from any action that will tend to revive or perpetuate past differences."

The thirteen trainmen failing of reinstatement include a number who resigned voluntarily and others dismissed for cause.

The cases of the discharged men were heard individually. Each man involved was allowed to tell his story and state his claims for reinstatement. It developed that a number were discharged in advance of the strike and that others had records which gave ample cause for refusing them employment.

BAD ADVICE FROM OUTSIDERS RESPONSIBLE

In commenting editorially on the strike the *Minneapolis Journal* said:

"The strike has been brought to an end through the interposition of the State Public Safety Commission, which rightly declares that 'unionism and non-unionism should not, during the war, be involved,' and which narrows the whole controversy to the question of the reinstatement of various trainmen discharged before the strike was called. These cases are to be considered on their individual merits. This is a common-sense solution of a difficulty that was precipitated by the bad advice of outsiders, who had their own ends to serve."

Wage Arbitration in Portland

The employees of the Portland Railway & Power Company, Portland, Ore., on Oct. 10 after a series of conferences with Franklin T. Griffith, president of the company, agreed to leave their demands to an arbitration board of three members. The decision of the board will be accepted by both the union and the company and will be binding until next June, but the subject can be reopened on or after Jan. 1, 1918. If the decision of the arbitrators bears too heavily on the company, it is expected the latter will appeal to the Public Service Commission to hear again a request for an increase in fare or some other tangible form of relief. There is no ill feeling between the company and men. The one big issue is the demand of the men for a straight eight-hour day. Recognition of the union does not enter into the question. The daily wage increase of 20 cents over the present wage scale asked by the men has been conceded by Mr. Griffith, with this point of difference that the men asked the increase on a basis of an eight-hour day, while the proposal made by the company is on the basis of a ten-hour day as at present.

At a conference on Oct. 6 the platform men of the company rejected an offer by Mr. Griffith to give them in wage increases every cent the company could save by following suggestions of the Public Service Commission as to curtailment of service, elimination of the 4½-cent ticket, and increase in the price of school tickets from 3 cents to 4 cents. In rejecting the offer, the men held out for the eight-hour day. This Mr. Griffith, in his proposal to the men, said would be impossible for the company to grant, for the simple reason that denial by the Public Service Commission of the company's application for a 6-cent fare to meet the demands of the men made it impossible for it to raise the necessary revenue.

The decision of the Public Service Commission in the fare case referred to in the wage negotiations is reviewed in detail on page 739 of this issue of the *ELECTRIC RAILWAY JOURNAL*.

Municipal Railway to Be Extended

Appropriation of money from the general fund, and the transfer of funds from the light depreciation fund, have been abandoned as a means of financing the extension of the Seattle (Wash.) Municipal Railway across the Fifteenth Avenue Northwest bridge into Ballard, after legal opinions of the Assistant Corporation Counsel indicated that such appropriations and transfers would be illegal. Charles R. Case, superintendent of streets, has been directed to build the extension, using the men in his department and the funds set aside for street cleaning, street repairs and other work. The order to Mr. Case is understood to mean that sums used to extend the railway will be replaced by emergency appropriations made from the general fund and added to the 1916 tax levy.

Mayor H. C. Gill has approved the bill passed by the City Council several weeks ago, specifying and adopting a plan for the extension of the municipal railway by building an elevated line on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, from First Avenue south to the West Waterway. The bill provides for the issuance of utility bonds, principal and interest to be paid from the earnings of the railway system. The cost of construction is estimated at \$350,000. Before the Council passed the bill, Mayor Gill announced that he would disapprove the plan for such extension to the south, because of excessive cost and the probability that the revenues would not be sufficient to make it a paying investment. The bill, however, passed the Council with six affirmative votes, sufficient to pass it over a veto.

Agreement Reached in Toledo

After Negotiating for More than Thirteen Months
Toledo Railways & Light Company and City
Agree on Electric Railway Grant

Mayor Milroy's street railway commission and Henry L. Doherty, chairman of the board of the Toledo Railways & Light Company, Toledo, Ohio, reached an agreement on Oct. 15, on a grant for the electric railway, after negotiations extending over thirteen months. It provides for the organization of a community company which will own the property. The intention is that local people shall buy the stock of this company and later on it is expected that the city will take over the road on the installment plan under a leasing arrangement.

The grant is to extend for twenty-five years. If, at the end of ten years the city has not taken over the property or the grant has not been renewed, an amortization fund may be established for the retirement of the stock at the end of the franchise term. Not to exceed one-half of 1 per cent of the capital value is to be paid into this fund monthly and the total amount so accumulated must not exceed 75 per cent of the capital value. This is similar to a sinking fund and will be paid into the hands of trustees.

Holders of stock in the community company will be paid 6 per cent on their investment. In the event the city takes over the property, they will receive 106 per cent of par for their stock. After five years the city may purchase the property by the payment of 25 per cent of the purchase price, which is to be found by making a physical examination of the property. It is provided that a fund to apply on this payment may be accumulated from excess receipts and from any other sources.

The rate of fare is to be based upon cost of operation, including interest and dividends. A sliding scale will be adopted to take care of varying business conditions. It is presumed that this will be patterned after the plan followed in Cleveland, although the figures may not be identical.

The City Council is to have control of the service. All questions upon which any agreement cannot be reached are to be submitted to arbitration. The award of the arbitrators will be enforced by withholding one-sixth of the dividends until the company has complied with the findings of the arbitrators.

Methods of amortization caused the longest discussion at the conferences held on Oct. 14 and 15. Mr. Doherty finally

announced that he would insist on the Cleveland plan unless one he had suggested some time previously was adopted. Members of the commission finally formulated a provision which corresponds with the one Mr. Doherty had outlined.

The new grant must now be submitted to a referendum vote. If the measure is approved the community company will be organized. Stock in the new company will be sold on the installment plan. The members of the commission expect that the stock will be taken readily.

Tacoma Municipal Railway Extension

Commissioners Atkins, Gronen, Pettit and Drake of Tacoma, Wash., recently went over the head of Mayor A. V. Fawcett and adopted a resolution at a special legislative session of the Council, offering to enter into a contract with the Tacoma Railway & Power Company for the operation of the new municipal tideflats line for a period of two years, with a transfer arrangement that allows a return of 2 cents on every 5-cent transfer issued by the company from its city lines. The resolution definitely fixes the fare to be charged at 5 cents inside the city limits, and an additional cent outside the city limits, when commutation tickets are used. Without commutation tickets, the fare will be 5 cents to the city limits, and 5 cents each way outside. The tickets are intended more particularly for the benefit of the shipyard workers on the tideflats.

Although the ordinance takes the operation of the city line from under his control Mayor Fawcett voted in favor of the resolution when it was on its way to a final reading in Council, maintaining that the 2-cent provision on transfers was all that he was ever fighting for. Members of the City Council believe that the resolution will meet with the favor of Louis H. Bean, manager of the Tacoma Railway & Power Company. With the fixing of an additional 1-cent fare for passage outside the city limits, the resolution provided for an equal division of profits on transfers where they are issued on a 6-cent fare. It is stated that the additional 1 cent which the city will receive if the 2-cent transfer agreement supplants the old one, where the city received only 1 cent out of every five, will pay 5 per cent interest on the initial investment of \$180,000 in the line.

Wage Increase in Pine Bluff.—Under a new scale of wages the trainmen of the Pine Bluff (Ark.) Company will receive from 20 to 27 cents an hour, the maximum, which will be paid after six years of service. The men have been receiving from 20 to 25 cents an hour.

Safety-First Talks on Harrisburg Railways.—In an effort to better conditions on its lines, the Harrisburg (Pa.) Railways recently had a representative of the Westinghouse Air Brake Company deliver two safety-first addresses and demonstrate brake applications on one of the cars of the company in operation.

Progress on Key Route Arbitration.—The arbitration board, headed by Paul A. Sinsheimer, which has been considering the differences between the San Francisco-Oakland Terminal Railways, Oakland, Cal., and its employees, has concluded the first section of its hearing and adjourned on Oct. 6 for two weeks. It is believed that a decision can be reached promptly after the recess.

Strike in Montgomery Called Off.—The Amalgamated Association has called off the strike of the employers of the Montgomery Light & Traction Company, Montgomery, Ala. The men went out on Aug. 15. Richard Tillis, president of the company, stuck resolutely to his decision not to discuss the question of recognition of the union. He built up a new organization around the men who remained faithful to the company.

Franchise Renewal Sought by Tulsa Street Railway.—In its efforts to secure a renewal of its franchise rights to build extensions in Tulsa, the Tulsa (Okla.) Street Railway published in the daily press a statement to the public containing the proceedings of the meeting recently held between a committee of the Chamber of Commerce and representatives of the railway company. The statement includes an account of the improvements made in Tulsa by the com-

pany since the construction of the original line and the extensions and improvements contemplated by the company in the near future.

New Working Conditions in Mobile.—At a recent conference between J. H. Wilson, president of the Mobile Light & Railroad Company, Mobile, Ala., and representatives of the Amalgamated Association, a new wage scale was agreed upon for the conductors and motormen. The working agreement entered into is for a period of two years and three months and is effective from Oct. 1. By the agreement one and two-year men get an advance in wages from 19 to 22 cents an hour, while three-year men will hereafter receive 23 cents an hour, four-year men 24 cents an hour and so on up to the eight-year men, who will receive 28 cents an hour.

Toledo May Have a Public Utilities Commission.—Councilman Frank Miller has introduced a resolution in the City Council of Toledo, Ohio, asking that a committee of three be appointed to determine the advisability of creating a public utilities commission under the provisions of the city charter. Such a commission would have power to decide upon rates, service and relations of all public utilities. The street railway franchise question, with other matters still unsettled, would come into the hands of this commission. It is claimed that the commission has not been established before because the financial condition of the city would not permit of any increase in expenses.

Increase in Wages in Davenport.—The trainmen in the employ of the Tri-City Railway & Light Company, Davenport, Iowa, have received an increase in wages of 1 cent an hour. This anticipates a clause in the contract of the men with the company calling for an increase on June 1, 1918. The contract, however, does not expire until June 1, 1919. The advance was made voluntarily by the company in order to assist the men to meet the advance in commodity prices. The men have been receiving 27 cents an hour for the first year, 28 cents for the second year and 32 cents for the third year. Under the increase they will receive 28, 29 and 33 cents an hour, respectively.

Philadelphia Conference Date Not Fixed.—No date has been fixed for the conference between representatives of the City Transit Department of Philadelphia, Pa., and counsel for A. Merritt Taylor, former director of city transit, who is opposed to some of the provisions of the contract as now worded providing for the operation of the proposed high-speed rapid transit lines by the Philadelphia Rapid Transit Company. It is expected that the conference will be arranged when Dr. William Draper Lewis, the Mayor's special legal adviser, completes certain amendments to the proposed lease with the purpose of making the provisions of the grant more specific but not of altering them materially.

West Side Improvement Plan Rejected.—The New York Central Railroad has rejected the "tentative proposals" of the joint conference committee of the Board of Estimate and the Public Service Commission for changing the rail facilities on the west side of New York City along the Hudson River. The "proposals" were made public by the joint committee on Oct. 6, and were the result of negotiations undertaken after the Board of Estimate had failed to solve the long-standing West Side improvement controversy, and the Legislature had delegated authority over the project to the joint committee. The improvements to be carried out contemplated the removal of the tracks from the surface and their electrification.

Coal Supply Still a Problem in the Central West.—An acute coal shortage has again been experienced by some of the electric railways in the central west, notably those which have obtained coal from the southeastern Kentucky-Tennessee field. A sudden descent of cold weather with freezing temperatures just before the middle of October created a severe drain on available coal supplies, while wholesale confiscation by the railroads, has further increased the stress. Cars of certain of the Southern Indiana traction lines have been running cold all fall due to inability to obtain supplies of coke for which the heating equipment is designed. Efforts of industrial consumers to obtain surplus supplies of coal have been attended with small success.

Mr. Duffy Banquets Vice-Governor of the Philippines.—C. Nesbitt Duffy, general manager of the Manila Electric Railroad & Light Corporation, Manila, P. I., recently gave a banquet at the Manila Hotel in honor of Hon. Charles E. Yeater, the new Vice-Governor of the Philippine Islands. The guests included many prominent men of the community. Following several speeches of welcome Mr. Yeater, who is a native of Missouri, in his first public talk on Philippine affairs, declared he was whole-hearted in his support of present policies on the Philippine problem and loyal to the pledge of independence to the Islands. Mr. Duffy acted as toastmaster. Before introducing Mr. Yeater he spoke of the necessity of developing that country and of the possibilities for investment there.

To Force Municipality to Complete Line Through Stock Purchase.—The Plymouth & Sandwich Street Railway, Plymouth, Mass., has petitioned the Supreme Court of the State for a writ of mandamus to compel the town of Plymouth to comply with a vote of the municipality in 1911 to subscribe for 500 shares of its capital stock. With the exception of about 0.75 mile between Sagamore and Sandwich the line has been completed. On the missing link an expenditure of about \$2500 is necessary. The road has been in operation between Plymouth and Sagamore since July 28, 1917. The 1911 Legislature authorized the town of Plymouth to subscribe not more than \$50,000 to the project. The company states that the subscription is needed to complete and maintain the road.

Programs of Association Meetings

New England Street Railway Club

The first regular monthly meeting of the 1917-1918 season of the New England Street Railway Club will be held at Young's Hotel, Boston, Mass., on Oct. 25 at 6 p. m. The subject committee of the club has chosen "The One-Man Car" as the topic for the meeting. The principal speakers will be John C. Thirlwall of the General Electric Company and C. H. Beck of the Westinghouse Air Brake Company. A special buffet dinner will be served.

New Jersey Utilities Association

The third annual convention of the New Jersey Utilities Association will be held at the St. Charles Hotel, Atlantic City, N. J., on Oct. 26 and 27. The program for Oct. 26 is as follows:

Address, Harry Bacharach, Mayor of Atlantic City.

Address, John A. Riggins, president of the New Jersey Utilities Association.

Paper, "Purification of Municipal Water Supplies," by George A. Johnson, consulting engineer, New York.

Address, "The Proper Relations Between Public Utilities and Public Utility Commissions," by Ralph E. Donges, president of the Board of Public Utility Commissioners of New Jersey.

Paper, "The Problem of Higher Operating Costs and Commission Control of Rates," by Thomas Conway, Jr., professor of finance at the University of Pennsylvania.

Paper, "Public Utilities Doing Their Bit," by John L. O'Toole of the Public Service Corporation of New Jersey, Newark, N. J.

The program for Oct. 27 is as follows:

Paper, "Inter-Relation of Various Obligations for Adequate Utility Facilities Under War Conditions," by George W. Fuller, consulting engineer, New York.

Paper, "The Financing of Public Utilities," by T. H. Dudley Perkins of Bioren & Company, bankers, Philadelphia, Pa.

Paper, "The Binding Force of Term Contracts with Special Relation to Public Utility Rates," by Ralph J. Baker, Harrisburg, Pa.

Paper, "The Valuation of Intangibles for Rate-Making Purposes," by Dr. F. Herbert Snow, chief engineer of the Public Service Commission of Pennsylvania.

Paper, "Utility Troubles—Their Causes, Effects and Remedies," by W. H. Roth, Philadelphia, Pa.

The annual banquet for members, guests and the ladies will be held by the association at the St. Charles Hotel on Oct. 26 at 6.30 p. m.

Financial and Corporate

Annual Reports

Third Avenue Railway

The comparative income statement of the Third Avenue Railway, New York, N. Y., and its controlled lines for the years ended June 30, 1916 and 1917, follows:

	-1917-		-1916-	
	Amount	Per Cent	Amount	Per Cent
Transportation	\$8,701,328	97.0	\$10,837,076	97.3
Advertising	71,348	0.8	80,000	0.7
Rent of equipment	19,927	0.2	18,386	0.2
Rent of tracks and terminals	51,588	0.6	73,211	0.6
Rent of buildings and other property	93,664	1.0	85,802	0.8
Sale of power	34,793	0.4	41,895	0.4
Total operating revenue	\$8,972,648	100.0	\$11,136,370	100.0
Maintenance of way and structures	\$998,770	11.1	\$1,090,701	9.8
Maintenance of equipment	709,637	7.9	599,549	5.4
Depreciation accruals	225,962	2.5	294,271	2.6
Power supply	781,085	8.7	731,598	6.6
Operation of cars	2,726,243	30.4	2,923,777	26.2
Injuries to persons and property	862,805	9.6	659,197	6.0
General and miscellaneous expenses	983,338	11.0	509,101	4.5
Total operating expenses	\$7,287,840	81.2	\$6,808,194	61.1
Net operating revenue	\$1,684,808	18.8	\$4,328,176	38.9
Taxes	794,450	8.8	848,122	7.6
Operating income	\$890,358	10.0	\$3,480,054	31.3
Interest revenue	164,925	1.8	157,870	1.4
Gross income	\$1,055,283	11.8	\$3,637,924	32.7
Deductions from gross income	2,677,609	29.9	2,646,852	23.8
Net income	*\$1,622,326	*18.1	\$991,072	8.9

*Deficit.

The system for the current fiscal year showed a deficit of \$1,622,326, as compared to a net income of \$991,072 for the year previous. The decrease was due to several causes. The operating revenue decreased \$2,163,721 because of the strikes on the transportation lines in the Boroughs of Manhattan and the Bronx during the summer of 1916. The earnings were also seriously affected by the epidemic of infantile paralysis with which the city was afflicted last summer and which reduced the pleasure riding to practically nothing. The unusually cold and rainy weather conditions existing throughout April, May and June of this year also contributed materially to the decrease in revenue.

Moreover, operating expenses rose because of the great increase in the cost of all materials used in the maintenance and operation of electric railways. It was necessary to raise the wages of employees generally, and increases were made in the last year which it is estimated will increase expenses by \$500,000 over those of June 30, 1916. The operating expenses in the last year also reflected large expenditures for repairs and renewals of track work. It was necessary to make \$300,200 of extraordinary repairs under orders of the Public Service Commission or to insure safe and economical operation.

New competition developed during the last year by reason of the operation of the White Plains Avenue subway extension, the Jerome Avenue subway extension, the Steinway tube to Long Island City and subway extensions in Queens Borough. While these extensions are decreasing the earnings of the company at the present time, it is expected that ultimately the extensions in the Bronx will develop new territory and new and profitable business to the advantage of the Third Avenue Railway. This company also suffered from competition of the bus line operated by the New York Transportation Company to the Billy Sunday Tabernacle. This operation was authorized by a temporary permit which expired with the close of the campaign. The buses are said at present to run under a permit which the Public Service Commission has refused to approve, and the present operation is without any legal sanction.

Within two weeks of the announcement of the company's partial payment plan for employees' subscriptions to the

Liberty Loan, 3265 subscriptions had been received from 73 per cent of the employees for more than \$200,000 of bonds. The plan submitted by the company provides for the payment of the amount of the subscription in fifty weekly installments. The company has borrowed the money necessary to finance the subscriptions, pledging the bonds as collateral for the loan. In regard to the need of higher fares the annual report states:

"The situation reduced to the simplest terms is that the cost of all labor and materials having increased to all manufacturers and others furnishing materials and supplies to electric railways, the manufacturers have, of necessity, increased the cost of their product to their customers. If electric railways were allowed to recover some part of this unavoidable increased cost of operation by increasing the cost of the service to their own customers, the car riders, the situation would adjust itself to some degree. It is only a fair and reasonable adjustment that this company seeks to make. Much will be said and written as to the right of the people to the 5-cent fare with free transfers and the hardships that will follow any increase in that rate. The facts in the matter, which must be recognized, are that no industry can continue to furnish its product at a loss. The electric railway industry is the only one in which the price at which the service or commodity is furnished has not increased materially in recent years."

Savannah Electric Company

The comparative income statement of the Savannah (Ga.) Electric Company for the calendar years 1915 and 1916 follows:

	1916	1915
Railway earnings	\$480,434	\$473,266
Light and power	345,660	320,948
Total earnings	\$826,094	\$794,214
Operating expenses	\$422,786	\$390,361
Maintenance	71,543	72,262
Taxes	59,366	55,865
Net earnings	\$272,399	\$275,725
Interest charges	\$262,757	\$258,492
Mortgage improvement fund	20,000	20,000
Deficit	\$10,359	\$2,767

The gross earnings for 1916 increased 4 per cent. Early in the year both the railway and lighting earnings showed decreases as compared with 1915. These conditions, however, improved to a sufficient extent during the latter months of the year to result in substantial increases in both the lighting and the railway department.

Operation of jitneys still continues without substantial regulation. General business conditions improved materially, especially during the latter half of the year. The high price of cotton is making Savannah and surrounding territory prosperous, and the naval stores business has been placed on a sound footing and prices are better. The factories manufacturing cottonseed products had a very prosperous year. Development of the river district west of the city is progressing rapidly and should prove of advantage to Savannah by leading to greater variety in the city's manufactures.

During 1916 the extensions to the light and power system cost \$37,500; \$4,800 was used in extending the company's power lines to the new compress west of the city, and about \$24,500 was expended for meters, transformers and short-line extensions to serve new customers. To provide funds for the necessary expenditures the company increased its floating debt \$125,000.

Underlying Companies Need Not Pay

In the case of the State of Ohio against the Little Miami Railroad, the Supreme Court of Ohio rendered a decision on Oct. 9 to the effect that underlying companies are not subject to the franchise tax imposed on domestic corporations. Underlying companies are defined by the Court as those which build railroads or other properties and lease them to operating companies. The suit was brought by the State several years ago and the decisions of the lower courts were in its favor. There are about thirty other underlying companies in the State and the franchise-tax for the several years would be large.

Municipal Lines Benefit from San Francisco Strike

The San Francisco (Cal.) Municipal Street Railway has been reaping a harvest by reason of the strike on the lines of the United Railroads of San Francisco. The total earnings for September reached the highest point in the history of the system. During the Exposition period, with thousands of visitors thronging the city, the lines had in August, 1915, earnings of \$236,935. With the aid of the Church Street line, which has since been built, the municipal system last month earned a total of \$313,125, or an increase of \$76,189.

Each day that the strike has been in progress has seen thousands of dollars diverted to the earnings of the municipal lines. It began the first day with a few hundred dollars. After the strike had been in operation for a week, the earnings began to climb at the rate of between \$2,000 and \$3,000 a day, until they reached on occasions points as high as \$5,000 over the same day of the preceding year.

While a very large part of the earnings is offset by heavy expenses, and it cannot be expected that the extra earnings are all profits, it is stated by Assistant Superintendent Fred Boeken that at the present rate, if the strike lasts a few weeks longer, between \$200,000 and \$250,000 will be added to the surplus of the system.

Dallas Railway Financed

New Company Which Will Take Over Dallas Properties Organizes and Announces Details of Financing

The Dallas (Tex.) Railway, which is to take over the electric railway properties in Dallas, consolidate them under one ownership and management and operate them under the service-at-cost franchise granted by the city of Dallas, has been formally organized. When the board of directors of the new company met during the week ended Oct. 13 to elect officers and complete details of organization, C. W. Hobson, who had been head of the company during its formative state, retired, and J. F. Strickland, president of the Dallas Electric Light & Power Company, was elected president of the Dallas Railway, and C. W. Hobson was made chairman of the board. Other officers of the Dallas Railway are: H. M. Hughes, vice-president; Henry Lange, Jr., secretary and treasurer. Members of the board of directors are: C. W. Hobson, chairman; J. C. Duke, H. A. Olmsted, W. A. Green, W. R. Ellis, John H. McDonald, Judge M. L. Morris, J. K. Hexter, H. M. Hughes, H. E. Hobson and C. W. Hobson.

Following the meeting of the directors, announcement was made by Mr. Strickland that Richard Meriwether, who had served as superintendent of the electric railway system of Dallas when it was controlled by Stone & Webster, had been appointed assistant general manager. The appointment of a general manager has not been announced.

The Electric Bond & Share Company, New York, was interested in financing the Dallas Electric Light & Power Company and the operation of the Dallas Railway. Mr. Hobson announced that the new railway will issue 26,500 shares of stock with a par value of \$100 per share, of which 21,500 will be common stock and 5000 shares will be 7 per cent preferred stock. These shares of stock will be in addition to notes amounting in principal to \$2,600,000, executed in payment of property actually received. These notes are unsecured, bear 6 per cent interest and are due April 1, 1922. The shares are also in addition to 1000 shares of common stock heretofore issued and paid for.

J. F. Strickland, representing the Dallas Electric Light & Power Company, announced that this company would issue 18,500 shares of capital stock of a par value of \$100 per share, in addition to 1500 shares of such stock heretofore issued and paid for, and in addition would put out notes in the principal amount of \$4,000,000, bearing 6 per cent interest, given in payment for property actually received. These notes are unsecured and are due April 1, 1922.

Mr. Hobson is quoted as follows: "A careful study of the situation discloses that the intimate relationship between the Dallas railways and other public utilities already in

Mr. Strickland's charge would make such an arrangement more efficient in the public interest and more economical for the owners than a separate management, however competent it could be. Mr. Strickland is a transportation expert and is surrounded with men who are trained in traffic work. He has an organization ready to take up the work; on the other hand, a new organization would have to be built up, a slow and expensive process."

The Board of City Commissioners, under the provision of the franchises, have appointed M. N. Baker, Dallas, as utilities supervisor. He will serve for one year and is subject to removal at any time by the Mayor and Board of Commissioners.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—Wilson, Cranmer & Company, Denver, and N. S. Walpole, Pueblo, Col., are offering at 97, to yield 7.2 per cent, an additional block of \$450,000 of the 7 per cent cumulative preferred stock of the Arkansas Valley Railway, Light & Power Company, the issue to provide for extensions and additions.

Bangor Railway & Electric Company, Bangor, Me.—According to the annual report of the Bangor Railway & Electric Company, filed with the Public Utilities Commission, the railway operating revenues for the fiscal year ended June 30, 1917, were \$358,318 against \$354,758 for the preceding year, an increase of \$3,559. The railway operating expenses for the last year were \$261,306 against \$231,883 for the preceding year, an increase of \$29,422. The net revenue from railway operations for the last year, therefore, was \$97,012 against \$122,874 for the preceding year, a decrease of \$25,862. The transportation revenue was divided in the last year as follows: Passenger revenue, \$316,238; parlor, sleeping, dining and special car revenue, \$80; mail revenue, \$1,590; freight revenue, \$30,116; rent of buildings and other property, \$2,891. The operating expenses of the road were divided as follows: Way and structures, \$40,734; equipment, \$32,373; power, \$13,664; conducting transportation, \$91,062; general and miscellaneous expenses, \$44,472.

Cities Service Company, New York, N. Y.—The directors of the Cities Service Company have increased the rate of the stock dividend on the common stock from a 6 to a 9 per cent annual basis. The company has been distributing stock in the form of dividends for some time in periodic payments. The usual monthly dividend of one-half of 1 per cent in cash has been declared, payable on Jan. 1 to shareholders of record of Dec. 15, and arrangement was made to make a similar distribution on Feb. 1. The directors have taken no action on the proposal to list the stocks on the Stock Exchange and to reduce the par value.

Dallas (Tex.) Northwestern Traction Company.—The Dallas Northwestern Traction Company, which proposes to construct an electric railway from Dallas to Slidell, has filed a trust deed in the office of the county clerk at Dallas, Tex., securing an issue of \$2,225,000 of twenty-year 6 per cent bonds dated Sept. 21, 1917. The trustee of the mortgage securing the bonds is the Metropolitan Trust Company, New York.

Dallas (Tex.) Southwestern Traction Company.—The Dallas Southwestern Traction Company, which has commenced construction of an interurban electric railway between Dallas and Cleburne, has filed with the county clerk at Dallas a trust deed to the Metropolitan Trust Company, New York, trustee, to secure an issue of \$2,225,000 of bonds dated Sept. 21, 1917.

Monongahela Valley Traction Company, Fairmont, W. Va.—At the annual meeting of the Kanawha Traction & Electric Company, directors were elected as follows: Thomas Logan, Parkersburg; W. W. Van Winkle, Parkersburg; Edward A. Merydith, Marietta, Ohio; William H. Jett, Marietta, Ohio; J. M. Hartley, Fairmont; G. M. Alexander, Fairmont; E. B. Moore, Fairmont. In pursuance of the agreement entered into by the Kanawha Traction & Electric Company and the Monongahela Valley Traction Company, the latter company took over the operation of the properties of the Kanawha Traction & Electric Company on July 1, 1917. Since the making of this agreement, practically all of the stockholders of the Kanawha Traction & Electric

Company have exchanged their stock for the stock of the Monongahela Valley Traction Company.

Petaluma & Santa Rosa Railway, Petaluma, Cal.—The directors of the Petaluma & Santa Rosa Railway have referred to a special committee the matter of taking care of the issue of \$217,000 of outstanding second mortgage 6 per cent bonds of the company which have matured.

St. Paul (Minn.) Southern Electric Railway.—The holders of the second mortgage bonds of the St. Paul Southern Electric Railway have appointed a committee as follows: W. W. Cutler, chairman, E. E. Sanford, P. J. Jarman, Frank Schlick and W. W. Dunn. The majority of the first mortgage bonds are held by a single owner who is represented by M. M. Munn, St. Paul, and no committee has been appointed to represent this issue. A statement credited to Irving Todd, Jr., vice-president of the company, with respect to its financial position was referred to in the ELECTRIC RAILWAY JOURNAL of Oct. 13, page 696.

United Railways & Electric Company, Baltimore, Md.—The Maryland Public Service Commission has granted permission to the United Railways & Electric Company to issue \$5,750,000 of five-year notes, but it has modified the plan proposed by the company for the conversion of these notes into the common stock. The company desired permission to convert the short-time notes, which will be dated Aug. 15, 1917, into common stock at \$30 a share within two years, \$32 within three years, \$34 within four years and \$36 thereafter until Feb. 15, 1922. Under the commission's order notes may be converted into common stock at \$30 per share within one year after Aug. 15, 1919, and at \$33 thereafter until Aug. 15, 1922. Thus under the commission's order there can be no conversion of the notes into common stock at \$30 after two years with an ascending scale thereafter upon the price of the stock for conversion purposes. The stipulation placed by the commission on the conversion privilege was put there in consequence of the investigation being made by the commission into the affairs of the company. It is said unofficially that the members of the commission were fearful that if they permitted the conversion to be effected before the investigation was finished those who obtained common stock in that way would set up a claim that they had taken the stock upon a valuation established morally at least by the commission and that therefore the commission should permit such earnings as would maintain the valuation so established.

Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.						
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., Aug., '17	\$112,515	*\$85,603	\$26,912	\$27,382	†\$339	
1 " " '16	109,761	*74,951	25,810	27,700	†1,708	
8 " " '17	728,149	*625,152	102,997	220,406	†116,453	
8 " " '16	656,817	*539,800	117,017	206,191	†187,642	
CONNECTICUT COMPANY, NEW HAVEN, CONN.						
1m., Aug., '17	\$977,471	*\$719,179	\$258,292	\$102,810	†\$160,109	
1 " " '16	910,429	*689,838	220,591	98,634	†144,667	
8 " " '17	6,733,370	*5,210,941	1,522,429	778,164	†875,409	
8 " " '16	6,338,486	*4,357,006	1,981,480	788,715	†1,345,011	
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.						
1m., Aug., '17	\$53,405	*\$33,503	\$19,902	\$7,982	†\$12,002	
1 " " '16	40,814	*28,078	12,736	7,987	†4,811	
8 " " '17	282,402	*237,549	44,853	63,872	†18,625	
8 " " '16	253,996	*202,041	51,955	63,874	†11,574	
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.						
1m., Aug., '17	\$47,556	*\$45,958	\$1,598	\$9,642	†\$7,392	
1 " " '16	46,027	*45,074	953	8,893	†5,965	
8 " " '17	371,161	*368,716	2,445	\$61,863	†51,623	
8 " " '16	352,261	*393,947	†41,685	\$67,671	†66,325	
RHODE ISLAND COMPANY, PROVIDENCE, R. I.						
1m., Aug., '17	\$595,687	*\$446,045	\$149,642	\$122,897	†\$27,822	
1 " " '16	587,474	*369,299	218,175	120,714	†99,067	
8 " " '17	4,035,508	*3,229,713	805,795	963,999	†72,569	
8 " " '16	3,885,362	*2,762,661	1,122,701	921,184	†289,464	
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.						
1m., Aug., '17	\$26,413	*\$24,483	\$1,930	\$2,211	†\$249	
1 " " '16	21,076	*21,872	†796	1,863	†2,630	
8 " " '17	167,003	*186,548	†19,545	16,870	†36,186	
8 " " '16	162,736	*171,641	†8,905	14,237	†22,935	

*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

Traffic and Transportation

Another Connecticut Fare Increase

Shore Line Shortens Its Nickel Zone and Increases Interurban Zone Fare from Two to Three Cents

The Shore Line Electric Railway, Norwich, Conn., which operates 240 miles of line, has increased its fares. The company has retained the nickel as the unit of fare, but it has materially shortened the ride and secured 7 cents as the next unit for a ride in two zones. This gives the company a 7-cent rate to the large manufacturing villages just out of Norwich where the company formerly received a 5-cent fare. The old minimum was 5 cents in two zones. The new minimum is 5 cents in one zone, except that in the cities of Norwich and New London the company includes a transfer into the second zone, so that a 5-cent fare provides transportation not only to and from the center of the city, but through the center with or without transfer, depending on how the cars happen to be routed.

INTERURBAN ZONE FARES INCREASED TO 3 CENTS

On the interurban lines the company has advanced the rate from 2 cents a zone to 3 cents a zone, with a minimum of 5 cents in one zone and 7 cents in two, using the same zone terminals as heretofore. This system was explained very fully in the ELECTRIC RAILWAY JOURNAL for Sept. 11, 1915, page 443. If the present advances in rate are maintained, the company will probably change its zone terminal numbers so that the principle of subtracting one station from the other will disclose the rate. At present it is necessary to subtract the station numbers one from the other and add one-half in order to arrive at the passenger fare.

STEAM AND ELECTRIC RATES COMPARED

The changes which have gone into effect have raised the rate by electric railways in a number of cases above the present steam road rate. The company sells now, as formerly, a commutation ticket at 75 per cent of the adult rate covering fifty-four rides in a calendar month. A comparison of the present rates of the Shore Line between Norwich and other cities with those of the steam road operating between these cities follows:

	Steam	Electric
Norwich to New London	35 cents	36 cents
Jewett City	24 cents	24 cents
Plainfield	40 cents	42 cents
Central Village	48 cents	51 cents
Danielson	63 cents	69 cents
Putnam	82 cents	96 cents
Williamantic	50 cents	45 cents

It is regarded as likely that the steam road rate will be advanced to a point above that of the electric railway.

HOW THE PUBLIC WAS INFORMED

Posters were put in the cars of the company at the time of the change in rate and a series of public notices was run in the daily papers. The first of these announcements to the public appeared in the form of a letter, while the others were run as regular advertisements. Number 4 of the series served as the announcement of the exact effect of the change. There has been some general complaint on the part of the public, but up to Oct. 17 no concerted action had been taken in opposition to the maintenance of the new tariff. An explanation for this is seemingly offered by the fact that the nickel still serves as payment for a short ride.

Some time previous to the change in fares R. W. Perkins, president of the company, made a statement in which he said the railway had just passed through the hardest year of its history, with operating costs advancing at a rate undreamed of even after the rising cost of the first year of the war. Every economy possible had been practiced by the company. He called attention to the increases in fares made by other companies in New England, and said that if satisfactory service was to be rendered by the Shore Line increased revenue per passenger must be secured.

Flat Fare Increase Denied

Oregon Commission Denies Fare Increase to Portland Railway, Light & Power Company— Suggests Elimination of 4½-Cent Tickets

The Public Service Commission of Oregon on Oct. 5 handed down a decision denying the application of the Portland Railway, Light & Power Company for an increase in fares to 6 cents. The application for this increase was made in order that the company could meet the demands of the platform men for an eight-hour day and wage increase, as reported in the *ELECTRIC RAILWAY JOURNAL* for Aug. 25, page 327, and Sept. 1, page 367.

COMPANY'S REVENUES INADEQUATE

The commission admitted, however, that the company's revenues were inadequate and that even without further increase in its expenditures its condition was critical. The commission recommended a reduction in service, the elimination of the 4½-cent tickets (sold only in books of fifty tickets) and the advance of the 31-3-cent school ticket to 4 cents. It also suggested that the city relieve the company of the burden of laying and maintaining pavements between its tracks, which would mean a saving of approximately \$225,000 a year, as well as remitting bridge tolls of \$66,000 a year. This could be done only by charter amendment at the next November election. Four-fifths of the tracks are already paved. The commission retains jurisdiction over the case and requires monthly reports of the company's operation showing the effect of these changes.

The order of the commission is signed by Chairman Miller and Commissioner Buchtel. Commissioner Corey dissented. The finding and the order of the commission follow:

THE FINDING

"After a full consideration of the foregoing, and based upon the record before it, and its knowledge of the operations of the company gained from an exhaustive investigation extending over several years, the commission now makes the following findings of fact:

"1. That present revenues derived by this utility from the operation of its electric railway system are inadequate.

"2. That service now afforded is in excess of that required reasonably to meet the demands of the traffic handled.

"3. That the rates charged and collected for unlimited ticket books and school children's limited tickets are unjust, unreasonable and inadequate.

"4. That just, reasonable and adequate rates and practices for the utility to charge, impose and collect, in lieu of such unjust, unreasonable and inadequate rates, are: Unlimited tickets, 5 cents each; limited school children's tickets, 4 cents each.

THE ORDER

"The commission having fully investigated the application of the Portland Railway, Light & Power Company for increase in fares on its electric railway lines in the city of Portland,

"It is ordered that the company be and it hereby is authorized to increase the rates named by it in its tariff O. R. C. No. P 141 for unlimited tickets and school children's limited tickets, such increased rates, however, not to exceed the following: Unlimited tickets, 5 cents each; limited school children's tickets, 4 cents each.

"It is further ordered that until otherwise advised by this commission, the company shall submit monthly statements covering its railway operations, together with full information as to any action which may have been taken subsequent to the date of this order with reference to the curtailment of service, or other measures of economy in such operations.

"And it is further ordered that pending further developments this matter be kept open upon the docket of the commission and that jurisdiction herein be retained for the purpose of taking such other and further action as may be deemed appropriate.

"The application of this order is restricted to purely Oregon intrastate business, and nothing herein contained shall be taken as in any way affecting interstate commerce."

In his dissenting opinion, Commissioner Corey said he favored a reduction in service where practicable, and a tempo-

rary trial increase of cash fares at 6 cents, six rides for 35 cents, retaining the present school children's tickets, workingmen's daily ride books upon the basis of fifty-two rides during the period of one month for \$2.50, unused coupons to be redeemable at an amount equal to the difference between what the rides the passenger has taken have cost him and what they would have cost him had he paid cash instead of using the tickets, such tickets to be used only on week days. He said:

"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 wages granted to the employees. 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."

COMPANY EARNING ONLY 2.07 PER CENT ON VALUATION

At the hearing it was shown that on the present basis of operation the company is earning only 2.07 per cent on the valuation of the electric railway. The figures cited were fixed upon the actual value of the utilities proper. It was also shown that without a change in the daily wage, if a change from a ten to an eight-hour day were made, the payroll would be increased 25 per cent, or \$600,000 additional annually. While the revenues for September were \$45,000 higher than the previous month, the deficit was \$3,000. This deficit was due to the increase in the operating expenses. No dividends have been paid since 1913 and stockholders in the last three years have had to put \$2,500,000 into the company.

Fare Protests Under Consideration

The traffic commission of the city of Bridgeport, Conn., has not yet decided when it will present its case to the Public Utilities Commission protesting against the 6-cent fare recently put into effect in that city by the Connecticut Company. The commission has retained J. Payson Clark as an expert to assist it in the investigation which is being made into the affairs of the company as they affect Bridgeport.

In Hartford no definite action has been taken by the city with respect to the increase. A public meeting was held there recently to determine the attitude of Hartford people in regard to the 6-cent fare and in consequence a resolution was introduced in the Council on the evening of Oct. 15 calling upon the Corporation Counsel to arrange with the Public Utilities Commission for a hearing in regard to the increase. This resolution, however, was held up by Acting Mayor Walter A. Schutz, who when the discussion of the resolution was under way turned the meeting over to Alderman Borden. A deadlock followed in which the rules of parliamentary procedure governing voting rights under such conditions were involved.

COMMISSION COULD NOT RESTRAIN COMPANY

Almost immediately upon the announcement of the proposed increase in fares by the company representatives of Bridgeport petitioned the Public Utilities Commission to issue forthwith a restraining order against the company. The commission through its chairman, Richard T. Higgins, replied that it was without jurisdiction to issue such an order or to order a change in the company's rates except upon a petition and after public hearing and a finding that the company's rates were unreasonable, such petition and public hearing to be in accordance with the procedure prescribed by statute.

CHANGE ONLY AFTER PUBLIC HEARING

Under the laws of Connecticut a utility company has the right to make, alter or raise its own rates. The Public Utilities Commission, however, has jurisdiction on petition to confirm, reduce or otherwise modify such rates. A company has in the first instance the right to raise or modify its own made rates, but has no authority to modify or change a commission-made rate. The Connecticut Company's rates now and heretofore in force in Bridgeport are company-made rates which the commission is not authorized to change except upon petition and a finding after public hearing that the rates established by the company are unreasonable.

Bay State Weekly Paper

Purpose Is to Acquaint Patrons with Present-Day Transportation Problems, and to Invite Constructive Criticism

Beginning on Wednesday, Oct. 24, the Bay State Street Railway, Boston, Mass., will publish a weekly paper devoted to the interests of patrons and seeking to establish a better understanding with the public. About 90,000 copies of this paper will be distributed free each week in all cars and waiting rooms of the company. In addition 11,000 copies will be mailed direct to the homes of selected persons in the territory in which the company operates. Contributions from the pens of the ablest electric railway experts will be features of the publication, and the public will be invited to contribute its views as to the service, as well as to make suggestions for improvements. The weekly will be illustrated, and will also contain the work of John Bliss, the Boston cartoonist.

PRESIDENT SULLIVAN'S AIM

P. F. Sullivan, president of the Bay State Company, when asked about the new publication said: "It is our aim to endeavor to interpret street railway problems to the public, and to have the public interpreted to

tailor has risked money in establishing his particular business and is therefore entitled to a fair protection and return fail to understand that this same protection and return is due the people who invest or risk their money in street railways.

"The Bank Commissioner of Massachusetts has held that street railway bonds are, under specified conditions, a legal investment for savings banks, which means that street railways must prosper if they are to pay interest on these bonds held by savings banks. To pay this interest they must earn more than expenses and cannot operate below the line of making expenses, as at present. The street railway must have such protection and opportunity as will safeguard the banks and insurance companies as well as the thousands of smaller individual investors. In addition to our desire to protect these investors, we want to make the Bay State Street Railway the most efficient public carrier of its kind in New England, and if possible in the world."

Detroit One-Fare Traffic Decreased

E. J. Burdick, Assistant General Manager of the Detroit United Railway, Says There Has Been Serious Decline in This Traffic

That the one-fare zone passenger earnings of the Detroit (Mich.) United Railway are showing a startling decrease was a statement made by E. J. Burdick, assistant general manager of the company, before the public utilities committee of the Common Council at a hearing recently when several matters affecting the service of this company were discussed.

NET PASSENGER EARNINGS DECLINED \$2,500 A DAY IN SEPTEMBER

While in the beginning of the year the gross passenger receipts within the zone were largely in excess of those of a year ago, due to the tremendous business activities of Detroit, there has been of late a marked decline, so that the fare receipts for September of this year were less than for the same month in 1916. Not only have the gross receipts declined because of business conditions, but the tremendous increased cost of operating the city lines—in the way of wages and other items—has resulted in a decline of \$2,500 a day in the net passenger earnings in September compared with the same month a year ago.

This loss came with some 35 miles of additional track in operation.

CO-OPERATION NEEDED

Mr. Burdick pointed out to the meeting the need of the hearty co-operation of the civic authorities so that there may be no needless expenditure of money, expressing the hope that rates of fare may remain the same. He said:

"It is not our desire to disturb the present low rates of fare. We are doing everything possible to avoid coming to you in the matter of increased fares to carry on our work and meet the many items of increased expenses. We, therefore, ask your hearty co-operation."

The company is by no means certain that all the routes as laid out for re-routing will be successful. It is more than probable that some of them will have to be changed in order to equalize the load on the various lines in the heart of the city. The separation of a vast amount of the east and west service across Woodward Avenue is most desirable, as it results in doing away with a lot of needless interference of cars with one another. Whether the loops as planned will accomplish all the company desires is a debatable question, but it is more likely that some new loops will have to be worked out.

SKIP STOP SUCCESSFUL—USED ON NEARLY ALL LINES

The skip-stop plan is working to the good of the service, particularly in the way of reducing the running time. This plan is now in effect on nearly all the lines of the city. There are, of course, some kinks to be straightened out, but the company has no doubt that these little matters can and will be adjusted in a satisfactory manner. It is opposed, however, to immaterial changes being offered simply for the convenience of the few here and there.

YOUR STREET RAILWAY SERVICE

Published weekly to acquaint the patrons of the Bay State Street Railway Company with the purposes and plans of the organization that serves them, to promote greater understanding, good will and neighborliness, and to secure that cooperation which will produce results that will satisfy the three partners: Investor, Labor and the Public.

Let us Co-operate. Edited by THOMAS BRIDGER. Let us Co-operate. To Develop Our City and To Give Better Service. Published by the Investor. To Develop Our City and To Give Better Service. Direct all mail orders for the Paper to Bay State Street Railway Co., 115 State Street, Boston, Massachusetts.

Vol. 1

OCTOBER 17, 1917

No. 1

Some Straight Talks to the Patrons of the Bay State

THIS is the first of a series of bulletins to be placed in the hands of the patrons of the Bay State Street Railway Company.

For twenty-seven weeks we have been publishing a weekly paper that told our employees about our Company and its problems. We have told them of the needs of the Company and have asked them to co-operate with the management for the purpose of decreasing unnecessary expenses and for the purpose of increasing income. We have repeated over and over the statement that the first lesson they must learn is that every employee from the president down to the humblest worker must master the art of giving satisfactory service to the public.

Let us make that as clear to you as we have tried to make it to our own employees: *The purpose of the Bay State Street Railway Company is to give satisfactory service to the public.*

We want to make that as emphatic as printed words can make it. Substitute that statement for every other statement you may have heard or seen printed anywhere which may have led you to think otherwise.

We Will Give a Frank Explanation

Having said that, let us go on. We know that the service given on all our lines is not perfectly satisfactory to all our patrons.

As a matter of fact, we know that it is unsatisfactory to many of them.

Why that service which is unsatisfactory exists and why we cannot substitute satis-

factory service for it are questions that will be answered in succeeding bulletins.

We will make a general statement now. Satisfactory service demands:

First. The right kind of men, second, the right kind of equipment, third, the right amount of money for the service rendered; fourth, the right conditions under which men, equipment and money operate.

In dealing with these matters we shall indulge in some straight talk. We shall call a spade a spade and not an agricultural implement. We shall be frank in telling what we think is responsible for the condition in which most street railways, not the Bay State alone, find themselves.

The Public Has a Right to Know

Our position is this, a street railway is a public service corporation. It is organized and operated with *private money* for the benefit of the public. Therefore, the public has a right to be told all about the business of the street railway, its problems, the forces that are hindering its growth and development, the conditions that are robbing it of its financial health, and everything else that enters into its operation.

Before we can furnish you with so much as an outline of the plans we have made for the betterment of the service it is necessary for us to clear away for once and for all many statements that have been circulated for years that have in them so little truth that they deserve to be wiped out of existence.

FRONT PAGE OF NEW PAPER

us through *Your Street Railway Service*, which is the name of our new publication. That, it seems to me, is a fitting name, for street railways belong to the people and they depend upon the people for good-will and for sufficiently sustained patronage to keep them going.

"The last two years have witnessed unparalleled increases in the price of everything connected with the operation of street railways. There are other problems about which the public is in ignorance. In my opinion large public utility companies have made a mistake in not taking the public into their confidence, in not trying to make things clear so that mutual problems might be discussed and settled amicably and logically.

"The relation between the public and big business must be established on a get-together basis. Strange to say, a great many people who recognize that a grocer or baker or

Transfer Limits Extended

Bay State Street Railway Transfer Order Includes Discussion of General Principles

In an order dated Oct. 9 the Public Service Commission of Massachusetts extended certain transfer limits in the Haverhill district on the Bay State Street Railway and included in its finding a discussion of general principles of transfer application in relation to the recent establishment of a 6-cent fare unit on the urban lines of the company. The local case involved two lines radiating from the transfer station in the heart of Haverhill. The 6-cent fare limit upon one line is at the Groveland-West Newburg town line, 4.34 miles from Haverhill, and upon the other it is at the Groveland-Georgetown town line, a distance of 5.11 miles. Formerly the transfer limits were the same, but now they are located at Pines turnout, in one case, 3.08 miles, and at the Haverhill-Groveland town line, 2.67 miles from Haverhill. The ticket limits are the same. The petitioners asked that the transfer limits be extended 0.71 mile on one line and 0.58 mile on the other, in order to enable passengers to ride through to local settlements known as Savoryville and South Groveland. The company conceded that its receipts would not be seriously diminished by the desired change, but rested its case upon the fact that the present transfer limits have been established substantially in accordance with the agreement reached in July, 1917, between the company and many of the principal communities served by it. The company held that any marked departure from this general principle would constitute a dangerous precedent.

SAME PRINCIPLES GOVERN TRANSFERS AND 5-CENT TICKETS

In the agreement then reached the understanding appeared to be that the same principle should apply to transfer privileges as to the sale of 5-cent tickets (twenty for \$1, good except Saturdays after 1 p.m., on Sundays and holidays); that existing transfer privileges should be retained in those towns or portions of towns which by location or density of population practically form a part of adjacent urban centers; and that in other territory transfer privileges might be curtailed by the relocation of transfer limits which permitted too long a ride for the basic fare. A suggestion that transfer privileges should in general extend about 2.5 miles from the centers of the urban districts was also considered, but was not adopted. The schedule filed by the company pursuant to the agreement provided for free transfer privileges which, in most cases, covered more than 2.5 miles from the centers of the respective cities. The scheme was elastic without fixing limits by any arbitrary rule of distance or other fixed standard. In the case in point the granting of the petition of the selectmen and citizens of Groveland extends the limits on the lines in question to 3.79 and 3.45 miles respectively, from the center of Haverhill. These distances are not greater than on many other lines of the Bay State company, but the commission states that even so, it would not have been willing to order the company to extend the former limits during the six months' trial period of the present fare schedule, had the evidence indicated that the company would be likely to lose any substantial amount of revenue.

Patron Returns Car Fare

The Ohio Valley Electric Company, Ashland, Ky., recently received a letter from one of its patrons in which restitution was made of car fare which had been withheld from the company more than a year previous. The letter was as follows, except for two words which it was impossible to decipher:

"To the Ohio Valley Railway

"Co. of Ashland ky i do hear in close some car fair which was not cledced from me about the year of 1916 and i did not thank much about it till a fue weeks ago and Jeses Crist shod me i must Pay it and i am only * * * * i did not Pay it then tho i hope you will for give me in excepin the 25 cts and when we meat at the Jgement of God you may ancer and say it is Paid God word says he will make all * * * * strait and i will close hoping to mete you all in heven if not on this erth is my Prair."

Women Subway Guards for the B. R. T.—Arrangements have been about completed for the installation of women as guards in the subways of the Brooklyn (N. Y.) Rapid Transit Company during rush hours.

Skip Stops Extended in Toledo.—On Oct. 1 the Toledo Railways & Light Company, Toledo, Ohio, established a skip-stop service on the Summit-Broadway line. Service on the Point Place line during the rush hours was lengthened from fifteen to eighteen minutes and from thirty to thirty-six minutes during the remainder of the day. Skip-stop service was started on the Cherry-Union Depot line on Aug. 13.

New Jitney Ordinance in Effect in San Antonio.—The new jitney ordinance restricting jitneys and their routes went into effect on Sept. 18 in San Antonio, Tex. The ordinance prohibits jitneys from operating on Houston and Commerce Streets. As a result, fifty-two applications for changes in routings were made by owners of jitneys, and as the petitions complied with the law, they were granted by the City Commissioners.

Employee Special Officers Make Arrests.—Uniformed supervisors on the city lines of the International Railway in Buffalo, N. Y., who were recently appointed special police officers, have been observing the loading of cars at congested intersections and at other points along the line. Several arrests have been made by the supervisors and a fine of \$5 has been imposed in each instance when a person was charged with pulling the trolley from the wire in order to board the car when the motorman had refused to stop.

New Street Guide Issued by Denver Tramway.—The Denver (Col.) Tramway has issued a new street guide, which, besides containing the information which the usual street guide carries, also gives information as to what cars to take to any address in Denver. Although the guide was compiled by the company, it has been published and will be sold by the Associated Tramway Trainmen's Clubs. There is a small profit above the printing cost of each book and all of that profit will be divided between the trainmen and their clubs.

Jitneys on Decrease in Houston.—The number of jitneys in Houston, Tex., is decreasing, according to George L. Charlton, public service commissioner, whose report just filed shows that only 100 jitney drivers have applied for licenses for the new quarter, whereas during the quarter just ended there were 140 jitneys in operation in the city. The city ordinance requires that a license tag be displayed on the front of the automobile used as a jitney and the tags for each quarter are of different color, thus enabling traffic officers to tell at once if a driver has paid the license fee.

Fare Increase Anticipated by Large Purchases of Tickets.—The Travelers' Insurance Company, Hartford, Conn., purchased \$25,000 of tickets of the Connecticut Company at the old rate of 5 cents just prior to the establishment of the 6-cent fare by the company. The purchase was made for the benefit of the employees of the insurance company to whom the tickets are being resold at cost. Each employee is entitled to buy \$2 worth of tickets a week, or two books of twenty rides each. No deduction is being made by the company for interest or carrying charges. Other business concerns in Hartford are reported to have made similar purchases in anticipation of the fare increase.

Permanent Injunction Against Free Jitneys Denied.—The petition of the Puget Sound Traction, Light & Power Company, Seattle, Wash., for a permanent injunction against Dave Levinson and twenty other jitney bus drivers in Seattle was recently denied by Judge King Dykeman. Judge Dykeman stated that he found from the evidence that the men had State licenses for operating automobiles for hire, and also licenses as drivers. The jitney men claimed they were not accepting money as common carriers, or holding themselves as such. The decision means that as far as the State is concerned, the free buses may operate with impunity. In the Federal Court, however, Judge Neterer, as noted on page 742 of this issue, issued an injunction against the same men.

Oregon Bus Owners Give Personal Bond.—The Portland (Ore.) Trackless Motor Bus Company, unable to secure surety company bonds, has filed with the Council personal

bonds covering the requirements under the various franchises granted by the voters at the last municipal election, for the operation of motor buses over streets in the city. The bondsmen are Stephen Carver, promoter and principal owner of the company, and his wife, whose resources are given at \$102,000, and J. L. Sprinkle, at \$335,000. Mr. Carver renewed his request for an extension of time in beginning the operation of several of the proposed motor bus lines, but he was informed that no action would be taken on the petition for extension until the investigation which has been ordered into the financial status of the bondsmen is finished.

New Buses for Baltimore.—The Baltimore (Md.) Transit Company, a subsidiary of the United Railways & Electric Company, has placed in operation twenty new buses on its Charles Street line, to replace the conveyances which have been in service. The new buses are similar in design to those formerly used, but are larger. They have a seating capacity of seventeen each, including the chauffeur and a total carrying capacity of twenty-three. The bodies are of Brill make, of special design for this company, and are mounted on two-ton White standard chasses. Passengers enter and leave the machines by hand-operated side folding doors, and there are also emergency doors at the back of the buses. The cars are housed at the company's garage, the old Charles Street carhouse, the remodeling of which for this purpose has been practically completed.

Temporary Injunction Continued Against Jitneys.—In declining to dissolve the temporary injunction granted against Earl W. Arnold and 196 other jitney drivers in Seattle, Wash., United States District Judge Jeremiah Neterer fixed Nov. 7 as the date for the hearing of the case on its merits, when it will be decided whether or not the temporary injunction granted the Puget Sound Traction, Light & Power Company shall be made permanent. The decision was made following an application filed by W. R. Crawford on behalf of certain of the 196 defendants to have the temporary injunction dissolved. The temporary injunction was granted on the application of the plaintiff, the Puget Sound Traction, Light & Power Company, which alleged that through the operation of auto buses for hire in competition with the company's cars it had been damaged to the extent of \$50,000.

Hearing on Buffalo Traffic Recommendations.—A hearing was arranged to be held on Oct. 18 at Buffalo by the Public Service Commission for the Second District of New York, before Chairman Van Santvoord and Commissioner Barhite, in the case pending with the commission against the International Railway. The action is one brought by the city of Buffalo and various civic and commercial organizations and concerns the service rendered and equipment operated by the railway within its 5-cent fare zone in Buffalo and vicinity. At the hearing the recommendations for improvements suggested in the report of C. R. Barnes, chief inspector of electric railroads for the commission, were to be presented for discussion and also the reply of the railroad in respect of the recommendations for changes in service and equipment made by Mr. Barnes. The recommendations made by Mr. Barnes were reviewed in the *ELECTRIC RAILWAY JOURNAL* of Sept. 8, page 415.

Elevated Non-Rush Hour Express Service Details Furnished.—Details of the proposed operation of an "all day" express service on the Third Avenue elevated railroad have been furnished to the Public Service Commission for the First District of New York by operating officials of the Interborough Rapid Transit Company. As soon as certain minor structural changes are completed and the necessary schedules prepared, the new service will be instituted. The date at which it will begin, it is believed, will be about Nov. 10. So far as outlined the schedule calls for the operation of express trains southbound during the morning rush hours, beginning about 6 a. m. and continuing until noon. The first northbound express train will leave the downtown terminus about 1 p. m. and the service will conclude at the end of the evening rush hour. It is estimated that southbound and northbound passengers in non-rush hours will be saved about eight minutes in running time between the northern and southern terminals of the railroad.

Legal Notes

CHARTERS, FRANCHISES, ORDINANCES

MINNESOTA.—*What Paving Is Made Extra by Reason of a Railway?*

Defendant's franchise, in referring to the cost of pavings, says that "the company shall be required to pay only so much of the expense of paving the street as is made extra by reason of said railway." Another section therein provides that the "company shall keep the space between the rails in proper repair." The word "railway," as used in the quoted part, is not synonymous with the "rails," but means the track with the cars moving on it. Held, that the company should pay for a width of 10 ft. where it had double tracks and for 5 ft. where it had single tracks. (*City of Duluth v. Duluth Street Railway Co.*, 163 Northwestern Rep., 659.)

NEW YORK.—*Private Freight Line Not a "Railroad" Within Meaning of Railroad Law.*

Under the provisions of the railroad law (Consol. Laws, chap. 49) the city of New York could not authorize the use of streets by a private freight railroad, with spurs extending across the sidewalks and injuring abutting owner's rights, not operated for the convenience of the public but for the convenience of manufacturing enterprises, and such a road was not a "railroad," within the meaning of the railroad law, and the termini in the private establishments which the railroad served were not "termini" within the legislative contemplation. (*Stanley v. Jay Street Connecting Railroad*, 166 New York Sup., 119.)

VIRGINIA.—*Right to Cross City Bridge.*

Under an ordinance granting a thirty-year street railway franchise, accepted by the company, authorizing the company to operate on a certain street to the corporate limits and referring to bridges to be crossed by the company's tracks, the company was not obliged to pay the city toll for crossing a bridge subsequently condemned and constructed by the city as a part of such street. The city's statutory right to require of transportation companies compensation for the use of its bridges was exercised by the compensation and considerations exacted of the company in the original franchise ordinance (*City of Richmond v. Virginia Railway & Power Co.*, 92 Southeastern Rep., 898.)

LIABILITY FOR ACCIDENT

MARYLAND.—*Injury of Passenger After Being Ejected.*

A passenger ejected from a car, who therefore walks along defendant's tracks, assumes the risk of its perils. (*State to Use of Scott et al. v. Washington, Baltimore & Annapolis Electric R. Co.*, 101 Alt. Rep., 546.)

MARYLAND.—*Employment Held to Be Not Under Federal Employers' Liability Act.*

In an action under the federal employers' liability act, evidence that deceased, who was accidentally killed by the discharge of a pistol in the hands of a fellow servant, was employed in a blacksmith shop in which repairs were made on cars engaged in both interstate and intrastate work, was insufficient to show that at the time of deceased's death he was engaged in work in interstate commerce. (*Washington, Baltimore & Annapolis Electric Railroad v. Owens*, 101 Atlantic Rep., 532.)

NEW JERSEY.—*Duty to Protect Passengers Against Assault.*

The fact that a passenger was intoxicated to the knowledge of the conductor, the fact that he had repeatedly insulted a woman passenger in the presence and hearing of the conductor, and immediately after the last insulting remark arose from his seat and struck her twice, all without any word of admonition or protest by the conductor or attempt upon his part to prevent the assault, although he was throughout within arm's reach of the drunken man, are circumstances from which the jury could properly infer that with proper care upon the part of the conductor the act of violence might have been foreseen and prevented. (*Hoff v. Public Service Railway*, 101 Atlantic Rep., 404.)

Personal Mention

F. M. Weld has been appointed master mechanic of the Boston & Worcester Street Railway, Framingham, Mass.

George Kuhn, master mechanic of the International Railway, Buffalo, N. Y., has been appointed acting superintendent of equipment in charge of shops and carhouses.

Walter G. Parker, manager of the Penobscot Bay Electric Company, Bucksport, Me., has been elected general manager of the Waterville, Fairfield & Oakland Railway, Waterville, Me. He will retain his former position.

H. D. Feuers, general manager of the Fremont Gas, Electric Light & Power Company, Fremont, Neb., has been appointed general manager of the City Light & Traction Company, Sedalia, Mo., to succeed S. B. Ireland.

Frank McEnaney, formerly of Providence, R. I., who for nine years has been in the service of the Connecticut Company, has been made superintendent of the Waterbury & Milldale Tramway, with headquarters in Waterbury, Conn.

George W. Dunlap, heretofore superintendent of power and equipment for the International Railway, Buffalo, N. Y., has been appointed superintendent of power stations following a separation of the equipment and power departments.

George H. Waring has resigned as vice-president and general manager of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., to become manager for the American Public Utilities Company at Salt Lake City, Utah.

Thomas Logan of Parkersburg, W. Va., has been elected president of the Parkersburg-Marietta division of the Monongahela Valley Traction Company to succeed S. D. Camden. This property was formerly known as the Kanawha Traction & Electric Company.

J. F. Strickland, president of the Dallas Electric Light & Power Company and president of the Texas Electric Railway, has been elected president of the Dallas Railway, which is to take over the electric railway properties in Dallas and operate them under the new service-at-cost franchise.

Richard Meriwether, who has been superintendent of the electric railway system at Dallas, controlled by Stone & Webster, has been appointed assistant general manager of the Dallas Railway. This road is to take over the electric railway properties in that city and operate them under the new service-at-cost franchise.

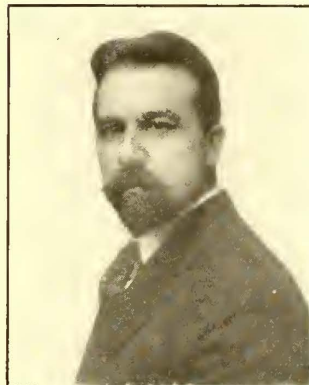
D. G. Brandt has resigned as general superintendent of Bartlesville (Okla.) Inter-Urban Railway and the Bartlesville Gas & Oil Company, which are operated by H. L. Doherty & Company, New York. Mr. Brandt will take up natural gas and oil work for the Doherty organization with headquarters in New York City.

C. M. Benedict, assistant secretary and assistant treasurer of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has been elected in addition vice-president of the company. He will have charge of the operation of the system, discharging the duties of general manager, which position has been abolished.

M. N. Baker, Dallas, Tex., has been appointed by the Board of City Commissioners of that city as utility supervisor in accordance with the terms of the new service-at-cost franchise under which the electric railway and light properties will hereafter be operated. He will serve for one year and is subject to removal at any time by the Mayor or the Board of Commissioners. Mr. Baker was born in Knowlesville, N. Y., in 1854. He was graduated from the high school at Geneva, N. Y., and at the close of his school career became connected with one of the predecessors of the Toledo Railways & Light Company at Toledo, Ohio. He served with that company in various capacities, including that of cashier, for seven years. Since 1883 he has resided in Dallas, where he has engaged in the buying and selling of farm lands and city property.

S. B. Ireland, vice-president and general manager of the City Light & Traction Company, Sedalia, Mo., has been appointed manager of the Montgomery Light & Water Power Company, Montgomery, Ala., to succeed Harry D. Frueauff, who has been transferred to the oil department of the Doherty organization. Both companies are operated by H. L. Doherty & Company, New York, with which Mr. Ireland has been connected for several years. He was formerly stationed at Fremont, Neb. In May, 1914, he was appointed manager of the Bartlesville (Okla.) Inter-Urban Railway, and later was elected vice-president and general manager to succeed L. G. Coleman. Mr. Ireland became connected with the City Light & Traction Company of Sedalia in September, 1916, to succeed Mr. Frueauff, whom he succeeds now as manager of the Montgomery property.

George E. Pellissier, as noted in these columns recently, has been appointed assistant general manager of the Holyoke (Mass.) Street Railway. During the last four



G. E. PELLISSIER

years Mr. Pellissier has acted as consulting engineer for that company in charge of the design and reconstruction of its power houses, carhouses and other buildings. He was first employed by the Holyoke Street Railway in 1897 and served in its repair shop and the transportation department. Three years later he entered Worcester Polytechnic Institute, from which he was graduated with the degree of Bachelor of Science in Civil Engineering. He then returned to the Holyoke Street Railway as engineer of maintenance of way and structures. From 1906 until 1912 he was engineer and superintendent for the Goldschmidt Thermit Company, New York, N. Y., engaged in developing the Thermit process particularly as applied to electric railways. In connection with this work he made inspections of electric railways in nearly all the large cities of the United States and Europe. For the last five years Mr. Pellissier has engaged in private consulting engineering practice in Springfield, Mass. During this time his work on the design and construction of power houses, carhouses and industrial buildings, bridges, etc., for electric railways and municipalities has aggregated approximately \$2,000,000 in value. Mr. Pellissier is a member of the American Society of Civil Engineers and the American Society of Mechanical Engineers.

Obituary

Behrend Joost, one of the promoters of the first electric railway in San Francisco, died suddenly at his home in that city recently. Mr. Joost was a member of the De Lesseps engineering firm which made the original attempt to build the Panama Canal.

Dr. James S. Gilbert, formerly Mayor of Bordentown, N. J., and the first superintendent of the old Camden & Trenton Railway, died in a Trenton hospital on Oct. 11, after a long illness. He was superintendent of the Camden & Trenton line for many years and gave up the position when the road was purchased by the Public Service Railway, Newark.

E. F. Roeber, Ph.D., editor of *Metallurgical & Chemical Engineering*, one of the papers of the McGraw-Hill Publishing Company, Inc., died on Oct. 17 after an illness of about six months. He was born in Germany in 1867 and came to this country in 1894. For some time he was associated with Dr. Carl Hering of Philadelphia, in electrical engineering work, but became editor of *Electrochemical Industry*, later known as *Metallurgical & Chemical Engineering*, on its foundation in 1892. He was a member of the American Institute of Mining Engineers, American Institute of Electrical Engineers, American Chemical Society and American Electrochemical Society, and was president of the latter organization in 1913-1914.

Construction News

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

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

FRANCHISES

Glendora, Cal.—The Pacific Electric Railway has received a fifty-year franchise from the City Council of Glendora for the construction of a line on Banana Avenue. This was the last act necessary to complete the securing of rights-of-way for connecting the Azusa-Glendora line with the Pomona and San Bernardino line. The connection will be made at Lone Hill. Officials of the company state that construction work will be begun at once and the line opened for traffic by the first of the year.

Washington, D. C.—The Capital Traction Company has received an extension of time until Jan. 1 on its franchise to construct an extension on Seventeenth and Nineteenth Streets, south of Pennsylvania Avenue.

Savannah, Ga.—The Savannah Electric Company has asked the City Council for a franchise to construct an extension on Abercorn Street between Fiftieth and Fifty-fourth Streets and on Fifty-fourth Street between Abercorn and Barnard Streets.

Cedar Rapids, Iowa.—The Iowa Railway & Light Company has received a twenty-five year franchise from the Board of State Railroad Commissioners to construct and operate electric transmission lines on certain roads and highways in Muscatine County.

Muskegon, Mich.—The Muskegon Light & Traction Company has filed its acceptance with the city of the proposed thirty-year franchise recently adopted by the City Council and which will be voted on at the spring election.

New York, N. Y.—James D. Quackenbush, counsel for the New York Railways, has notified the Board of Estimate that the company will not accept the contract as drawn up by the city for the franchise to operate a line through West Eighty-sixth Street from Central Park West to Broadway.

Nashville, Tenn.—The Board of City Commissioners of Nashville rejected the franchise granting to the Nashville Railway & Light Company rights-of-way on a number of streets of the city on condition that the company at its expense extend and pave Deaderick Street from Fifth Avenue to Capitol Boulevard and accord to the Board of Commissioners the privilege of supervising the routing of its cars.

TRACK AND ROADWAY

Montgomery Light & Traction Company, Montgomery, Ala.—Work will be begun at once by the Montgomery Light & Traction Company on the construction of its proposed extension to Camp Sheridan. The double-tracking of its line to Pickett Springs will also be begun at once.

Connecticut Company, New Haven, Conn.—The Public Utilities Commission of Connecticut recently approved three petitions of the Connecticut Company with regard to the building of trolley tracks. The first was a petition for approval of the proposed method of reconstructing the single track on Main street, South Farms, in Middletown. The second was with regard to the construction of a split switch cross-over on the New Haven-Derby line in the town of Orange. The third concerned the construction of a spur track across Watertown Avenue to the property of the Oakville Company in Waterbury.

Savannah (Ga.) Electric Company.—At a recent meeting of committees representing the five trade bodies and the city to consider the construction of an electric railway to Port Wentworth, a general committee was appointed to offer its services to the Savannah Electric Company in connection with its plans for the extension of its car service to the new industrial center.

Des Moines (Iowa) City Railway.—The North American Construction Company has received a contract from the Des Moines City Railway for the completion of the Fort Des Moines and Sevastopol lines from the south end of the Seventh Street viaduct to the south end of the bridge and for the connections with the two lines there.

Joplin & Pittsburg Railway, Pittsburg, Kan.—A preliminary survey has been completed by the Joplin & Pittsburg Railway for a 2-mile line from Waco into the rapidly developing mineral field between Waco and Lawton.

***Sharptown, Md.**—Plans are under consideration for the construction of a line from Sharptown to either Delmar or Salisbury, 11 and 15 miles respectively. The Board of Trade, Sharptown, may give information.

Boston (Mass.) Elevated Railway.—Work will be begun at once by the Boston Elevated Railway on the extension of its tracks at Neponset to the site of the proposed \$200,000 bridge which is to be constructed from Commercial Point, Neponset, to Squantum, where the federal government is to erect a huge destroyer plant.

Detroit, Pontiac & Owosso Railway, Owosso, Mich.—According to an announcement made by officials of the Detroit, Pontiac & Owosso Railway, operation will be begun on its line between Detroit and Owosso, via Pontiac, next summer. The new line will operate over the tracks of the Detroit United Railway from the interurban waiting room in Detroit to Huron Street, Pontiac. From there the line will branch off on a private right-of-way, extending 52 miles to Owosso and passing through Fenton, Holly, Linden, Durand and other towns. [June 24, '16.]

Kansas City (Mo) Railways.—Work has been begun by the Kansas City Railways on the construction of tracks across the Union station plaza. Double tracks will be laid in front of the station, connecting on the east with those on Main Street and turning north over the Broadway viaduct. Immediately in front of the main entrance of the Union station a loading and unloading station will be erected with covered passageways leading to the station. The company estimates the cost at about \$100,000.

St. Louis, Mo.—Public Utilities Director Hooke recently submitted to the Board of Public Service proposals for the construction of a downtown interurban loop to connect with the free bridge at St. Louis. The companies asking for the privilege of crossing the bridge and using the loop are the St. Louis & East St. Louis Interurban Railway and the St. Louis & Illinois Railway. Director Hooke proposes that the loop extend from the west approach of the bridge north to Seventh and Walnut Streets, east to Sixth Street, north to Chestnut Street, west to Seventh Street and back to the bridge. The cost of constructing this loop, he estimates, would be \$150,000.

Butte, (Mont.) Electric Railway.—A petition has been presented to J. R. Wharton, manager of the Butte Electric Railway, by merchants of that city for the double-tracking of Main Street from Park Street to Quartz Street. The petition has been referred to the City Council of Butte. Mr. Wharton states that his company stands ready to perform this work if the public demands it, but that orders for material will have to be placed at once if work is to be begun in the spring.

Brooklyn (N. Y.) Rapid Transit Company.—Agreements have been reached between officials of Queens, representatives of large Long Island City manufacturing interests and officials of the Brooklyn Rapid Transit Company regarding the proposed extension of the company's lines into Long Island City. The proposed line would begin at Second Avenue and Fifty-ninth Street, Manhattan, cross the Queensboro Bridge, pass through the Dutch Kills industrial basin and by way of the Greenpoint Avenue bridge reach Manhattan Avenue, Brooklyn, extending to Bedford Avenue and thence to the Brooklyn plaza of the Williamsburg Bridge. This route would give a crosstown line between Long Island City and Manhattan and a direct route to uptown Manhattan and Brooklyn's eastern district.

Cincinnati (Ohio) Traction Company.—Street Railway Commissioner Culkins recently submitted eight proposed extensions to the Cincinnati Traction Company with the request that they investigate and inform him of the cost.

Those on the list were the extension of the Sedamsville line to Fernbank, Crosstown line to Mount Washington, the Madisonville loop, Auburn Avenue to Ehrman Avenue, North Fairmount line to Colerain Avenue, McMicken and Main line over the Hopple Street viaduct, John Street line to Seton and Warsaw and the Warsaw Avenue line to the Harvest Home grounds.

Tulsa (Okla.) Street Railway.—The Tulsa Street Railway has double-tracked practically the whole of East Third Street from the corner of Main and Third Streets to Yorktown Avenue and will complete the line to Lewis Avenue. The company will also double-track Madison Street from Third to Fostoria Street and Fostoria Street to Quincy Street. It is also intended to extend the double-tracking on West Third Street from Elwood to Guthrie Streets and West Fifth Street from the end of the double-track at Boulder Street as far as the carhouse. The entire Main Street line will also be double-tracked.

Dallas Northwestern Traction Company, Dallas, Tex.—It is reported that construction will be begun by the Dallas Northwestern Traction Company within the next few weeks on its proposed line from Dallas to Slidell. A trust deed from the Dallas Northwestern Traction Company to the Metropolitan Trust Company of New York, trustee, to secure the payment of \$2,250,000 first mortgage 6 per cent bonds of the company, authorized at a meeting held July 9, 1917, was filed in the County Clerk's office on Oct. 2. A similar deed of trust from the Dallas Southwestern Traction Company to the Metropolitan Trust Company of New York, trustee, authorizing the issuance of bonds in the same amount, was also filed. Provisions in the trust deeds are made for the immediate certification of \$50,000 of the bonds of each company and for the certification of others as engineers shall report that the companies have expended the amounts called for for the purchase of rights of way, depots, power houses, equipment or work done. Both deeds of trust were executed Sept. 21. References to the bond issues are made on page 738 of this issue. E. P. Turner, president. [Aug. 25, 1917.]

Dallas Southwestern Traction Company, Dallas, Tex.—Actual construction work has been begun on the interurban line of the Dallas Southwestern Traction Company from Dallas to Irving, via West Dallas, Cement City and Eagle Ford. The line is being built by the Creek Construction Company. The plans of the company call for the Dallas-Irving line, 10 miles long, to be completed within eight months. Later a line will be built from Eagle Ford through Grand Prairie, Mansfield, Cleburne, Glen Rose and eventually to Stephenville, thus giving the company a line 80 miles long. Sealed bids will be received by the Creek Construction Company, 303 Gaston Building, in care of F. R. Perkins, until Nov. 6, for the construction of a steel bridge over Trinity River and concrete approaches at Dallas. Plans and specifications can be obtained by depositing a certified check for \$25 for the return of same. Each bid must be accompanied by a certified check for \$500. E. P. Turner, president. [Oct. 13, 1917.]

Seattle (Wash.) Municipal Railway.—The Board of Public Works has cancelled the contract awarded to R. H. Travers for an extension of the Seattle Municipal Railway into Ballard at \$19,554. This action was taken when it became apparent that for some time at least there would be no money available, in view of the opinions of the legal department that money cannot be taken from the light or general funds for such a purpose. Mr. Travers asked to be relieved of the contract, the board agreeing to reimburse him to the extent of his expenditures to date, the total not to exceed \$350.

Tacoma (Wash.) Municipal Railway.—At a special session held recently the City Council passed a resolution offering to enter into a contract with the Tacoma Railway & Power Company to operate the city's car line on the tideflats. The proposition, if accepted, provides that the Tacoma Railway & Power Company would operate the city line at cost for two years. The city would receive 2 cents on each transfer, while the company would receive the remaining 3 cents. As noted elsewhere in this issue a fare of 5 cents would be charged for all points within the city limits while a fare of 6 cents would be charged for any point outside the city limits.

SHOPS AND BUILDINGS

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—This company will remove its offices to No. 5 Public Square, which will be remodeled into an office building.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, William S. Twining, director, until 12 o'clock noon, on Oct. 30, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 525.—Steel frame work and railings, concrete floors and parapets, side inclosures, roofs, drain gutters and spouts for four station platforms and connecting passages or foot bridges between station platforms and station buildings at Orthodox-Margaret Streets and Ruan-Church Streets. Contract No. 533.—Erection of brick and reinforced concrete station buildings at 4604 Frankford Avenue and at 4679-4681 Frankford Avenue, including the removal of existing buildings on these sites. Contract No. 534.—Erection of brick and reinforced concrete station buildings at 4270-4272 Frankford Avenue and at 4269-4271 Frankford Avenue, including the removal of existing buildings on these sites. Copies of plans and specifications may be obtained upon deposit of \$10, to be refunded upon return of plans.

Pennsylvania Railroad, Philadelphia, Pa.—Plans have been completed by the Pennsylvania Railroad for the construction of a new one-story addition, about 25 ft. x 50 ft., to its West Philadelphia shops, to cost about \$7,000.

POWER HOUSES AND SUBSTATIONS

Northwestern Elevated Railroad, Chicago, Ill.—The construction of a new substation at the terminal of the Northwestern Elevated Railroad at Linden Avenue, Wilmette, is contemplated by the Public Service Company of Northern Illinois, to furnish power to the railway.

Illinois Traction System, Peoria, Ill.—A sixteen-lever Saxby & Farmer mechanical interlocking plant will be installed by the Illinois Traction System at the crossing of its line with the Chicago & Illinois Midland Railroad. The Federal Signal Company, Albany, N. Y., will furnish the plant.

Manchester Traction, Light & Power Company, Manchester, N. H.—A contract has been awarded by the Manchester Traction, Light & Power Company to Whitcomb & Kavanaugh, Boston, Mass., for the construction of a new power station.

New York Municipal Railway, Brooklyn, N. Y.—Plans have been prepared by the New York Municipal Railway for the erection of new signal towers, circuit-breaker houses, etc., at its Coney Island terminal.

Ohio Electric Railway, Springfield, Ohio.—An automatic substation is being installed by the Ohio Electric Railway at Columbus Grove, on the Toledo division. The substation will contain one 500-kw. rotary converter.

Northwestern Ohio Railway & Power Company, Toledo, Ohio.—This company plans to install a 5000-kw. turbo-generator in its power house at Port Clinton.

Virginia Railway & Power Company, Norfolk, Va.—A contract has been awarded by the Virginia Railway & Power Company to J. H. Pierce, Norfolk, for the construction of a new one-story substation, about 20 ft. x 25 ft.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—A report from the Puget Sound Traction, Light & Power Company states that it has placed orders for and is preparing to install a 16,000-kva. generator at its White River hydroelectric station; a 10,000-kw. steam turbine set at its Georgetown steam station, together with coal and ash-handling apparatus; a 600-hp. boiler at its Western Avenue steam-heating plant, together with apparatus for burning powdered fuel under a battery of five boilers at this plant.

Monongahela Valley Traction Company, Fairmont, W. Va.—A new 50,000-kw. power plant is now being built by the Monongahela Valley Traction Company at Fairmont.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—A contract has been awarded to the Wisconsin Traction, Light, Heat & Power Company for the installation of street lights at Neenah.

Manufactures and Markets

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

Railway Buying Active in the South

High Prices No Bar to Purchasers as Traffic Under Military Influx Increases, Necessitating Additional Equipment

The natural increase in population and the location of cantonments in the Southeastern states have put the various electric railways in that section of the country under great pressure during the past few months in order to provide additional service for the normal traffic and the abnormal temporary influx of the military. The Columbia Railway & Gas Company, Columbia, S. C., has purchased one 500-kw. rotary and ten double truck cars; the South Carolina Light, Power & Railway Company, six double truck cars; the Augusta-Aiken Railway Company, five single and five double truck cars; the North Carolina Public Service Company, fifteen single truck cars; the Columbus Railroad Company, eight single truck cars; the Tampa Electric Company, fifteen single truck cars; the Vicksburg Light & Traction Company, three single truck cars; the Georgia Railway & Power Company, ten double truck equipments, the cars to be built in the shops, and two 500-kw. rotaries; the Charleston Consolidated Railway & Light Company, one 500-kw. rotary. Some of the above mentioned equipment is being installed now, and the balance will be delivered shortly.

The Savannah Electric Company is contemplating the extension of its lines a distance of 10 miles to Fort Wentworth. The government is now widening the channel to accommodate the shipbuilding yards being erected at this point.

On the whole, the above reference to a few electric railway companies indicates considerable activity in this field, even though the price of most all materials has advanced rapidly. Extensions, maintenance and relays have called for a considerable steel tonnage, and with some of the companies price had to be treated as a secondary consideration, as the delivery of steel was of first importance. Cantonment extensions called for practically immediate delivery of the equipment necessary to handle the traffic, and in these instances the second-hand dealers found a ready market for a large quantity of equipment.

While the demand for new motors has fallen off slightly in the past two weeks, good second-hand equipment is being disposed of without much difficulty.

Manufacturers say that the gear and pinion market is very dull, and that consumers are buying from hand to mouth. The market for car wheels is somewhat uncertain, but the general average shows up fairly well. This line has secured abnormal support from the various car repairing and equipment companies putting second-hand cars on the market. The demand has been good for cross-ties, spikes and miscellaneous track equipment, with a decided slowing up in deliveries of steel products. Difficulty is also experienced in securing prompt delivery on ties. Overhead material has had an active period, and deliveries are about as good as can be expected under the existing raw material situation.

Insulators continue to be in demand, and a slight improvement in deliveries is noted. This may be only temporary, however. As a rule, buyers of large quantities of steel and copper do not seem to be hesitating on account of the recent price fixed for these products, as they realize it may be some time before anything definite will be known or before any prices settle materially, if at all. They feel that under the circumstances it is much better to secure the necessary material on the present basis than wait and possibly be seriously inconvenienced later when the need may be more acute.

Coal Situation Acute in Middle West

Strike of 12,000 Illinois Miners, Oct. 16, Cuts Off 75,000 Tons a Day from Normal Supply—More Evidence of Open-Market Purchasing

The unauthorized strike of 12,000 miners in the Illinois coal field is seriously aggravating the already acute coal situation in the Middle West states. This strike was effected on Oct. 16, the beginning of the second pay-day period for October, for the reason that the miners insisted that the advance in pay of 10 cents a ton for digging coal, \$5 a day for day work and 15 cents advance for yardage and dead work, should begin that day. It is reported that this strike will spread through the states of Missouri, Arkansas, Oklahoma and Kansas by Oct. 19, in protest against the penalty clause inserted in recent agreements, which would automatically fix fines for unauthorized strikes. National Coal Administrator Garfield is making strenuous effort to bring about an immediate settlement, and by the time this item is published some agreement may have been effected which will put the miners back to work.

However, this strike is only an added pressure to an already acute coal situation throughout the Middle West states. One prominent electric railway company in Ohio at the present time has no contracts for coal, and is forced to make all purchases on the open market, which it reports to be tighter than last year. The principal difficulty there seems to be shortage of motive power, and also lack of sufficient labor at the mines. The effect of the President's recent price fixing for coal in this location is interpreted to be a lessening of the amount of coal offered on the market. All the larger operators are booked for Lake shipments, which, presumably, is in accord with Mr. Garfield's priority shipment order for the Upper Lake region.

Evidence that this is the case is also had by a report from one of the electric railways in this district, which states that it is not having any serious difficulty in securing coal on contract. Contractors seem to be having more difficulty than formerly in maintaining their stock on hand, but otherwise the situation has not changed since last year.

A large electric railway in Indiana reports the coal market there to be easier than last year at this time, and that its needs are being supplied on contract. The effect of the President's order at this location is said to be only the freeing of coal at a lower price, but the shortage of supply is still the determining factor.

A large Illinois interurban railway reports that the mine is unable to fill its contract, due principally to labor and equipment trouble, and the company is at present buying about one-third of its supply in the open market. It finds it almost impossible to secure a good grade of coal, though there is plenty of poor coal to be had. This company states that it has noticed a particular shortage of good coal since the President fixed the prices, and also that the market in this district is now much tighter than last year at this time.

A report from a Missouri electric railway company of considerable prominence states that the coal situation is growing steadily worse, even without considering the possibility of a strike in Missouri, Kansas, Oklahoma or Arkansas or that already obtaining in Illinois. This company is not able to procure the full amount of coal called for on its contract on account of the labor and car shortage, and it also states that it is difficult to obtain sufficient coal in the open market to meet its requirements above the contract deliveries. This company expresses the belief that coal would certainly be more easily obtained if particular attention were given to the car supply rather than the coal supply, since the coal would be made available if the railroads were compelled to place open cars at the mine. The situation is now more

critical than at any time during the past year. It was also believed to be very important that the American Electric Railway Association should take advance steps to prevent the government or state officials from diverting any coal consigned to city utilities to the use of other consumers. This has been threatened in several instances, and if any state administrator should take such steps it would cause serious trouble.

One Iowa electric railway company reports that it is receiving all the coal it is entitled to on its contracts dated in 1916, and also on other contracts dated in 1917. However, not sufficient coal was contracted for in 1917 to meet the full requirements, and the company is buying in the open market at the prices proclaimed by the President. It states that some difficulty is had in getting operators to quote on this additional tonnage, and it is found that the market is materially more tight than it was at this time a year ago. The sharp advance in 1916 did not come until several weeks later in the season.

Good Local Market for Old Rail and Wire

General Scarcity Brings Demand from Contractors and Industrials for Rail and Copper Platers for Copper

Considerable demand for old rail, without much regard to weight or section, and for old copper wire and bar copper is being felt by the electric railway companies in their own cities and along the lines of their own properties. The general scarcity of rail has frequently brought customers from among the local industrial men to the railway companies to purchase sufficient rail for industry side tracks for which they are willing to pay premium prices. Local contractors have also been calling for old rail sections as reinforcing metal for concrete, to make up for their inability to get standard reinforcing material. One railway company reports that it has been getting \$75 a ton for old rail sold locally for these purposes, and it has frequently secured additional revenue from hauling these shipments over its own lines. The customers were glad to get the steel at any price.

Old copper has also been in demand locally by copper plating companies and various manufacturing companies who were glad to get it at unusual prices. For this purpose it is necessary to cut old wire up into sections 18 in. long, but this is readily accomplished by a bull cutter, one or more of which is usually to be found in the average railway shop.

Gears and Pinions in Active Demand

Delivery Situation in Regard to Raw Materials Somewhat Easier, Although Still Far from Being Satisfactory

Freights have caused no end of uneasiness and exasperation among the manufacturers and sellers of gears and pinions. The uncertainty in the delivering of material and obtaining blanks has caused the giving of promises, made in good faith and with an idea that their ultimate execution would be a matter of course, in the main untrustworthy. However, deliveries are improving, according to some distributors, and not so much anxiety is displayed on this score, although the betterment is none too satisfactory. Others declare that on the matter of freights it is impossible to accept any contracts with any definiteness of a delivery date.

The demand is active, and there is not the slightest indication of a decline in trade or lack of orders. Where some manufacturers are obligated to pay a premium on metals and even on freights to guarantee shipments, others declare there is a slight tendency toward lower prices. There is also a marked preference for a better grade of material. The blank situation is trying, and stock of this description, as stated, is difficult to obtain. The cutting of the blanks is "extremely strenuous," as a leading manufacturer phrased it, somewhere in the ratio of sixty in the receipt

of blanks against forty in material. Deliveries on finished goods is about thirty days, which is much better than for some time past. Prices on gears and pinions reflect that of the basic metals, and instances are reported where the price was, within reason, a negligible quantity so long as the goods could be figured on a certainty of delivery.

Labor at the plants is creating obstacles, as in other branches of the industry. The demand for skilled workmen far exceeds the supply. This phase, producers report, is improving; however, it is not so intensive or pressing.

Taylor-Wharton Company Celebrates 175th Anniversary

Large New Plant at Easton, Pa., Engaged in Manufacture of Frogs, Switches, Curves and Track Layout, of Particular Interest

Several thousand employees and guests of the Taylor-Wharton Iron & Steel Company assembled at High Bridge, N. J., on Oct. 13, to celebrate the 175th anniversary of the iron and steel business founded by Robert Taylor. The program comprised an inspection of the High Bridge plant, addresses by officials of the company, a wonderful historical pageant, a clam bake, and sports and entertainment of several kinds. Large numbers of employees came from the other plants of the company, and the town was elaborately decorated in honor of the event.

To the electric railway track specialist the most interesting plant of the company is the one located at Easton, Pa., where the company owns 100 acres of land, utilizes about 40 acres for manufacturing purposes and has under roof a floor space of nearly 10 acres. The plant comprises a main building for track work, 420 ft. x 420 ft., a foundry 115 ft. x 415 ft., a pattern shop 120 ft. x 200 ft., a pattern storage 40 ft. x 110 ft., a forge shop and finishing shop having combined dimensions of 110 ft. x 420 ft., a large office building, a garage, a power plant, and sundry smaller buildings. A prominent feature of the yard layout is the assembly yard at the west end of the plant which is surrounded by a stretch of track of 175-ft. radius within which special track work layouts, switches, frogs, etc., are assembled and loaded for shipment. In all about 11,000 ft. of trackage is provided in the yard installation.

NEW YORK METAL MARKET PRICES

	Oct. 10	Oct. 17
Prime Lake, cents per lb.....	23 1/2	23 1/2
Electrolytic, cents per lb.....	23 1/2	23 1/2
Copper wire base, cents per lb.....	35	35
Lead, cents per lb.....	7.60	7.00
Nickel, cents per lb.....	50	50
Spelter, cents per lb.....	8 1/4	8 1/4
Tin, Straits, cents per lb.....	61	61
Aluminum, 98 to 99 per cent, cents per lb.....	42	..

OLD METAL PRICES—NEW YORK

	Oct. 10	Oct. 17
Heavy copper, cents per lb.....	23 1/2	23 1/2
Light copper, cents per lb.....	20 1/2	23 1/4
Red brass, cents per lb.....	19	19
Yellow brass, cents per lb.....	16 1/4	16 1/4
Lead, heavy, cents per lb.....	7	7
Zinc, cents per lb.....	6	6
Steel car axles, Chicago, per net ton.....	\$41.00	\$41.00
Old car wheels, Chicago, per gross ton.....	\$28.00	\$27.00
Steel rails (scrap), Chicago, per gross ton.....	\$35.00	\$34.00
Steel rails (relaying), Chicago, per gross ton.....	\$55.00	\$55.00
Machine shop turnings, Chicago, per net ton.....	\$15.00	\$15.50

RAILWAY MATERIALS

	Oct. 10	Oct. 17
Rubber-covered wire base, New York, cents per lb.	35	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..	\$7.00	\$5.50
Steel bars, Pittsburgh, per 100 lb.....	\$4.50	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$8.85	\$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
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.	\$1.18	\$1.17
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.19	\$1.19
White lead (100 lb. keg), New York, cents per gal.	12	12
Turpentine (bbl. lots), New York, cents per gal..	50	51

ROLLING STOCK

Yazoo City (Miss.) Municipal Railway is reported as contemplating the purchase of four cars.

Salt Lake, Garfield & Western Railroad, a steam line undergoing electrification, has placed an order with the McGuire-Cummings Company for six passenger cars. These cars will be all steel and 56 ft. long and will be equipped with four 110-hp. GE-240 motors per car. The orders for the air brake and other equipment on the cars and for the automatic substation equipment to be installed in two new substations on the line were also placed with the General Electric Company.

TRADE NOTES

Ward Leonard Electric Company, Mount Vernon, N. Y., announces that it is now represented in Detroit, Mich., by the Electrical Specialties Company, 69 State Street.

Railway Improvement Company, New York, N. Y., announces that A. L. Whipple, hitherto sales manager, has been made vice-president; and W. O. Wade, formerly chief engineer, sales manager.

W. H. Bramman has recently become connected with the Walter A. Zelmicker Supply Company, St. Louis, Mo., as assistant to the president. Mr. Bramman was formerly with the American Carbon & Battery Company.

Lund & Weiss Company, East Orange, N. J., has been incorporated by Edward P. Lund, Arthur J. Weiss and Frank Tunstead of East Orange, N. J. The company is capitalized at \$10,000, and it is its intention to engage in the manufacture of motors.

Henry M. Sperry, 120 Broadway, New York City, will hereafter handle the publicity work of the Union Switch & Signal Company, General Railway Signal Company, Federal Signal Company and Hall Switch & Signal Company as publicity representative of these companies.

Ford, Bacon & Davis, New York, N. Y., announce that they are prepared to devote special attention to the appraisal of industrial property for the purpose of war tax returns, as called for by the war profits tax section of the new revenue law recently enacted by Congress.

Westinghouse Traction Brake Company, Wilmerding, Pa., is supplying 100 partial equipments to the Connecticut Railroad, which are in the process of delivery. The second shipment of twenty-five went forward last week, the remainder being delivered monthly in like number.

Consolidated Car Fender Company, Providence, R. I., through the Wendell & McDuffie Company, general sales agents, has received an order to install H. B. life guards and Providence fenders on the ten cars ordered by the Honolulu (H. T.) Rapid Transit & Land Company, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 13, page 700.

Hale & Kilburn Company, New York, N. Y., has plans under consideration for a readjustment of its capitalization, to obtain additional capital. One meeting of the stockholders has been held, and further conferences will consider the proposals that have been advanced, which so far are in a tentative form. High cost of materials and other causes have prompted the proposed readjustment.

Frank P. Archibald, for the last five years Eastern manager of the National Lock Washer Company, Newark, N. J., has been elected vice-president of the company. J. Howard Horn, eastern representative for seven years, is appointed sales manager. On or about Dec. 1 offices of the National company will be opened in Philadelphia, Pa., and St. Louis, Mo. These are in addition to offices in Chicago, Ill., and Detroit, Mich.

Indiana Rubber & Insulated Wire Company, Jonesboro, Ind., on Oct. 10 presented all employees who have been in their service for one year or more a life insurance policy, through the Metropolitan Life Insurance Company, New York. The amount of the policy is in accordance with the years of service, but will be increased yearly, as each employee's connection with the company grows older. All employees have the privilege of naming the beneficiary. The total amount of protection will amount to approximately

\$250,000, the expense of which will be borne by the Indiana company.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has given another increase in wages for shop employees aggregating nearly \$2,000,000 a year, effective on Oct. 16. All employees observing shop hours, excepting munition workers, will receive an additional bonus of 10 per cent if they are on a salary or time rate basis; and of 7 per cent if on a piece, premium or task basis. The 20,000 shop employees of the Westinghouse Company have had increases granted since the outbreak of the European war amounting to about 60 per cent of the former average compensation.

Vulcan Steel Products Company, New York, N. Y., has opened an office in Havana, Cuba, under the management of G. O. Simpson. In connection with this office, there will be maintained a permanent exhibition of machinery, and steel and iron products of the company. The Vulcan company's agencies are now established in the principal trade centers of the world including branch offices at Paris, France; Hongkong and Shanghai, China; Yokohama, Japan; Milan, Italy; Barcelona, Spain; Melbourne and Sydney, Australia; San Juan, Porto Rico, and Singapore, Straits Settlements.

Standard Asphalt & Refining Company, Chicago, Ill., has purchased the plants, trade marks and good-will of the Sarco Petroleum Products Company. The Cities Service Company, New York City, is the new interest back of this company; although the management remains essentially the same as before the change. Charles Muller, who was an executive of the former company, now becomes manager. He has been associated with the old company for ten years, and has risen through the ranks to his present position and is well known in the business and financial circles of Chicago. Robert F. Trumbull has been promoted to manager of the railway and building materials department. He has been in the service of the old company for eight years in this department, and is therefore intimately acquainted with its requirements for asphalt materials.

NEW ADVERTISING LITERATURE

Burt Manufacturing Company, Akron, Ohio: Illustrated catalog on "Oil Filters, Exhaust Heads and Ventilators," describes saving waste in lubricating oil, the cost of lubrication in general and matters of similar nature.

Prest-O-Lite Company, Indianapolis, Ind.: Illustrated booklet on "Turning Waste Into Profit," is devoted to the possibilities of reclaiming broken and worn machinery and metal parts for service by the oxy-acetylene process.

Moller & Schumann Company, Brooklyn, N. Y.: Bulletin No. 2 treats specially of the company's Hilo colored lacquers or transparent color varnishes, air drying and baking, for use on manufactures of tin, polished nickel, aluminum, zinc, etc. Samples of six standard shades in color on metal stripe are embodied in the bulletin.

Automatic Sprinkler Company of America, New York, N. Y.: "The Pursuit of Safety" is the title of a new bulletin now being distributed which gives photographs of fires where the sprinkler system was installed, besides illustrations showing modern structures and rebuilt structures equipped with fire extinguishers.

Ohio Wood Preserving Company, Pittsburgh, Pa.: A new booklet, "The New and More Economical Creosoted Wood Block Pavement," has been distributed by this company. It describes and illustrates the new creosoted block construction, which consists of pinning and sealing each block to the concrete base, instead of merely sealing the joints, as formerly.

Magnesia Association of America, Philadelphia, Pa.: A new booklet, "Let 85 Per Cent Magnesia Defend Your Steam," is a study of the cause and prevention of heat losses in the transmission of steam for power or heating purposes, with adequate illustrations. It is a good deal more than the ordinary trade booklet, being a carefully written treatise on the subject. The manufacture and application of the coverings are described in a very practical manner.