

# Electric Railway Journal

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## Give the Motorman Every Possible Chance

**A**T FIRST SIGHT there may seem to be a lot of "frills" in the control system which has been provided for the new six-motor, two-car trains of the Montreal Tramways. Details of the control system are given in an article by Keith MacLeod, printed elsewhere in this issue of the JOURNAL. If, however, this or any other arrangement serves to give the motorman more perfect control of his car a slight complication of wiring should not be permitted to stand in the way of its adoption. The multiple-unit control system is a wonderful success in heavy train service; it will work just as well with light, short trains if the equipment is properly installed and maintained.

It being granted, for purpose of argument, that an operator can have practically anything he wants from the manufacturers in the way of control, provided he is willing to pay a reasonable price for it, it follows that he ought to have one perfectly suited to his needs.

We are all preaching to the platform man at either end of the car the doctrine of high schedule speed, the highest speed consistent with safety. The essential for this purpose, after ample but not excessive motor power has been provided, is perfect control. If an analogy is wanted, we might compare the motors to the brute force and muscles of the car, while the control, with the motorman's brain behind it, is its nervous system.

As in the animal perfect co-ordination of brawn and brain is essential to productiveness and safety, so it is in the car. Formerly when the main circuit was taken through the controller any increase in power capacity of the car or train meant that more platform space must be given up to control purposes. With master control no such limitation exists, and any degree in refinement of control becomes possible. Hence, when we provide the best available control we give the motorman an opportunity to get the highest possible output from his car.

## Federal Commission to Investigate Labor Question

**T**HE threatened electric railway strike in Boston and others which have occurred during the past six months in other cities, emphasize the importance of the new federal National Industrial Commission which begins in Washington this week a study of "how to prevent strikes and assure a maximum production during the war of materials necessary to maintain the American armies in France." Presumably, the board will make an especial study of labor conditions on public utilities, because an interruption of railway or power service in an industrial community might easily cause more delay to munitions manufacture than a strike in a single munitions factory itself.

We are glad a national committee has been appointed to undertake this study, because the labor problem is undoubtedly a serious one on many electric railway properties. A large number of these companies, although their own finances have hardly warranted additional expenditure, have raised the wages of their men because of the increased cost of living. Nevertheless, it has been difficult in all cases to hold a full quota of men. This has been partly because there are many munition plants which can and do pay

more wages than can a public utility. It is also partly due to the fact that this is a time when jobs are seeking men rather than men jobs.

We hope that the new federal board will blaze a new path in labor investigation and will determine some logical and permanent basis for wages paid by a public utility, so that necessary increases will be reflected in increased rates granted to the utility. The reason for such an arrangement exists in the public interest in continuous service. The public, in fact, is a third party to every public utility labor agreement, and has a right to demand from labor, as well as from capital, the maintenance of efficient, satisfactory and safe service. Conversely, labor and capital have each a right to demand from the public an adequate return for their services.

## Utilities Must Be Maintained

**P**RESIDENT WILSON has spoken once more, with his usual incomparable breadth of vision and clear-cut understanding of fundamentals.

It is the vital importance of utilities to-day to which he has now directed his attention. He realizes their value and their needs.

Here is what President Wilson says, in a letter on Feb. 19, to the Secretary of the Treasury:

"I fully share the views you express regarding the importance of the public service utilities as a part of our national equipment, especially in war time. It is essential that these utilities should be maintained at their maximum efficiency and that everything reasonably possible should be done with that end in view. I hope that state and local authorities, where they have not already done so, will, when the facts are properly laid before them, respond promptly to the necessities of the situation."

## Public Improvements Should Be Deferred Wherever Possible

THIS is the season when the railways and municipalities are taking up their programs for the coming year's work. In ordinary times the railway would naturally consider in its program such items of public improvements in streets as new bridges and the like, which would in turn affect the railway tracks. Often railways have been forced to discard tracks and pavements which have several more years of useful life because of minor grade changes of streets to suit new types of pavements.

Managers and engineers can do a great work just now by getting in touch with civic officials and carefully considering this situation as applied to these times when every effort must be put forth to win the war. Men and materials are at a premium, and all unnecessary public improvements involving large expenditures by railways as well as municipalities must be eliminated. We have seen a number of instances during the year just past where pavements adjoining railway tracks have been completely renewed when a reasonably small expenditure for repairs would have put them in shape for at least two more years of service. The railways were compelled to co-operate in such wasteful practices to an extent which often prevented the making of improvements and repairs to tracks and pavements elsewhere far more urgently needed.

The municipal official must be shown that no business concern can now afford to make improvements or alterations requiring unwarranted use of men, materials and money which can by any possibility be avoided; that the public interests and the railway interests are one in the matter and that patriotism requires their close co-operation with one object in view, namely, Help Win the War.

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## Keeping Track of Electric Railway Information

EVERY man in a position of executive responsibility, no matter how light this responsibility may be, must be in a position to get together, on short notice if necessary, reliable data in the field of his specialty. His ability to do so will often insure success where otherwise failure would be certain, and a recognition of this fact serves to explain the great interest of heads of departments and others in schemes for filing and classifying references. Each man must work out his own filing or indexing system, or at least must adapt the plans of others to his own circumstances. Ready-made schemes, while attractive, are apt to be too general and elaborate for individual application, and, obviously, simplicity is the first requirement in any scheme if it is to become a lightener of labor rather than a continuing burden.

Among the most interesting plans which we have seen lately is that in operation in the office of Arthur Gaboury, superintendent Montreal Tramways. Mr. Gaboury has selected fifty representative electric railways for special study and has assigned a division in a filing cabinet for each. Here he files clippings, pamphlets, etc., relating to each selected road, as well as reports and comments made by officials of the tramways company based upon their own observation of the several properties. As an endeavor is made to have

officials of the company become personally familiar with as many of these properties as possible the file has far more value than it would have otherwise. A simple card index supplements the data file, permitting a rapid and comprehensive topical study of the contents of the file. The important thing about Mr. Gaboury's plan is that it is not so comprehensive as to be unwieldy and at the same time the range of conditions covered is great enough to insure completeness. There are doubtless many other plans equally as effective and this one is chosen merely for illustration of a general principle. There is danger that the extent of the information on electric railway practice may seem so vast as to be bewildering, discouraging any attempt at systematic filing. However, any scheme faithfully carried out is better than none, and some scheme seems essential.

In the ELECTRIC RAILWAY JOURNAL editorial offices it has been found convenient to bind together extra copies of the indexes, permitting a rapid searching of the files. Some years ago a twenty-year index was compiled and published in book form, and this will be found useful for the early years. It will be a revelation to anyone who has never tried the JOURNAL indexes to do so and see the wealth of material published on practically every line of electric railway progress.

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## Fare Petitions Should Be Based on Facts, Not Feelings

COMMISSIONS are not going to grant higher fares purely out of sympathy for utility managers. Regulators act according to the dictates of their brains, not their hearts. Furthermore, their brains function along the line of judgment, not imagination.

These observations seem worth while at this time lest some electric railway operator should take too much for granted in trying to secure financial relief for his company. In their private capacity, public service commissioners undoubtedly realize the general plight of the electric railway industry, but in their official capacity they can act only upon the evidence. Hence, if a utility expects to receive proper consideration, it must "prove in" its case.

Any good executive requires a subordinate to justify in detail his requisitions for material and labor, especially if they pertain to something new or radically different. Skeleton figures and personal opinions without material justification are not sufficient. The subordinate must show not only that a definite need exists, but also that other methods immediately available will not meet the need, and that the proposed method will do so, as nearly as it is possible to prophesy performance upon the basis of sound engineering and accounting practice and good common sense.

Commissions have the right to expect the same justification of applications for higher fares. Company officials should show the same carefulness, thoroughness and promptness in presenting rate cases that they require of their subordinates in handling requisitions. Each case must stand on its own merits, and complete preparation is needed to make such merits apparent. Mere guesswork, the sympathy gag, going off half-cocked—such practices are worse than useless. Only one thing counts in rate cases—facts. And the proper procedure is evident—get the facts, and then present them.

## Zone Fares Are Not a Primary Cause of Congestion

**B**EFORE entering into any discussion as to the relative money merits of a higher flat fare versus some kind of zone fare, electric railway men should determine whether there is any important connection between congestion in cities and use of zone fares.

A favorite bogey is the undoubted congestion in European cities. But is this really due to the zone fare? If it were, then the flat fare (2½ cents) of Berlin's street railways ought to result in a lower density of population than in Continental cities with the zone fare. This is not the case. Berlin is pre-eminently a city of big apartment houses. As a matter of fact, the high cost of land and the economy which it is necessary to practise in the use of building materials and fuel lead to close packing of large houses in even the smallest cities of western Europe. An American war correspondent wrote recently that in the reconstructed areas in France the farmers are more likely to live in a flat in the nearest village than to take up valuable land for a big, rambling house.

Still another cause for congestion in European cities is the historical fact that so many of them were once surrounded by walls and ditches for defense. The highly compact communities within these old limits have not broken up and spread in ratio with better transportation because comparatively little land is available, and the extent of the system of ground leasing instead of sale does not encourage a tenant to make improvements. Also, it is not uncommon for a forest reserve to hinder the natural growth of a city. From the foregoing it should be clear that the congestion of cities in western Europe, particularly, long antedates the zone fare or any other kind of fare. In short, the connection between congestion and zone fares is not particularly close.

To turn now to America, it is sometimes said that the flat or unit fare has been the prime cause that made it possible for many people to live in their own homes in the country instead of in unhealthy city tenements. Undoubtedly, this distribution of the population has been the greatest achievement of the American electric railway, but it has not been because of the flat fare, or certainly not primarily therefor. The main cause has been the existence of a good system of urban transit in a country where the restrictions of Europe on the use of land and material did not apply. The person who benefited most by these extensions of the service given for the 5-cent fare was the owner of suburban real estate. The car rider got more and better transit for the same nickel and the landlord got more income; while the railway acted as a philanthropist to both. The effect of these generous extensions on the flat-fare basis is too well known to-day to call for comment.

It is far from certain that a change to the zone fare will cause congestion. Chicago with a 5-cent fare has a higher density of population than Philadelphia with an 8-cent fare for a large proportion of riders.

People of foreign birth willingly pay an extra fare in order to live among colonies of their own people. Again, many thousands of Americans prefer a 25-mile suburban train ride and a zone fare to living in the city. Change from suburban to city life just now is due not to the question of fares, but to the shortage of domestic help.

To conclude: The topography of a city, the relative location of industrial and home sections, the cost of land, building materials and fuel, and the habits of the people are much more important factors of the amount of riding which is done than the rate of fare. In the 70's and 80's, when the combined fares by different companies in the same city for a present 5-cent ride were 10, 15, or even 20 cents, American cities had a larger proportion of homes with gardens than now. If the people in those times when the nickel was real money refused to huddle in crowds, they will not be deterred in these days of 15-cent milk from paying a zone charge of 2 to 5 cents more if they prefer life in the suburbs.

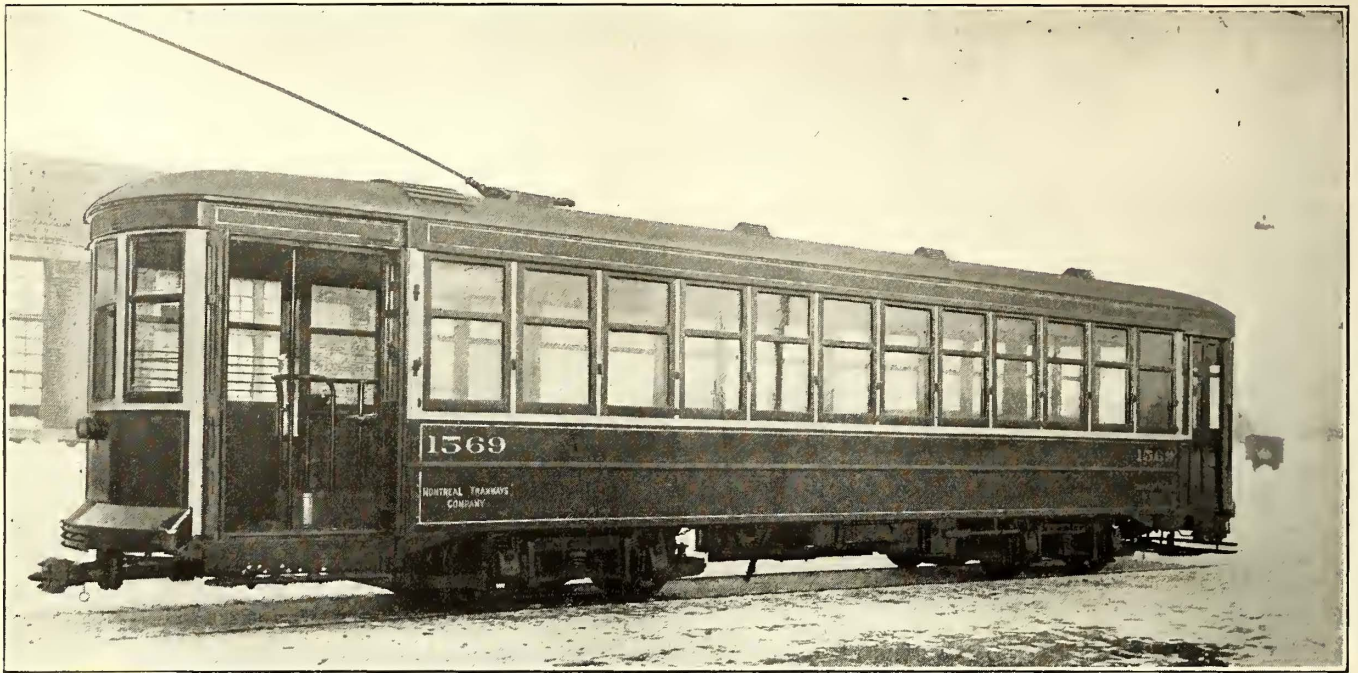
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## Planning for the Future More Important Than Ever Before

**T**HE time was when railway department heads could foretell quite accurately the requirements of their departments along both labor and material lines for several years ahead. Plans for new equipment or extensions of service could be laid with some confidence that at the proper time the equipment or whatever was needed for the execution of the plans would be available. This situation has been completely changed by the demands which the war is making on our industries and labor market. We may be able to predetermine our equipment and material needs now for six months or a year hence, but that ability does not insure our getting either the equipment or the labor wherewith to install or operate it. We may have plenty of trainmen and a sufficiency of common labor to-day, but who can say what we shall have to-morrow? We may have ample fuel to-day and for a month, but to-day's situation is no guarantee as to the situation two months hence.

Railway officials are apt to be a conservative class of men. Men tied down as they are with the burden of routine work necessary for the safe operation of railways can scarcely be otherwise. But if our transportation systems are to continue to do an uninterrupted business, conservative action must at the very least be coupled with a radical use of the imagination. By this we mean that only by attempting to foresee and by planning to meet all possible future contingencies can railway service be kept at anyways near its present standard. This planning need not involve any considerable expense; in fact, it may need go no further than tentative plans laid out in the minds of the responsible officials. The average man reacts quickly and effectively in an emergency only if he has carefully rehearsed in his imagination the emergency and his plan of action relative to it. He then tends to do the right thing automatically. Even the layman understands that trainmen, central station attendants and others who are often required to face emergencies must receive special drill and training to fit them for the work.

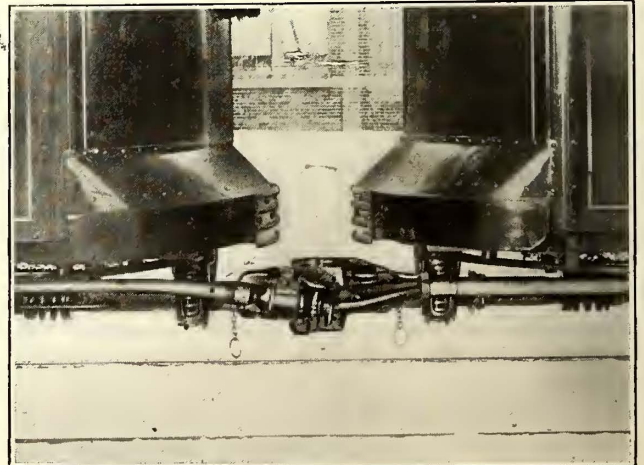
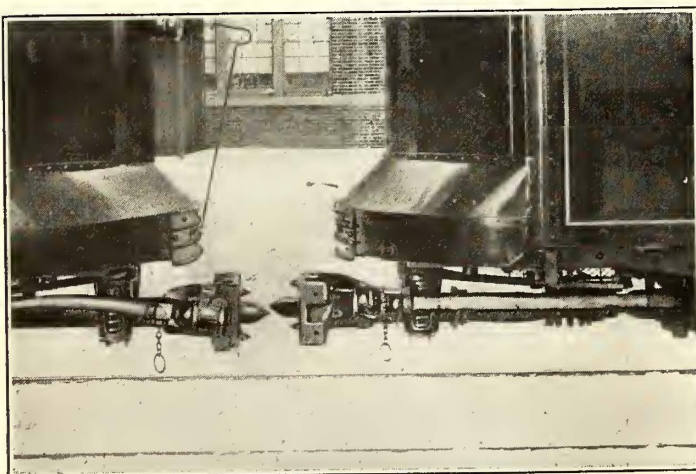
During the war our transportation systems will be compelled to face many new operating conditions and emergencies. While no doubt the higher officials of every railway in the country are striving to foresee future contingencies, we wonder if the rank and file of those holding the minor positions of authority are giving the matter the attention it should receive. They should begin to think about it if they have not already done so.



MONTREAL TRAMWAYS MOTOR CAR, SHOWING CONDUCTOR'S STATION AND TRAPS IN CONTROLLER COVER FOR CUTTING OUT MOTORS



TWO-CAR, MULTIPLE-UNIT TRAIN



ARRANGEMENT OF CONTROL CABLE JUMPER WITH CARS UNCOUPLED AND COUPLED

### New Montreal Cars Designed for Multiple-Unit Operation

# Six-Motor Multiple-Unit Trains for Montreal

Two-Car Semi-Trail Operation on Grades Up to 13 per Cent—Multiple-Unit Control with Hand and Automatic Acceleration—Semi-Automatic Brake System—Emergency Opening Coupler—Air-Operated Doors with Safety Interlocking Control

BY KEITH MACLEOD

Engineer of Equipment Montreal (Que.) Tramways

THE operation of trailers on the fairly level east and west lines of the Montreal Tramways has proved so satisfactory that it has been decided to place fifty new two-car trains on the north and south lines. As these lines are quite hilly, the maximum grade being 13 per cent, it was necessary to increase the motive power, and a two-car multiple-unit train was decided on as the most efficient and flexible arrangement.

It is in the control mainly that these cars differ from the former cars\* of the company. In general the new arrangement is a multiple-unit system with Westinghouse P-K-35-G controllers operated from storage batteries, each car having identical control with the ex-

tery voltage in the control cable, a very convenient arrangement of jumpers is possible.

The storage battery which operates the signal-light, buzzer and control systems is a standard 12-volt, 35-amp-hr. automobile lighting battery, charged by a shunted portion of the compressor motor current. The shunt is adjustable, so as to allow the battery to be kept properly charged. The buzzers are connected so that any button will operate both buzzers, and the signal-light circuit is connected to the switches on each entrance door and on the emergency door at the rear of the trailer.

The control circuit is also grounded through the switches on the entrance and emergency doors, but pro-

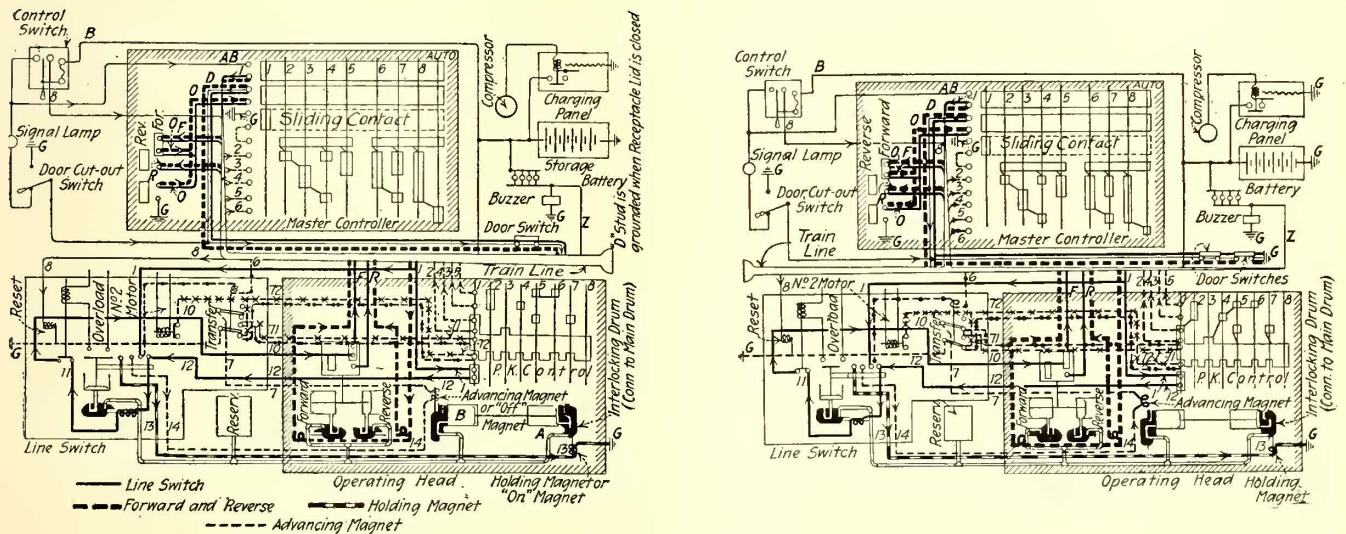


DIAGRAM OF ELECTRICAL CONNECTIONS ON FOUR-MOTOR CAR AND TWO-MOTOR CAR

For convenience in tracing the circuits they are indicated by different kinds of lines for the several controller positions, as listed below the left-hand diagram

ception of the rheostats. There are four Westinghouse 533-T-4 motors on the motor cars and two on the front trucks of the trailers. Although it is not intended to operate the trailers as independent units, it was desirable, since motors were needed on them anyway, to increase the operating flexibility by adding controls. There is no bus line, as it was feared that under Montreal winter conditions serious trouble would occur on a 500-volt jumper and that the current on grades would be too heavy for a single trolley. By having only bat-

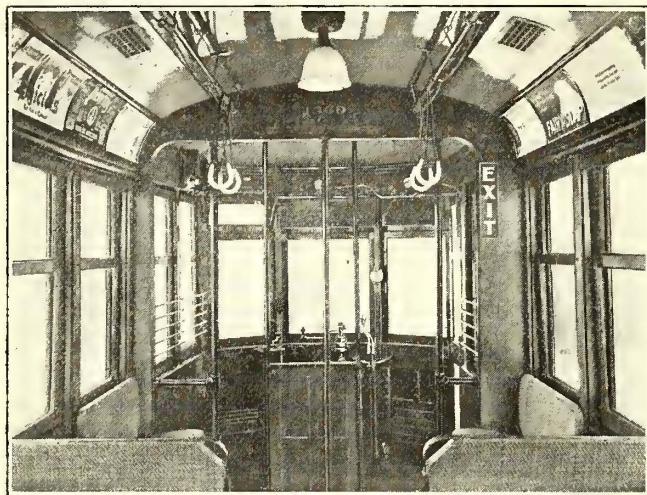
vision is made for an independent ground on the control if for any reason the door circuit cannot be closed. When the door cutout switch is in use the signal-lamp circuit is open, which makes it necessary for the motor-man to obtain a definite bell signal before proceeding. The signal lamp burns only on the car from which the train is being operated and the switch carries a target as a signal to the street inspectors.

The control is provided with the usual line switch, overload and reset relays. A distinctive feature, however, is the combination of both hand and automatic acceleration. The connections on the master controller and the interlock drum are such that in hand notching

\*For previous articles on Montreal cars, see the following issues of ELECTRIC RAILWAY JOURNAL: Dec. 2, 1916, page 1163; Oct. 3, 1914, page 614; Feb. 14, 1914, page 367; Oct. 25, 1913, page 939.

the main controller will always follow to whatever notch the master controller handle has reached. There is an inherent time lag in the engine which prevents too fast feeding of the main drum if the motorman opens the master controller too quickly. Eight notches on the master controller correspond to the eight notches on the standard K-35 controller and the ninth notch connects in the automatic current limit relay.

In combining the hand and automatic features, it



FRONT VESTIBULE OF MONTREAL TRAMWAYS MOTOR CAR

was found necessary to incorporate what is termed a transfer relay, which separates the hand and automatic circuits without increasing the number of train-line wires. Without this relay there is a circulating circuit between the interlocks which, under certain conditions, will make unwarranted advances of the main drum.

#### CONTROL CIRCUITS

There are five distinct circuits in the control, namely, reset, forward and reversing, line switch, hand acceleration and automatic acceleration. The first three are easily followed from the diagram and it may be noted that the line switch will not close until the reversing engine has made the main controller correspond to the master controller. The method of accelerating consists of advancing and returning the main drum by differentials of air pressure and a double piston connected to the main drum through a rack and pinion. Whenever the line switch is in, air pressure is applied to piston *A* by means of the "On" magnet valve, and remains until the line switch releases. Whenever the "Off" magnet is energized, pressure on piston *B* reduces, and the main drum advances. Whenever the "Off" magnet is de-energized, pressure builds up in *B* and prevents further movement. The function of the accelerating circuits is therefore to provide means of properly energizing and de-energizing the "Off" magnet.

With hand acceleration the first notch merely closes the line switch, the main drum already being on the first notch. On the second notch of the master controller the "Off" magnet obtains its circuit from 1 on the line switch through 7 and 71 to the interlock drum, through 2 by the train line to finger 2 on the master controller and through the sliding contact to ground. The "Off" magnet being energized, the main drum commences to move, and as it moves, finger 2 on the inter-

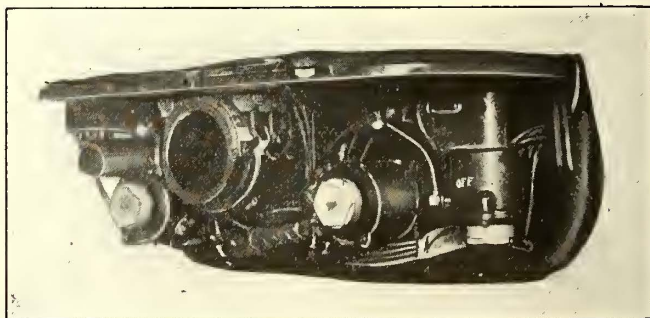
lock falls off, but 72 engages and carries the "Off" magnet circuit until it also falls off at position 2 of the main drum. Since no other fingers on the interlock and master controller now correspond, the "Off" magnet circuit is open, and the main drum ceases to move. Advancing the master controller to the third notch closes the "Off" magnet through finger 3 and so on through the range of hand notching.

Automatic acceleration is obtained by grounding No. 6 wire in the master controller, thereby lifting the transfer relay and connecting the "Off" magnet to the limit relay, the interlock being still used to insure that the main drum stops on definite notches. When the master controller handle is thrown off, the line switch circuit is open, the line switch releases, both "On" and "Off" magnets are de-energized, pressure builds up in *B* and decreases in *A* and the main drum moves back to the first notch.

An operating feature of interest in this combination hand and automatic acceleration is that if a motorman, using the automatic on a grade, finds the main controller has not reached full parallel, on account of the limit not dropping, he may move the master handle back two or three notches and work up by hand notching, the main controller being then forced to follow up.

The control wiring is installed in a combination of rigid and flexible conduit, straight lengths of pipe being used wherever possible, with flexible bends and turns. This proved to be much cheaper than either rigid or flexible work alone. Simple straight runs in rigid conduit are provided for the main cable, and a special design of junction box made for quick disconnecting is furnished for the motor leads.

The car bodies are of the same general design as those described in previous issues of the JOURNAL, the principal modifications being the addition of air engines, which are of National Pneumatic Company make, to operate the entrance doors and of a ventilating sash in the front vestibule to take care of mild days in the spring and fall when the storm sash is still on. Under certain weather conditions wet driving snow or



PK CONTROLLER OPERATING HEAD

sleet will freeze on a storm sash, while if there is only a single pane the heat of the car will melt the sleet and keep the motorman's vision clear. An arrangement of the front storm sash has therefore been made which will allow the permanent windows to be lowered independently.

The conductor's station was made to conform with the design worked out in connection with the application of folding doors and steps to the older cars of the company,

# Interurban Cars Slow Up City Service

**Third Section of the Beeler Report on Washington, D. C., Recommends That the W., B. & A. Line Be Terminated in Suburbs Instead of in Congested District**

**T**HE third section of the report of John A. Beeler on transportation conditions in Washington, D. C., was issued on Feb. 14. This section deals with the problems occasioned by the operation of the heavy electric interurban cars of the Washington, Baltimore & Annapolis Electric Railroad over the conduit tracks of the Washington Railway & Electric Company's Columbia line into the very heart of the city. Mr. Beeler notes the increase of traffic congestion at the busiest two traffic centers of the city, Fourteenth and Fifteenth Streets and New York Avenue, and the delays caused to the city patrons of the Columbia line. In order to overcome the present serious difficulties, he recommends that the interurban cars be stopped at a point almost 3 miles out, until such time as terminal facilities not interfering with city traffic shall be built outside the congested district.

The Washington, Baltimore & Annapolis Electric Railroad operates a high-speed interurban line between Washington and Baltimore, a distance of 40 miles, with a 20-mile branch line from Annapolis Junction to Annapolis. Prior to 1910 the Washington terminus was at the White House Station, at Fifteenth and H Streets, N. E., 2.82 miles from the Treasury. In 1910 the interurban line was re-equipped and the construction of the conduit track of the Columbia line was strengthened in order that the cars could be routed through to the terminus at Fifteenth Street and New York Avenue opposite the Treasury.

According to Mr. Beeler, the point where the interurban cars stand at the city terminus of the line is precisely where the throat of the Capital Traction Company's system is the most contracted and the greatest

congestion exists. The operation of the Baltimore cars over the Columbia line of the Washington Railway & Electric Company also causes congestion at the neck of this system, on Fourteenth Street between F and H Streets. Furthermore, the interurban road is the cause of innumerable delays and interruptions to service on the Columbia line.

The square on New York Avenue between Fourteenth and Fifteenth Streets contains four car tracks, two belonging to each of the principal companies in the city. The line of the Washington Railway & Electric Company terminates in two stub tracks, which do duty as a terminal for three important lines of the city system as well as the Baltimore cars.

The time-table of the Washington, Baltimore & Annapolis road calls for forty regular trains per day in each direction using the terminal at Fifteenth Street and New York Avenue. According to schedule the time allowed at this point is five minutes per car. Observations show that one or more of the interurban cars are standing at this congested point practically all through the day. Out of a total of twelve hours and twenty-four minutes during which observers watched the street, one or more interurban cars were standing there nine hours and thirty-four minutes, or 77 per cent of the time. The average time each car stood there was nineteen minutes and one second. Since the cars are taken to Fourteenth Street before loading is permitted, it is seen that this space in Washington's busiest center is used only as a storage track.

The action of the interurban road in allowing its cars to stand thus in the street, Mr. Beeler says, is in direct violation of a most commendable regulation of the police department. This regulation states: "A driver of a street car shall not allow it to stand upon a street for a longer period than five minutes unless the way is obstructed."

The loading of the interurban cars at Fourteenth Street is slow. As the car steps are high and narrow, the ingress of passengers is a laborious performance. This is especially true in this case, as the passengers are nearly all burdened with luggage. Observations show that the boarding time is three seconds or more per passenger. Frequently 100 or more passengers board a single car at this point, requiring from five to six minutes. Meanwhile the car is standing on the main line and blocking the track for the city cars.

## INNUMERABLE DELAYS TO PATRONS OF COLUMBIA LINE

The situation is aggravated by the delays occasioned to the city cars on the Columbia line. The delay sheets kept by the Washington Railway & Electric Company show that during recent months the delays of the Washington, Baltimore & Annapolis cars within the District of Columbia were as follows: October, eighty-two delays totaling 677 minutes; November, 127 delays total-

*(Concluded from page 404)*

as described in the Aug. 18, 1917, issue of the ELECTRIC RAILWAY JOURNAL, page 262, and an extra stanchion was placed in the front of the motor car.

Other features of the new cars are the lighting, which is furnished by five 93-watt, 120-volt lamps with reflectors and Electric Service Supplies Company compensating fixtures which shunt in an equivalent resistance when the lamp burns out, the thermostat controlled heaters and the Brill 76 E trucks with 30-in. wheels, bolster guides and a graduated spring system.

The brakes on the cars are the semi-automatic system with straight air for service and automatic for emergency application. Safety stops on the cylinder levers are arranged to insure braking on one truck in case of failure on the other. An American slack adjuster is provided which, with one take-up on the dead lever of each truck, takes care of all shoe wear. Conductor's valves are installed on both cars and an attachment on the coupler is provided which opens the emergency line when the drawbar swing becomes abnormal, as for instance if the strain splits a switch.

ing 1092 minutes; December, eighty delays totaling 752 minutes.

During this period an average of three and one-tenth delays was recorded for each day. The average duration of the delays amounted to twenty-seven and one-half minutes daily. When it is considered that the scheduled headway of the city cars on the Columbia line is twelve cars per hour during the midday period, and forty-eight cars per hour during the morning rush, the seriousness of these ten, twenty and thirty-minute delays becomes apparent. A ten-minute delay during the period of maximum travel holds up eight cars of the city lines, thereby delaying perhaps 800 people.

These delays of interurban cars practically all occur on the conduit tracks within the city proper. In Mr. Beeler's opinion, they are due to four principal reasons, namely: (1) Complicated and heavy equipment; (2) Lack of thorough inspection and systematic repairs to rolling stock; (3) Shortage of competent and experienced motormen; (4) Faulty condition of tracks and defective conductor rail.

The interurban cars are 50 to 57 ft. long and weigh from 78,500 to 79,800 lb. empty. To Mr. Beeler's mind it is not surprising that this equipment with its numerous 600-1200-volt trolley-conduit complications is subject to frequent breakdowns under the present shortage of skilled operators and mechanics. Furthermore, these heavy cars, in operating to Fifteenth Street and New York Avenue, are doing so under conditions with which this equipment should not be expected to cope. There are no less than thirty compulsory stops on the short round trip between the White House Station and the Treasury, an average of five and one-third stops per mile. For a thorough interurban car weighing between 45 and 50 tons loaded, this is bad. In addition to these compulsory stops other stops are made for passengers.

#### INTERURBAN CARS SHOULD STOP FARTHER OUT

Mr. Beeler recommends that the interurban cars of the Washington, Baltimore & Annapolis Electric Railroad be denied the use of the conduit tracks west of the White House Station at Fifteenth and H Streets, N. E., until such time as the following necessary improvements, all of which are essential to the proper operation of these interurban cars, are made:

1. Terminal facilities that will permit the interurban cars to load and unload on separate and independent tracks shall be provided so as not to interfere with the free passage of a city car. Such a terminal should preferably be on a loop over which city cars will not operate.

2. The terminal should be located east of Fourteenth Street, N. W., so that the Baltimore cars will in no wise interfere with the congested traffic on Fourteenth and Fifteenth Streets. This is for the benefit of the patrons of the two city traction systems and also of vehicular and pedestrian travel.

3. Thorough inspection and adequate maintenance of equipment of the interurban cars must be provided to insure against the breakdowns and delays that are now of such frequent occurrence and so annoying to the citizens of Washington dependent upon the Columbia line for transportation to and from their work.

4. A sufficient number of competent and experienced motormen must be secured and carefully instructed in the proper handling of these heavy and complicated cars over the conduit tracks.

As the result of the elimination of the interurban cars from the heart of the city, the track will not be occupied by half-filled interurban cars during the height

of the rush period, and the space thus made available can be used to advantage by the city cars and their passengers. The effect of this change on the Washington Railway & Electric Company will be that more local cars can be put through on the Columbia line and an improved and more regular service maintained. This company must provide sufficient additional equipment to care properly for the interurban passengers between the White House Station and the Treasury.

Passengers of the Washington, Baltimore & Annapolis road will be slightly inconvenienced, because they will have to change cars at the White House Station. In Mr. Beeler's opinion, however, this requirement, under the circumstances, is not unreasonable. Most of the passengers come by trolley or other vehicle to the present terminal at the Treasury. In short, this requirement is no more than that imposed upon the passenger who arrives at the Union steam railroad station. In fact, the use of the White House Station will have its advantages for patrons, as it would be much easier for them to board the high cars from flush platforms, which can readily be provided at this station.

At first thought, Mr. Beeler states, it might be presumed that the exclusion of the interurban cars would have a damaging effect on the Washington, Baltimore & Annapolis road, but this road is now handicapped by a lack of facilities to handle the traffic being forced on it by the Camp Meade cantonment and Annapolis activities. Sufficient cars and men are not available to care for the present business. By terminating its cars at the White House Station, from two to five cars and crews will be released for an increase in the service on the remainder of the system. Little or no expense need be incurred by the company to take care of the new arrangement, as it already maintains a waiting room at the White House Station. To terminate all the interurban cars there will be simply to revert to conditions that existed eight years ago.

### 35,000-Kw. Turbine Wrecked in Boston Station

**A**BOUT 4.55 p. m. on Thursday, Feb. 14, the 35,000-kw. horizontal, single-cylinder steam turbine in the O Street station of the Boston Elevated Railway exploded, so completely wrecking the machine that it will be sold for junk as it stands, it is reported. Fortunately no one was killed or injured. The trouble developed in the low-pressure stages—the seventeenth, it is believed. All diaphragms and wheels, together with the blades from this stage on to the twentieth, were fractured and broken in many pieces and released with such force as to smash away the whole top half of the low-pressure end of the casing.

The initial cause of the accident is thought, at this writing, to have been excessive steam pressure between the diaphragm and the seventeenth wheel, concaving the diaphragm, causing it to foul the wheel, closing up the buckets and thus increasing the steam pressure at this point until the next diaphragm was similarly affected, when the whole low-pressure end let go.

The accident occurred at a time when 27,500 kw. carried by engines in another station of the railway company dropped their load. It is assumed that the wrecked turbine tried to take all of this load, opening its secondary valve to get all the pressure available.



# New Power Source for Columbus (Ohio) Railways

Station Has Large Units for Size of Community Served and Is Located Without Regard for Load Center—Most of Electrical Equipment Out of Doors—No Reciprocating Units Installed

THE Columbus Railway, Power & Light Company, Columbus, Ohio, has completed for operation the first part of its new Walnut power station, located on the east bank of Walnut Creek, about 10 miles southeast of the center of the city. This company operates the city railway system in Columbus, supplies light and power to the city and surrounding villages within a radius of 15 miles, and supplies power to some extent to the interurbans entering the city. It also furnishes considerable energy at the present time to Camp Sherman and the national army camp at Chillicothe, and also to the cities of Chillicothe and Circleville, about 50 miles south of Columbus.

The company has several old power stations, some of which are becoming inoperative, and all of which are located within the city limits. The new steam station became necessary owing to the large increase in the industrial load, and to the necessity of securing more economical operation. Due to the lack of suitable water for condenser purposes and of space for coal storage, a site outside of the city was selected, determined by the natural resources rather than the density of population.

Walnut Creek has a water shed above the plant site of approximately 500 square miles, and a natural pool at the station varying in depth at low water from 15 to 20 ft. The Hocking Valley Railroad runs approximately through the middle of the 25-acre property on

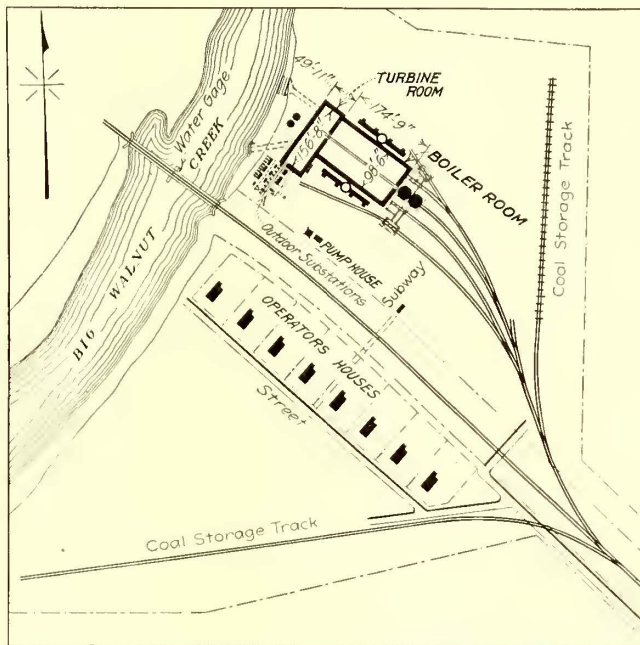


FIG. 1—PROPERTY MAP OF COLUMBUS RAILWAY, POWER & LIGHT COMPANY'S WALNUT STEAM STATION

which, in addition to the plant, will be built operators' houses and a large coal storage system. When coal is obtainable three or four months' supply will be carried in storage.

The generating equipment now in operation consists of one 18,750-kva., General Electric, 60-cycle turbo-alternator. The plans include a second turbine unit of 12,500-kva. capacity. Eight Babcock & Wilcox 440-hp. boilers are now installed, and eight more will be added later. The future equipment is under order and is expected to be ready for installation the early part of this year. Energy is generated at 13,200 volts and is

transmitted over three 39,400-volt transmission lines, and one 13,200-volt circuit, which feeds an industrial section at the extreme south end of the city.

The plant is laid out with the intention of having all equipment that requires attention on the main floor level. This applies to the switchboard, turbines, motors for driving circulating water pumps and hot-well pumps, controllers for all forced-draft, induced-draft and stoker drives, battery-charging sets, etc., giving little occasion for operators to leave the main floor for any length of time.

A noteworthy feature of the plant is that no reciprocating apparatus is used. The only steam auxiliaries are one steam turbine-driven feed pump and two steam-driven dry vacuum pumps. All other auxiliary equip-

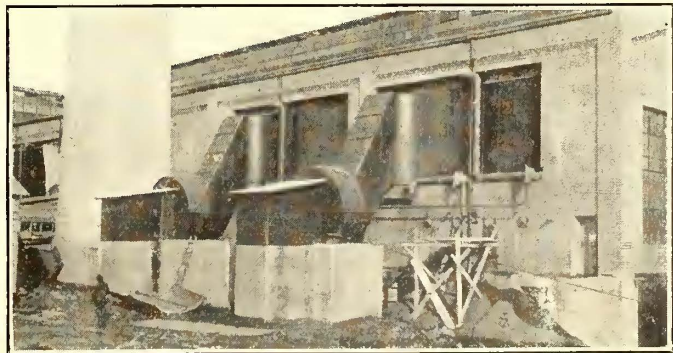
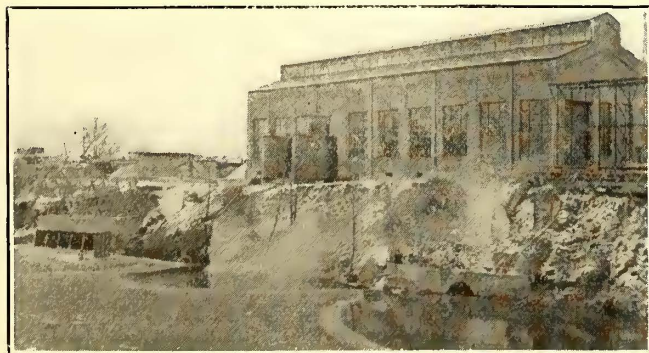


FIG. 2—GENERATING END OF PLANT SHOWING INTAKE AND DISCHARGE TUNNELS AND FEED-WATER PURIFYING PLANT—INDUCED-DRAFT FANS AND WALL OPENINGS FOR ECONOMIZERS

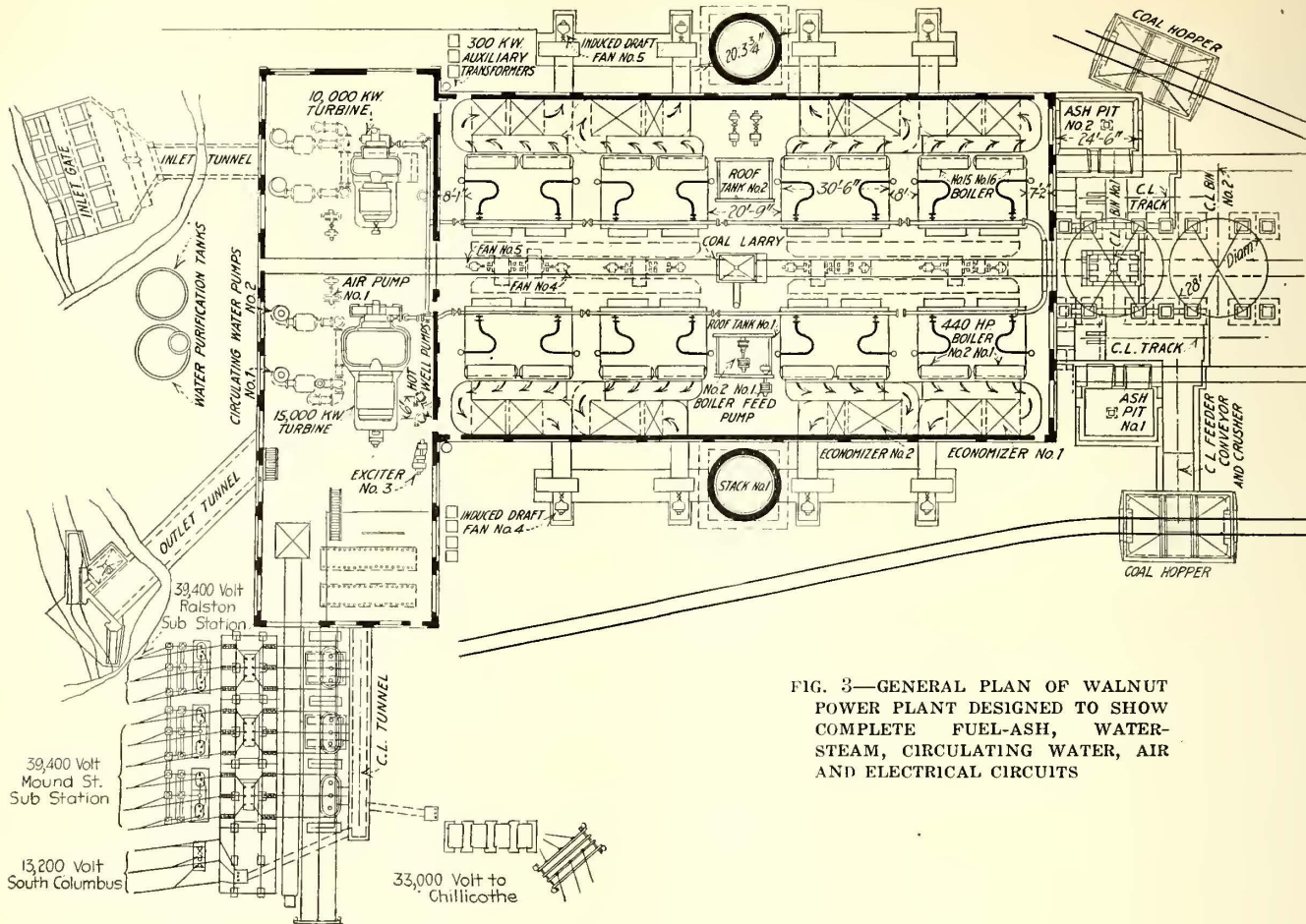


FIG. 3—GENERAL PLAN OF WALNUT POWER PLANT DESIGNED TO SHOW COMPLETE FUEL-ASH, WATER-STEAM, CIRCULATING WATER, AIR AND ELECTRICAL CIRCUITS

ment is driven by induction motors, most of which are provided with variable-speed control. Every motor or turbine, including the generating unit, has a flexible coupling.

Very little space within the station is used for electrical equipment, all transformers, high-voltage bus structures, main-line switches and lightning arresters being located out of doors. Any of this equipment, however, can be cut out of service for inspection and repairs, thus securing all the advantages of the outdoor type of electrical equipment with minimum disadvantage. The control is compact, and only the 13,200-volt switches are within the station.

In providing spare equipment the effort has been to make each unit complete so that it can be regularly operated. For instance, duplicate circulating-water pumps and condensate pumps are provided, the spare unit in either case being available for immediate service. The large alternator is provided with a direct-connected exciter, and a geared turbo-exciter set is installed for spare service.

The boiler plant, as previously stated, will ul-

timately contain sixteen boilers, each having a heating surface of 4440 sq. ft. These are designed for 250 lb. pressure, and are provided with Diamond mechanical soot blowers, Copes feed-water regulators and balanced-draft regulators. Bailey furnace meters are also used to record steam flow, air flow through boilers, temperature of exhaust gases and draft under stokers. The single-loop superheaters will produce about 150 deg. of superheat under average conditions.

The boilers are set two in a battery and the gases from each battery pass through 5/16-in. steel-plate flues, covered with 1/2 in. of asbestos, to one Green fuel economizer of 6300 sq. ft. heating surface. The gases

from each economizer are in turn conveyed from the economizer through uncovered steel breechings to one 60,000-cu.-ft.-per-minute Green induced-draft fan. The fans discharge downward into a concrete flue, located below grade, which connects with the base of a tapered concrete chimney of 150 ft. height and 14.5 ft. inside diameter at the top. Two such chimneys will be provided, each to accommodate four fans and eight boilers.

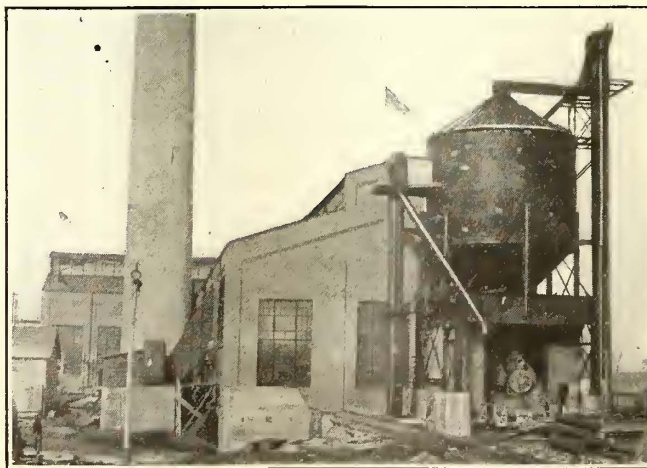


FIG. 4—STEAM END OF PLANT SHOWING COAL AND ASH-HANDLING EQUIPMENT

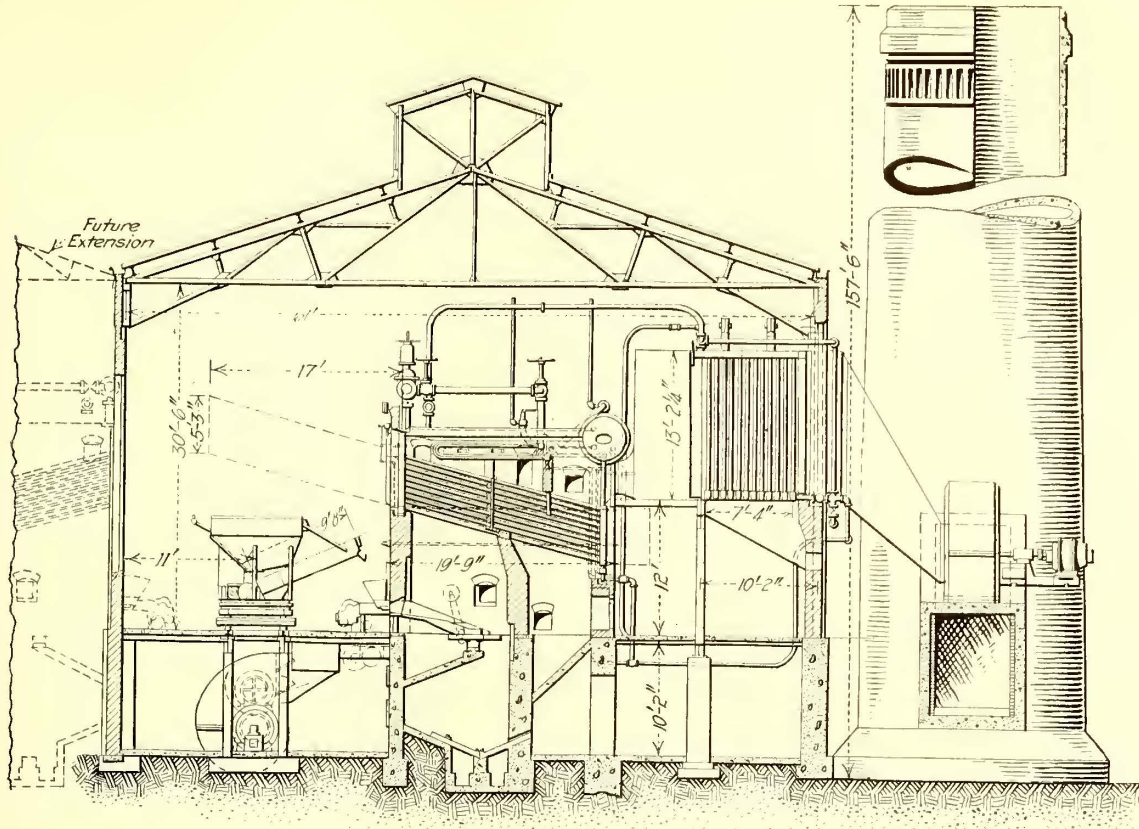


FIG. 5—CROSS-SECTION OF BOILER ROOM SHOWING ARRANGEMENT OF EQUIPMENT AND SCHEME FOR EXTENSION

The turbines are guaranteed for a water rate, under best conditions, of 11.35 lb. per kilowatt-hour on the 18,750-kva. unit, and 11½ lb. on the future 12,500-kva. unit. The steam equipment is arranged in units of two boilers and one economizer, the economizer having approximately 71 per cent as much heating surface as the two boilers. Each boiler is provided with one eight-retort Sanford Riley underfeed stoker. This gives a unit which is capable of turning out a maximum of 340 per cent of its nominal rating, according to guarantees by the stoker company. The battery of boilers therefore has a maximum capacity of 3000 hp., so that the station can generate approximately 7 kw. per rated boiler horsepower.

It should be noted that no by-passes are provided for the economizer, as it is expected to operate each unit of boilers with draft fans continuously. When it is necessary to make extensive repairs an entire unit will be shut down. Either one of the boilers may be shut down for cleaning without disturbing the operation of

the other. The economizers are provided with the usual scraper mechanism, one 5-hp. motor driving the scrapers on two economizers. The controllers for the motors driving the draft fans are located near the boilers and are, under the control of the boiler-room operators. The balanced-draft equipment provides for close regulation of the induced draft, and the large steps in the adjustment of this draft are obtained by the variable-speed motors, which are hand controlled. The forced draft is also hand regulated by varying the speed of the motors and by the movement of the dampers in the air ducts.

The steam from the boilers is carried through 6-in. steam lines to a main 12-in. steam header for each row of eight boilers. The two headers are connected at each end so as to form a complete ring. In the same way the feed water will be supplied to the boilers from a 6-in. feed-water header for each row of boilers, and the feed-water headers will be connected to form a complete loop.

The economizers are operated in parallel, feeding di-

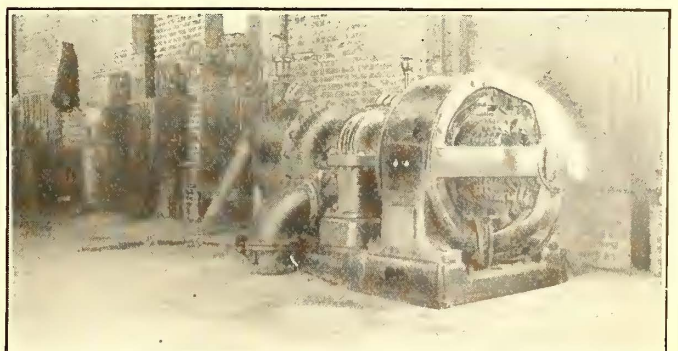
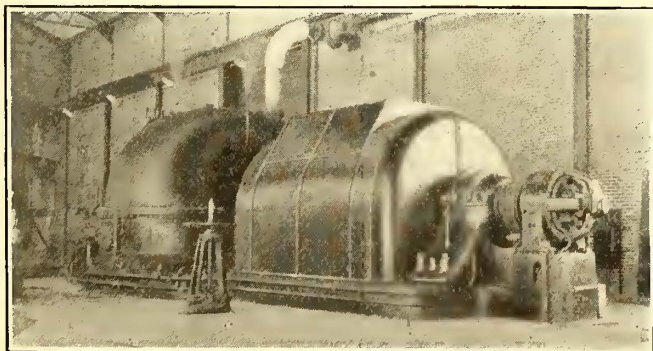


FIG. 6—18,750-KVA. TURBINE SET WITH DIRECT CONNECTED EXCITER—100-KW. TURBO EXCITER SET

rectly into the feed-water header, and to avoid unequal feeding Monel metal orifices are provided in the header between the connections to the economizers. It is expected to obtain fine adjustment of the feed to the economizers by regulating the opening of the valves in the connections between the economizers and the header, determining the adjustment of these valves by the temperature of the feed water leaving the economizers as shown by Bristol recording thermometers. These are

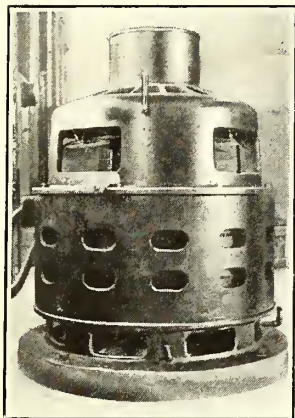


FIG. 7—120-HP. VERTICAL VARIABLE-SPEED MOTOR FOR DRIVING CIRCULATING WATER PUMP

supplied for the gases leaving the economizers, for the water entering and leaving the economizers, and for that entering the feed-water heater.

The economizer arrangement is such that the access tubes and blow-off are on the outside of the building. Asbestos sectional covers are used over the outside of the economizers, and the opposite brick wall of the building is omitted. This arrangement provides for easy inspection and repairs and saves floor space. All steam piping is provided with steel flanges and Van-

stone joints, and welded nozzles are used wherever possible to eliminate joints and to make piping contact.

Coal passes from two track hoppers by means of a flight conveyor through a crusher and thence by bucket elevators to the top of two 400-ton coal bunkers located just outside the boiler room at the end of the station. The coal from the bunkers is carried into the boiler room by means of a  $4\frac{1}{2}$ -ton traveling larry on a standard-gage track laid flush with the boiler-room floor. The larry is electrically operated, has a revolving bin which works like a turret, and is provided with a screw conveyor which supplies the boilers on either side of the firing aisle. It is operated by one man, is simple in construction and all wearing parts are easily accessible for repairs. Track scales are provided under one of the coal bunkers so that all coal can be weighed as it is taken into the station. This will permit the keeping of an accurate record of coal used by any boiler or for the entire station during any desired period.

To provide against shortage of coal, through lack of cars or irregularity of shipments, an elevated storage track is provided, which is 480 ft. long and elevated approximately 15 ft. above the ground level. The track is carried on reinforced concrete piers, 14 ft. between centers, and is supported between piers by I-beams, with steel cross members on 5-ft. centers to prevent spreading. The coal will be distributed over the ground and reloaded into cars as needed by means of a 15-ton Brownhoist steam-driven locomotive crane equipped with a 2-yd. grab bucket.

The ash pits are formed by the concrete foundations of the boilers. Two drag-chain conveyors pass under each row of eight boilers conveying the ashes out to the end of the station and discharging them into a clinker crusher, which in turn discharges into the boot of a bucket elevator. This elevator can discharge into a concrete ash pit, a railroad car or a wagon. The ashes

can be disposed of for a long time in grading around the property. Although each conveyor has sufficient capacity for carrying out the ash, duplicate conveyors are furnished so as to permit repairs or changes without inconvenience to operation.

The circulating water for the Alberger surface condenser under the turbine is supplied by duplicate vertical variable-speed motor-driven pumps. These pumps receive water from a gravity tunnel, which extends under the entire length of the turbine room. The water from the condenser discharges into another gravity tunnel, which also extends under the turbine room and carries the water out into the river at a point about 160 ft. below the intake. Each condenser is provided with duplicate motor-driven single-stage centrifugal condensate pumps. The concrete tunnels under the turbine room eliminate the usual large amount of piping required for circulating water and also conveniently supply the water with a minimum waste of power. The water in the tunnel will have a velocity of 2 ft. per second with the two turbines carrying full load and about 3.1 ft. per second with 40,000 kw. of turbine capacity in operation. The discharge water lines from the condensers are sealed in the discharge tunnel so that advantage is taken of the syphon action obtained.

The intake end of the tunnel is enlarged and provided with a large area of racks for the water to flow through

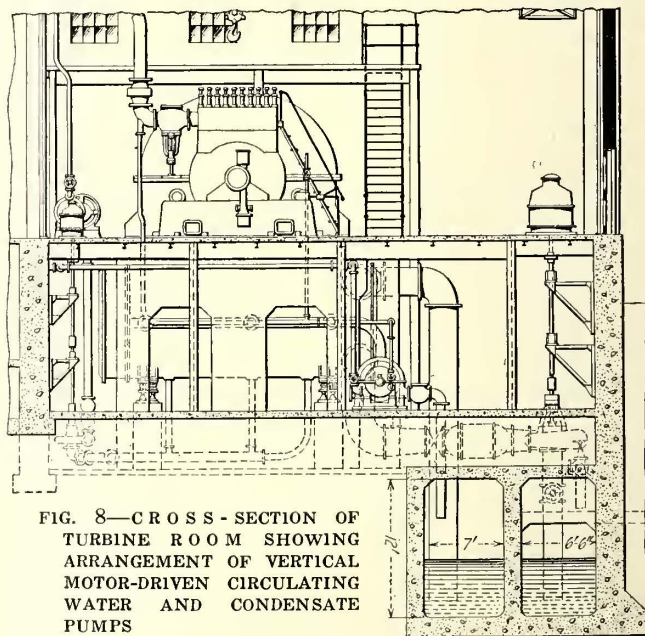


FIG. 8—CROSS-SECTION OF TURBINE ROOM SHOWING ARRANGEMENT OF VERTICAL MOTOR-DRIVEN CIRCULATING WATER AND CONDENSATE PUMPS

The velocity through these racks will be  $\frac{1}{2}$  ft. per second for the first two units and 0.8 ft. per second for 40,000-kw. of turbines in operation. There are also provided six large removable wire baskets of 1-in. mesh, designed to catch leaves, twigs, etc., that may come downstream during high water. Each basket is in a separate compartment provided with a gate for shutting off the flow of water when the basket is raised for cleaning. A traveling hoist is provided for operating the gates and baskets. Any material that passes through the baskets and racks can be removed before reaching the condenser by means of Elliott twin strainers having  $\frac{3}{8}$ -in. holes and located between the circulating water pumps and the condensers. The circulating water pumps are placed on top of the intake tunnel so that a minimum suction lift of 11 ft. is secured.

The condenser of the unit now installed is bolted direct to the exhaust flange of the turbine without any expansion joint. Car springs are placed below the condenser and so compressed as to balance the weight of the empty condenser. These springs will allow the condenser to expand when heated, and the turbine is capable of taking the additional weight of the water

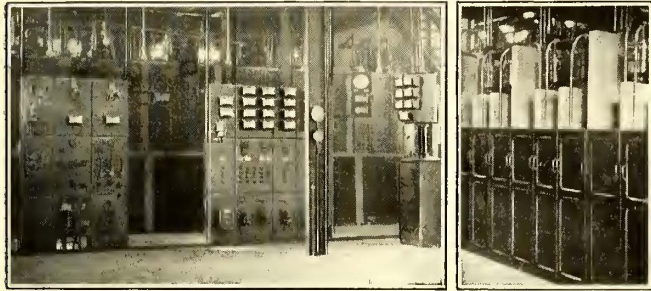


FIG. 9—SWITCHBOARD PANELS AND BUS STRUCTURE—DETAIL VIEW OF 13,200-VOLT SWITCH CELL

which may be in the condenser during regular operation.

The condensate from the condenser is forced by the centrifugal pumps to the top of the boiler room, where it flows through water meters into an open storage tank. This tank is divided into two compartments, one with a capacity of 6000 gal. for condensate and the other with a capacity of 3000 gal. for make-up water. The water from the tank flows through a Hoppes open feed-water heater having 1300 sq. ft. of heating surface. The feed-water heater is divided into two parts; the condensate passing over one-third of the heating surface and the make-up water over the remaining two-thirds.

From the heater the water passes through a battery of four 400-gal. per minute four-stage Cameron centrifugal boiler feed pumps. Three of these pumps are motor driven and one is steam driven. The pumps discharge into headers supplying the economizers, which carry full boiler pressure plus the additional pressure required for forcing the water through the economizer to the boilers.

To supply the make-up water for the boilers, that is, water in addition to that secured from the surface condensers, a lime and soda ash feed-water purifying plant is installed. This plant consists essentially of two 20,000-gal. wood stave tanks with stirring mechanism, and an elevated dosing tank. The river water is of fairly good quality except during high water when it may be quite riley. A battery of four 200-gal. per minute motor-driven centrifugal pumps is located in the basement of the turbine room for furnishing water to the feed-water purification plant and for cooling bearings and transformers.

MUCH OF THE ELECTRICAL EQUIPMENT PLACED OUT OF DOORS

In general the electrical system is that which is considered modern practice for the potentials at which it operates. The alternator is connected to a 13,200-volt bus through a General Electric, type H3 oil switch. A transfer bus is provided so that any 13,200-volt switch with its instrument transformers can be cut out when necessary without interrupting service. All feeders and other circuits have oil switches of the same type and all

of them are remote-controlled from the switchboard. The turbine controls are also located on the switchboard.

Energy is transformed from the generated voltage of 13,200 to 39,400 volts by means of 15,000-kva., three-phase, 60-cycle, water-cooled, outdoor type transformers, two units of which will be installed this year and a third at a later date. All of the 39,400-volt switches, lightning arresters and connections are located outside of the station. Electrical energy for Columbus will be received at 39,400 volts at one point for the present, and at a second and a third point later on, and will be distributed in the city between substations at 13,200 volts. The primary voltage for all other light and power customers is 4150 on a four-wire distribution system. The tie lines between the principal substations of the city operate at 13,200 volts and consist of triple-conductor lead-in-cased cables laid in vitrified clay duct subways.

The Walnut station was designed and constructed by the E. W. Clark Management Corporation, through whose courtesy the foregoing illustrations and data were obtained.

Who Put the Nick in the Nickel?

A CURRENT bulletin issued by E. J. Cooney, executive assistant Rhode Island Company, Providence, R. I., in the interest of a 6-cent fare contains a presentation of the "rising costs" question that will undoubtedly be of interest to other railway men. The material is shown by the accompanying illustrations and the following paragraphs:

"For some years past electric railways have been suffering under burdens placed upon them by various municipalities in the form of taxes, etc., until investors have looked upon them as questionable security.

"But the situation became really serious in 1914 when war broke out in Europe, shocking the whole world. As the months passed all lines of business



**Rising Costs**

- I am speed personified.
- I am gradual, with never a rest.
- I affect both the rich and the poor.
- I attack persons or objects, showing no partiality.
- I come from unseen quarters and leave a wide trail.
- I shake the foundations of the greatest giants of business.
- I find no structure so great as to be able to withstand my assaults.
- I am always victorious.
- I am Rising Costs.

TWO PAGES OF "RISING COST" BULLETIN ISSUED BY RHODE ISLAND COMPANY

became affected by a sturdy youth named 'Rising Costs.' As he grew he stretched out his tentacles and pulled in one commodity after another, until he reached the public service utilities.

"Nothing was too big for him to tackle as he went onward, and the electric railways began to feel the effects of his attacks. The nickel that for so many years gave them profits on their huge investment began to weaken, until 'Rising Costs' cut a nick in the nickel that greatly reduced its value"

# Connecticut Company's Power-Saving Campaign

Systematic Educational Work Has Reduced Energy Consumption Per Car-Mile by 11 Per Cent in Five Months—Best Records on Each Line Are Recognized by Substantial Prizes

BY WILLIAM ARTHUR

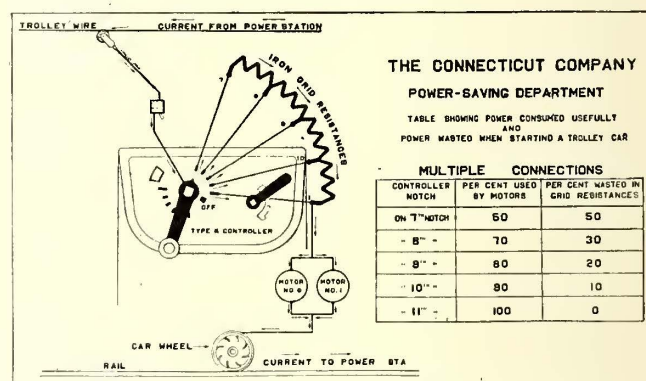
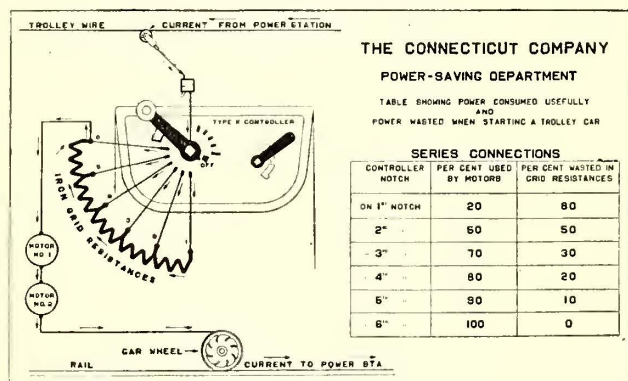
Electric Railway Engineer, New Haven, Conn.

SEVERAL months ago the officials of the Connecticut Company, as part of a general move toward greater economy, decided to see what could be done further to reduce power and maintenance bills, particularly those caused by faulty operation on the part of motormen and conductors. It was realized that the power wasted in car operation was considerable, and an effort was made to determine just how considerable the waste was. It was also realized that the problem of getting men to change the ingrained habits of years was no easy matter, and that the task must be done thoroughly or not at all.

It was decided to create a power-saving department in the company, putting an engineer in charge, and to

his assistant. Men were expected to know the company rules, observe safety precautions at all times, avoid abuse of equipment, and operate as economically as possible.

This was good so far as it went, but in the matter of power saving the instructions were not specific enough. Too much reliance was placed upon individual judgment as to the proper methods to be employed in this direction. The chief motorman on one of the big divisions is usually a very busy individual, upon whom devolves the duty of breaking in new men, including the teaching of all rules relating to signals, emergency work, etc. He usually has little time to study the fundamental technical principles of power saving, much



INSTRUCTION CHARTS DESIGNED TO IMPRESS ON MOTORMEN THE MAGNITUDE OF RHEOSTATIC LOSSES  
FIG. 1—SERIES POSITIONS OF CONTROLLER; FIG. 2—PARALLEL POSITIONS

have him work out his problem in conjunction with the company officials. The writer was retained in an advisory capacity in connection with this work of organization.

## REVIEW OF CONDITIONS EXISTING BEFORE THE CAMPAIGN STARTED

The Connecticut Company employs about 2500 platform men and operates approximately 1100 passenger cars. Its lines cover most of the State of Connecticut, connecting New Haven, Hartford, Bridgeport and Waterbury, together with about seventy smaller towns and villages. For company purposes, this territory is subdivided into nine operating divisions. Each division, therefore, operates some city and some interurban services.

The platform men employed by this company compare favorably with men of similar class in other sections of the country. All motormen had received preliminary training at the time of employment. In a general way, also, their work had been checked up from time to time by the chief motorman of each division, or in the case of the four larger divisions, by the chief motorman and

less to impart these principles to the men under his charge. As a result many of the most elementary principles and conceptions are either not understood at all, or at most they are understood very imperfectly by the men on the cars. In this particular the conditions existing on the Connecticut Company property prior to the power-saving campaign were probably fairly representative of the conditions existing on similar properties throughout the country. This point is enlarged upon because the success achieved in any power-saving campaign will depend largely upon the clearness with which those organizing it visualize the state of mind of the men whose habits it is desired to correct. Consider only a few of the ideas which are current among motormen throughout the country.

1. Practically all believe that the controller turns on the power "gradually," much in the same way that a faucet turns on water. This to anyone without special training is a very natural thought, but is a fundamental misconception which of itself is productive of a frightful amount of waste. This point will be further dealt with.

2. Some motormen are taught that in notching up a

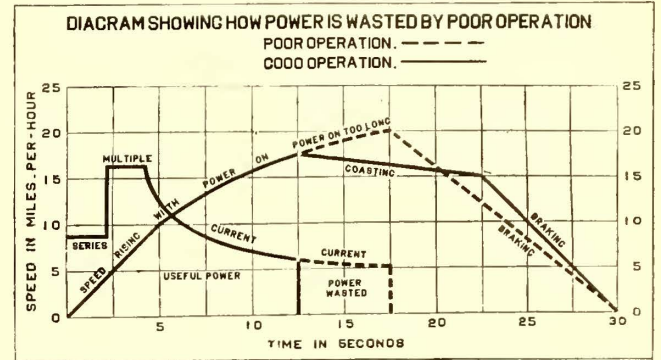
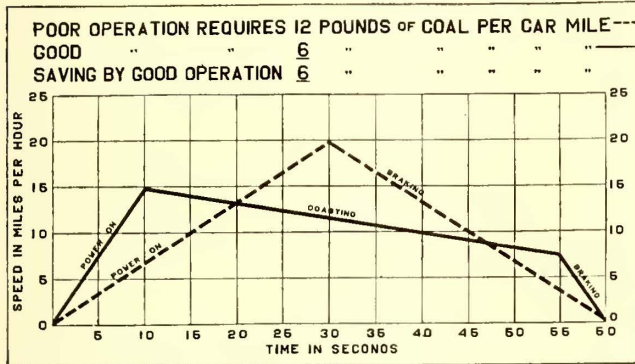
controller, the full car speed possible on any notch must be reached before passing to another notch.

3. Many believe that in starting the car fewer motors are in operation when the controller is in series than when it is in multiple.

4. Others are convinced that when motors are connected in series those nearest the controller, and which

saving recorders"; an educational campaign was started, and means for following up the motormen's daily records were devised. Particulars of these three features will now be dealt with.

The educational work comprised four distinct features: (1) Special instruction of the chief motormen; (2) the issuance to all motormen and conductors of a



DIAGRAMS USED IN VISUALIZING CAR OPERATION LOSSES IN POUNDS OF COAL—FIG. 3—TO SHOW EXTREME CONDITIONS; FIG. 4—TO SHOW USUAL CONDITIONS

therefore "receive the power first," do most of the work—and so on.

This list of popular misconceptions could be much extended, but the instances given are typical of the kind which are common, and which, to some extent, must be removed before real progress in power saving can be made on any property.

The essential thing is to change the habits of the motormen operating the cars, if a power-saving campaign is to be effective. But habits cannot be changed until wrong ideas have been supplanted by correct ones. Once the men are in a frame of mind where they are willing to save power (and this condition of mind can be created) they must then be shown how. A power-saving campaign is therefore primarily an educational matter.

A WORD ABOUT CHECKING DEVICES

Next to education a checking device is most essential; in fact, the two features are complementary. There must be provided some means of recording and comparing the men's individual efficiency from day to day, otherwise no permanent benefit will follow from the educational effort. Men forget rules or become careless or indifferent, or they operate carefully only while watched, or while under the surveillance of the chief motorman or other official. Some constant stimulus to good work must be provided, otherwise their interest lags. The only means so far devised for creating and keeping up this interest is to put on the car some instrument which will permit comparison to be made between the individual performances of groups of men doing similar work, *i. e.*, of men working on the same route or under the same general conditions. By this means a competitive spirit is created, and by simple follow-up methods can be maintained.

The three essentials, therefore, for a successful power-saving campaign are: (1) Education of motormen. (2) Use of a checking device. (3) An effective follow-up system.

All three features were employed in the campaign herein described. The cars were equipped with "power-

small educational folder, containing power-saving rules; (3) personal instruction of motormen on the cars by the chief motorman or his assistant; (4) illustrated talks to groups of motormen at meetings specially held for this purpose.

As a part of the instruction of the chief motormen, meetings were held weekly, at which men from all divisions were in attendance. At these meetings the fundamental principles of power saving were carefully explained and discussed. Many deep-rooted ideas held by these men, however, could not be removed by mere discussion. It was necessary to show them, on a car, that large savings can actually be made by slight changes in methods of operation of controller and brakes.

Tests were therefore made on specially equipped cars, and the different ways in which power could be wasted and saved were shown in such manner as left no room for dispute or personal opinion. These tests

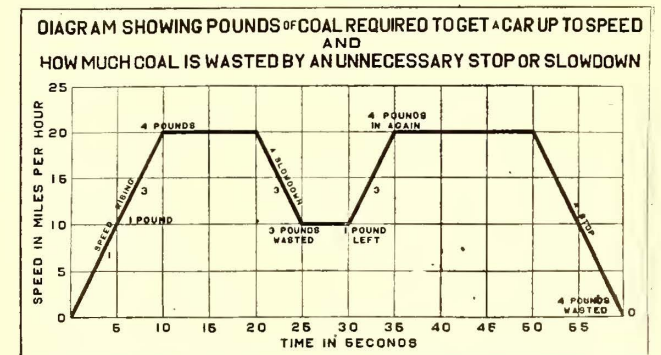


FIG. 5—DIAGRAM TO DISCOURAGE THE MAKING OF UNNECESSARY STOPS AND SLOWDOWNS

were carried out by the chief motormen themselves, under the supervision of the writer, and were of the greatest assistance in imparting to these men a spirit of enthusiasm and confidence.

As illustrating one of these tests, a car was operated in city service on a definite schedule making six complete trips in the way in which it would be handled by

an average motorman. No attempt was made to exaggerate conditions or produce a result such as would be obtained by a very poor motorman. For instance, the controller was notched up without noticeable dawdling on the resistance notches, a certain amount of coasting was done and the brakes were applied and released in the ordinary manner. The power consumption was metered by the chief motormen themselves on every trip. Six runs were then made over the same route, making the same number of stops and running on the same schedule, but with the car handled in the new way in which the men had been instructed, and again the power consumption was metered.

Upon comparing the results, to the intense surprise of the men, they found an average difference of 25.7 per cent in energy consumption. In another test they found an average difference of 32.5 per cent. No further argument was necessary.

**FOLLOWING UP THE INITIAL EFFORTS**

The introductory portion of the educational folder containing power-saving rules is reproduced herewith. This illustrates the general style, and also tells something of the method of awarding prizes for meritorious work which was adopted. Several prizes are awarded quarterly on each division and range from \$5 to \$2 each. At this point it is not necessary herein to enlarge upon these rules, as they are given in the writer's article in the issue of this journal for Sept. 2, 1916.

On the four large divisions, New Haven, Bridgeport, Waterbury and Hartford, the assistant chief motorman assumed the chief part of the burden of instructing the motormen in the finer points of power saving. On the smaller divisions this duty was carried out by the chief motormen themselves. These men were required to ride with each motorman in turn, and impart to him in a practical way the proper methods of handling his controller and brakes, giving in simple terms the reason in each case.

THE CONNECTICUT COMPANY					
Motormen's Daily Time and Power Saving Report					
Date _____ 191...					
POWER-SAVING REPORT					
State below the readings of the recorder each time you take or leave the car.					
BRAKING PERIOD					
	CAR NO.	CAR NO.	CAR NO.	CAR NO.	CAR NO.
Start					
Ending					
STOPS AND SLOWDOWNS					
Start					
Ending					
Number of hours on each car	Hrs. : min.	Hrs. : min.	Hrs. : min.	Hrs. : min.	Hrs. : min.
Remarks					
TIME REPORT					
	REGULAR TIME		OVER TIME		TOTAL TIME
Run No.	hrs.	hrs.	hrs.	hrs.	hrs.
" "	" "	" "	" "	" "	" "
" "	" "	" "	" "	" "	" "
" "	" "	" "	" "	" "	" "
Total	" "	" "	" "	" "	" "
Name _____					No. _____
	(OVER)				

FIG. 6—COMBINED TIME AND POWER-SAVING DAILY REPORT FORM

The educational campaign was further rounded out by a series of informal meetings at which from thirty to 300 motormen and conductors at a time were instructed. By the use of large charts, some of which are herewith reproduced, the differences between care-

less habits and good habits were shown, the effect upon the coal pile being explained in each case. These talks were entirely non-technical. For instance, no reference was made to "kw.-hr.," the unit of "pounds of coal per car-mile" being used instead. The abstract conception of "kw.-hr." is absent from the minds of most motormen, but they readily grasp the idea of "pounds of coal per car-mile."

Questions were encouraged, and many interesting discussions took place, in which the motormen joined. The local manager, the superintendent, and other officials, would often be present and take part in these discussions.

Motormen evince the liveliest interest when new ideas are presented to them in a simple manner. For instance, the idea that a controller does not throw on power gradually, but draws from the trolley wire substantially the same amount on each series notch,

is a brand new idea to most of them. The charts shown in Figs. 1 and 2 are used to illustrate this point and to show the large percentage of waste that takes place on certain of the controller notches. It is a startling thought to most motormen that on the first notch four-fifths of the power is wasted in the resistance and only one-fifth used by the motors in starting the car. Emphasis is, of course, laid upon the need for more coasting, and usually brings forth from the men the questions: "How can I coast more and not lose time?" The many ways in which this can be done are then explained, and the fact is emphasized that some of these ways require the conductor's help, whereas others do not. It is shown that the whole secret of obtaining a good coasting record is in learning to save a few seconds here and there, and then using these seconds for more coasting. The following suggestions are typical:

**HOW TIME CAN BE SAVED**

1. By being alert in responding to the bell.
2. By notching up more quickly.
3. By braking at a higher rate.
4. By helping the passengers in and out and so saving a second or two at the stop.
5. By not arriving at the end of the line ahead of time in order to get a longer lay-over.
6. By starting on time.
7. By stopping at the right place so that the passengers won't delay the car by having to walk some distance to the doors.
8. By the conductor calling out the streets in a clear voice so as to permit quicker unloading.

Methods for notching up the controller are dealt with in considerable detail. The rules given regarding this may be summarized as follows:

**THE CONNECTICUT COMPANY**

**TO MOTORMEN AND CONDUCTORS**

The cost of every item used on the Street Railway has gone up. Coal, wages and everything else, but the public pays no more for a ride than it did years ago. It is therefore, necessary to further economize in every department.

One of the chief items of expense is coal to make the electricity that runs and heats the cars. When we save electricity we save coal. How can electricity be saved?

**THE WAY TO SAVE ELECTRICITY IS TO COAST MORE, USING GOOD JUDGMENT IN STARTING AND STOPPING THE CARS, SO AS TO GIVE MORE TIME FOR COASTING.**

If you save only four seconds by notching up a car. This report must be handed in each day at the expiration of the day's work.

The following rules show in detail the way in which cars can be operated to the best advantage. Talk these over with your conductor for he can help you by giving the starting signal promptly and in other ways. The men who use the best judgment in carrying out these rules will get the best record.

J. K. PUNDEFORD,  
V. P. & G. M.

Dec. 15, 1917.

FIG. 7—CLIPPINGS FROM FIRST AND THIRD PAGES OF INSTRUCTION BOOK ON POWER SAVING



1. Run with resistances in circuit as little time as possible. This means notching up at as fast a rate as a proper regard for safety, for the comfort of the passengers and the care of the equipment will permit.

2. In starting a car move quickly over the resistance notches to the first running point, wait there for a short time, then move quickly until the full multiple or last notch is reached. This waiting until moving into multiple has three good effects. First—It enables a motorman to move more quickly over the multiple resistance notches, and so saves power. Second—It reduces the strain on the controller. Finally—It reduces the draft of power and strain on the transmission lines and power station.

3. Don't, however, notch up so fast as to spin the wheels and pull out the circuit breaker, as this will waste power just as much as the old way. Use good judgment in this as in everything else. When the rails are slippery, adjust operation accordingly.

Proper methods of applying the brakes were then explained and for convenience the rules regarding this are summarized as follows:

1. Apply the brakes at as low a car speed, and at as high a rate as is possible, having regard to safety, to the comfort of the passengers and to the care of the equipment. Slow down the car without jerks; avoid "fanning the air" and whenever possible make one application do the work. Release the brakes a little just before the final stop. This will avoid a jerk, and will reduce trouble from flat wheels.

2. Making a quick stop saves power just as making a quick start does, but in a different way. A slow stop loses time in one block, and so leaves less time for coasting in the next, or in a later block. "Fanning the air" aggravates this, and in addition wastes still more power by requiring the more frequent pumping up of the air reservoir. Fast braking doesn't mean stopping the car so fast as to lock the wheels. Good judgment will tell what is right in this as in everything else. Adjust the braking rate to suit the rail conditions from day to day.

One of the first serious sources of waste in car operation consists in running too close to the car ahead, and so being forced to make unnecessary stops and slow-downs. In this connection it is pointed out that it takes about as much power to start a car once as will keep it running for a quarter of a mile on level track; so that unnecessary stops are very wasteful. Motormen are required to note that the word "unnecessary" is used. All proper brake applications as dictated by safety and the needs of the public should, of course, be made. Only the "unnecessary" ones should be eliminated.

Some unnecessary brake applications were then indicated as follows:

1. Those caused by running too close to the car ahead, when the second car might just as well be a short distance behind.

2. Those caused by approaching cross streets, curves, etc., at too high speeds.

3. Those caused by not keeping a good lookout for teams and other obstructions ahead.

Correct operation in each of the above three particulars not alone saves power but obviously increases safety of operation. This point is emphasized. The effect of unnecessary brake applications upon brake-shoes, wheels and rails is then gone into, and the connections between these and power saving pointed out.

#### MAKING THE POSSIBLE SAVINGS DEFINITE

In discussing the chart shown in Fig. 3 it is pointed out that the difference between good operation and careless operation can be as high as 6 lb. of coal per mile. This at 100 miles a day can make a difference of more than 100 tons of coal per year. Six pounds of coal per mile does not look very much to a motorman, but when translated into "100 tons of coal per year" it acquires a new meaning. This is the difference between

the best and the worst men. The average amount to be saved, of course, is less than this.

Conductors are encouraged to attend these meetings for the reason that motormen's efforts at power saving can be very much influenced by the way in which the conductor performs his portion of the duties. The best results come only from good team work on the part of both men. As a guide to conductors, the following suggestions were made:

1. As soon as the car starts, call out in a clear voice the name of the next street or stopping point, so that as early as possible passengers may signify their desire to stop.

2. Give the stop signal early. The bell in time will often prevent the motorman from throwing power on unnecessarily and so avoid waste of power.

3. Make the stop as short as possible, having regard to the safety and convenience of the public. All time saved at stops can be used by the motorman for extra coasting and so will help in saving power.

4. Avoid excessive use of heating current. It takes about one-third as much power to heat a car on a winter's day as to run it. An overheated car is more disagreeable to the public and more unhealthful than one which is too cold. Avoid waste in this as in everything else.

#### THE FOLLOW-UP SYSTEM AND ITS RESULTS

Motormen are supplied with a combined time and power-saving daily report form which is reproduced herewith. The time-slip portion of this is similar to that used prior to the power-saving campaign. The other portion has been added and provides space for the motorman to write down the power-saving recorder figures each time he joins and leaves the car. These reports are handed in each day and are then allowed to accumulate for two weeks. They are then classified into routes, so that all men whose records are in any way comparable may be grouped together. The records for each route are then totalized and the average efficiency figures found for all men operating cars on this route.

Each man's record is compared with this average, thereby making it possible to classify the men in the order of their merit. Rating lists, showing each man's standing, are posted twice a month, and by this means a spirit of competition is created and kept alive. Men showing constantly at the bottom of the list receive special attention from the instructors.

The results of the power-saving campaign have been gratifying. The division first equipped with power-saving recorders (New Haven) has shown a consistent and constantly increasing reduction in kilowatt-hours per car-mile month by month, totaling at the end of five months nearly 11 per cent. It is expected still further to reduce the power consumption and gradually to achieve the same, or better, results on other divisions, some of which are but now being equipped with recorders.

What has been achieved is not the result of any one man's individual effort. It has resulted from the loyal co-operation of many local managers, superintendents, chief motormen and others. Similar results can be obtained wherever the same team-work is possible.

The cost of the uniform worn by the women conductors on the New York Railways is \$5.75, made up as follows: Coat, \$2.75; bloomers, including puttees, \$1.75; cap, \$1.25. The uniform is made of khaki material. A photograph and a description of it were published in the issue of this paper for Dec. 15, 1917.

# Women Successful as Conductors\*

Have Been Quick to Learn—Average of Character and Intelligence Is High Among Those Who Apply—Public and Male Employees Have Accepted Plan Kindly

By COL. T. S. WILLIAMS

President Brooklyn Rapid Transit Company

**O**F COURSE the employment of women for what are generally called "men's jobs" is by no means new, although it has been accentuated by the conditions which war has produced. While in some states of society women have been expected to carry the burden of most of the hard physical work, the higher standards of civilization, recognizing the importance of conserving both the physical and moral influences of women on the human race, have regarded with disfavor any employment of women which subjects them to occupation not mainly domestic or intellectual.

Notwithstanding this tendency, the census of 1910 showed that in this country more than 23 per cent of females of ten years or over were engaged in gainful occupations. Out of 8,075,000 such females only 2,530,000 were engaged in domestic and personal service, 733,000 in professional service, and 593,000 in clerical service. There were 1,807,000 engaged in agriculture, and nearly 2,400,000 in manufacture, transportation, trade and mining.

It therefore looks as if our previous occupational standard for women was being radically modified—whether for the better or worse being a question as to which there may be radical differences of opinion. The present increasing interest in this question arises out of the recent and very sudden increase in the employment of women occasioned by the conditions of war. Especially in England and France, but all over Europe, and to a considerable extent in this country, women are taking the places of men in lines of work which have been generally regarded as distinctly mannish. England has a million women engaged in munitions work alone. They are doing agricultural work to a larger extent than ever, are running automobiles, and are engaged in the operation of railroads and other transportation properties.

With the railroads in this country the employment of women, except for duties more or less clerical which they have long been performing, was at its inception a matter of necessity and not of choice. For the kinds of railroad work to which women now for the first time have been assigned, I assume all railroad companies would have continued the use of men had it been possible to obtain men with satisfactory qualifications. That was essentially our condition on the lines of the Brooklyn Rapid Transit Company, and it is with respect to our experience that I speak more particularly.

We were the first transportation company in the country to employ women as guards on subway trains. Fortunately for the trial of such an experiment, the duties of this occupation are not onerous. Train doors

are opened and closed automatically by pushing a button, and about all the woman guard has to do is to be careful in properly closing the doors, in giving the necessary train signals and in calling out the names of stations. In addition she must, of course, have a cool head, a knowledge of what to do in emergencies, and must show courtesy to passengers. We found that in nearly all these qualifications women were the equal of men, and in some surpassed men—especially the type of men now seeking these positions.

## WOMEN MAKE GOOD IN RAILWAY WORK

This initial experiment was so successful that we extended it to the position of conductors on surface cars, and to the position of porters at stations and of car cleaners. Of course, women have been successfully employed by the company as ticket agents for a great many years.

After three months' experience we are prepared to say that these women employees have absolutely made good. We have now 525 women thus employed. Of this number 300 are subway guards and 175 are surface railroad conductors. The consensus of opinion of our operating officers is that they are quicker in "breaking in" than the average man; that they are not so anxious for days off; that they attend to their duties more faithfully and have fewer accidents; that they are anxious to learn and to hold their positions; that in collecting fares and passing signals they are on an equality with the best male conductors; that they are more conscientious in registering fares, and that the rank and file of male employees are doing their best to help the women in making a success as train employees.

## REQUIREMENTS FOR POSITIONS

Female applicants for the positions must be over twenty-one years of age and preferably between twenty-four and thirty-five; must be in good physical condition, weighing not more than 150 lb.; not under 5 ft. 5 in. in height; have good eyesight and color sense, and they must present satisfactory references. The applicants are mostly women who have heretofore worked in factories, as domestic servants, as nurses, hotel employees, cashiers and school teachers. Many are wives, daughters or sisters of Brooklyn Rapid Transit men who have gone into military service, and some are widows of our former male employees. There are instances of man and wife on the cars respectively as motorman and conductor, of brother and sister, and of father and daughter.

The average of character and intelligence is high among the women already employed, and as the novelty has worn off and the public has become more accustomed to seeing women on the cars, women of more education

\*This article appeared in the *New York Evening Post* for Feb. 26 as one of a series dealing with the new industrial opportunities for women in America, brought about by the change in labor conditions resulting from the war.

are applying. The publicity which the employment of women has received has seemed to bring out applicants of a higher rather than a lower type.

Women employees are paid at exactly the same rates as the men—all of our rates being on a seniority basis. On the surface lines they start at 27 cents an hour, are raised to 30 cents an hour in the second year, with increasingly larger rates to a maximum of 35 cents an hour. As subway guard, where the work is easier, they start in at 24 cents an hour, with an increase each year to a maximum of 30 cents an hour. These wages attract the women because they are higher than they have been accustomed to receive in other occupations, and are higher, I believe, than the average amount paid women in occupations not requiring special training and experience.

Of course, the employment of women has necessitated special accommodations for their comfort at the car depots. Here they have their own rest rooms and lockers, and as the number increases special women inspectors will be employed to look out for their welfare. The women are not allowed to use the men's clubrooms, or to mingle with them in any social way during working hours.

The privileges of our group insurance plan are open to them on the same terms as to men employees of the company, and equally with the men they are entitled to free medical service.

INNOVATION SUCCESSFULLY MADE

So far as the public is concerned, it seems to have taken to this innovation kindly. It required considerable courage for the first women employees on the cars to "break the ice" and subject themselves to the curiosity of passengers. As the number of women conductors and guards increases, however, and their presence has become an old story, this cause of embarrassment is disappearing. With the exception of occasional taunts and jibes from ill-mannered men, and some ill-tempered criticism from hypercritical women, the attitude of the public towards the women employees may be said to be considerate and helpful.

It is noticeable also that their presence is having a good effect upon the male employees. The latter now appreciate the necessities which have compelled the employment of women in these occupations, and their masculine chivalry is constantly apparent. The occasional intoxicated male passenger seems to have no terror for the women conductors and guards, as they usually quiet his offensiveness by a word and a smile, and if these do not succeed there is always the motorman, to say nothing of sober male passengers, who are willing and eager to proffer their services.

Of course, there are interesting human phases of this new industrial experiment. One woman conductor fell in love with her motorman, stayed away for one day to be married and returned the next day with the announcement that both she and her husband would remain in service. One old-time motorman threw up his job because his wife would not allow him to work with a woman conductor. One woman employee fell a victim to pleurisy, and another had to give up her job because she fell off the rear platform of a car.

There have been few dismissals for inefficiency or dishonesty.

Illinois Associations Appeal to Public

State Bodies Are Speaking to the People Through Newspaper Advertisements Showing the Need for Higher Rates

THE accompanying reproduction shows the kind of material being used by the Illinois Electric Railways Association, the Illinois State Electric Association and the Illinois State Gas Association in their united appeal to the public for due consideration of the need for increased rates. The three advertisements shown in the illustration below have been sent out for publication in the various newspapers in the State.

This campaign was decided upon in order to bring directly before the people of Illinois the problems which confront utility managers in these "high cost" times, and to cause the thinking public to realize that the vastly increased costs have affected utilities as well as other enterprises. The associations hope to point out that public utilities and railroads are per-



THREE ADVERTISEMENTS, REPRODUCED IN PART, SHOWING THE STYLE OF PUBLICITY EMPLOYED BY ILLINOIS PUBLIC SERVICE ASSOCIATIONS

haps the lone exceptions whose price to the public is fixed by ordinance or statute, thereby making them unable to increase their revenues to offset the increased costs of operation.

It is also hoped to have the public appreciate the necessity for the continued operation of public utilities on account of their intimate relation with the prosecution of the war. It is felt that if the gas and electric companies and electric railways are handicapped to such an extent that they are unable to keep their properties up to a high state of efficiency, the entire industrial world will suffer.

The following quotation from the annual report of the Comptroller of Currency, John Skelton Williams, which was noted in the ELECTRIC RAILWAY JOURNAL of Feb. 9 and is reproduced in part in one of the advertisements, is regarded as being particularly timely:

"The work of war has thrown upon many of these corporations strains which they are unable to endure without prompt help. The cost of their labor and of all materials for operation, betterment and upkeep has increased heavily and suddenly. . . . The continued and increasing efficiency of these corporations is important for the successful conduct of the war. . . . The first and most direct relief to the public utilities can be given by the state public utilities commissions and municipal and local authorities with the broad-minded co-operation of the people."

# Annual Meeting of C. E. R. A. Takes Patriotic Form

About 200 Delegates Attend—President Wilcoxon and Ex-Mayor Bookwalter of Indianapolis Speak on First Day—Work of Accountants' Association Reviewed on Friday—Special Quartet Leads Singing

THE annual meeting of the Central Electric Railway Association was held this week at the Miami Hotel, Dayton, on Feb. 28 and March 1. The first session was set for 3 o'clock on Thursday afternoon to allow delegations from neighboring cities to leave in the morning and reach Dayton the same day. The largest special party came from Indianapolis. About 200 in all were present.

C. N. Wilcoxon, president Chicago, Lake Shore & South Bend Railway and president of the association, called the meeting to order at 3 o'clock and presented his annual address, which advocated publicity as of help in securing relief to electric railways. The address was received with applause.

An attractive feature of this and the other sessions was the singing of national anthems. The singing was led by a quartet under the direction of J. F. Starkey, general passenger agent Lake Shore Electric Railway, but the audience joined in the singing.

After the presentation of the address by the president, Charles A. Bookwalter, former Mayor of the city of Indianapolis, addressed the delegates. Speaking as one who had had much to do in his official capacity with the relations between the public and the electric railways, he noted several successive changes in the attitude of the public toward electric roads. Originally when the interurban railways sought to enter terminal cities over the streets, there was a howl of disapproval. Then, as it was found that the interurban brought new business and prosperity to the cities this attitude changed to a friendly one and many roads were built. Gradually as the increase due to this impetus became less conspicuous, the popular tide turned against the railways, but it is again favorable because of a more general present appreciation of the service rendered.

Mr. Bookwalter acknowledged that in the past the public had hampered transportation development. The effect of this hostility was seen in the coal famine this year, as this famine was brought around primarily because of lack of transportation facilities rather than lack of fuel. The great benefits which electric railways can confer on the public are now becoming better recognized. In the past self-appointed guardians of the public welfare in some cities have urged that electric railways in cities should be restricted to the transportation of human beings. But this winter these restrictions have been relaxed to some extent under war conditions. The public need has affected public opinion, and the public now better realizes what electric railway service means to its welfare.

Mr. Bookwalter also discussed the war, and his address was logical and thrilling. He said that the war

was primarily due to the systematic inculcation in Germany of the doctrine ever since the Franco-Prussian War that might makes right. This philosophy has permeated the German people and entirely transformed them. We entered the war because we realized that our rights were invaded, but this invasion at home and abroad had begun in August, 1914, when the war broke out. Mr. Bookwalter strongly advocated universal military training, a sentiment which the meeting loudly applauded.

On Thursday evening all of the attendants at the meeting were the guests at a theater party of John F. Ohmer, president Ohmer Fare Register Company, Dayton.

## MEETING ON FRIDAY

The program on Friday included an address by Charles A. Gilles, Dayton, on "War Savings," a paper by A. C. Van Driesen, president Central Electric Railway Accountants, on "The Work of the Accountants' Association," and the annual report of the secretary and treasurer. The report by Mr. Neereamer and an abstract of Mr. Van Driesen's paper follow:

### REPORT OF THE SECRETARY AND TREASURER

The report of the secretary and treasurer, which was for the year ended Dec. 31, 1917, said that the present railway membership of the association consists of sixty-eight interurban lines operating 4927 miles, and two city lines. During the year there were 140 supply members. A summary of the financial report follows:

Cash on hand Jan. 1, 1917.....	\$1,644	
Receipts .....	8,352	
Disbursements .....		\$8,398
Cash on hand Dec. 31, 1917.....		1,608
Total .....	\$10,006	\$10,006

The expenses include the amount paid out by the association for the work of the committee on military efficiency and defense, *i. e.*, account of the preparation of the map, \$373, and on account of the data sheets \$144, making a total of \$517. It also includes \$737 as investments. Of this amount \$273 was stock in the Railroad Men's Building & Savings Association and \$500 was a Liberty bond. Among the receipts were an item for the sale of tariffs of the Central Electric Traffic Association, \$1,691. The report concluded with the statement:

"Notwithstanding the increased expenses of the association during the past year, our finances are now in the best condition they have been since the organization of this association, and this situation is only achieved by careful watching of each and every expense, thereby preventing waste on useless items.

"The work during the past year has been very heavy owing to the preparation of the map compiled and securing of data showing the physical condition of the interurban lines in this territory, under the auspices of the committee on military efficiency and defense. The work on the map has been completed, and the information asked for in the data sheets has been compiled so far as same has been received from the interurban companies."

## The Work of the Accountants' Association

BY A. C. VAN DRIESEN

President Central Electric Railway Accountants' Association, and Secretary Toledo Railways & Light Company

THE Central Electric Accounting Conference was organized in Dayton in March, 1907, "to bring together electric railway accountants for the interchange of ideas; to promote the adoption of uniform systems of accounting and to encourage more intimate personal relations." In December, 1911, at Toledo, a new constitution and by-laws were adopted, the name of the Conference changed to Central Electric Railway Accountants' Association, and the association voted to become an auxiliary of the Central Electric Railway Association. The association numbers among its members sixty-seven individuals, representing sixty-one separate and distinct electric railways, including both city and interurban lines. This is practically 90 per cent of the membership of the Central Electric Railway Association, and we trust that the remaining 10 per cent will soon be within the fold.

### SOME WORK DONE

The various agreements adopted at the first meeting in March, 1907, relative to the handling of freight and ticket accounting are still in use, merely being revised to meet changed conditions. The committee on uniform report blanks compiled in 1909 a set of blanks for the reporting of interline business, which, with few changes, are in use at the present time. The rules and blanks prepared by this committee were practically adopted as a whole by the American Electric Railway Accountants' Association at Denver, in October, 1909. Our various committees have worked hard and well in promulgating forms, decisions and recommendations to be used in accounting problems. Various accounting forms as used by the different roads are on file in the secretary's office and will be loaned to any member on request. During the early part of 1917 a clearing house for interline traffic accounts was recommended, but to the present, principally because no meetings have been held by this association, it is still in its formative state. The benefits to accrue from the installation of this system are many, principally the elimination of individual drafts with consequent saving in clerical work, besides a large saving in postage and stationery.

In 1916 the association appointed a committee on electric light and power accounting. This is a very important committee, as there is no uniform system of accounts for electric light and power throughout the country. Each state prescribes its own classification, and for an interstate road a large amount of time as well as gray matter is needed properly to report the revenue and expenses and the various statistics required, owing to the clash of different classifications.

On account of the war but one meeting was held in

1917, that on Oct. 27, for the purpose of considering the war revenue act. At this meeting certain motions were adopted relative to the collection of the taxes, and as future events have proved, the decisions then rendered by the members of this association were upheld by the Treasury Department in its interpretations of the law. Thus once again you see this association was in the forefront, as it has been so many times in the past.

It is not often that an accounting official is in the position I stand to-day, whereby he can talk directly to the operating heads and general managers of properties and tell them some of the trials and tribulations he suffers often at the hands of these very officials. Personally, I am fortunate in being able to report directly to our president and general manager, but in a large number of cases the accounting official is obliged to report through a third party, sometimes even to the operating head, which, in my humble opinion, is directly opposed to good accounting. Permit me to quote from an address given by me to embryo accountants about three years ago:

The accountant of to-day has outgrown the old bookkeeper with his debit and credit system. He must be highly trained. He should be familiar with the laws, both state and federal, governing public service corporations. Nearly all of them affect the accounting department in one way or another. He must be able to analyze; he must know his property, and by that I mean he must know every detail of the operation and organization of the property, in order that he may not only record the figures but that he may also know and understand the reasons for those figures.

In this connection I desire to emphasize the absolute necessity for the greatest co-operation between the accounting and all other departments of a corporation. In many corporations the accounting department is looked upon as a necessary evil, while in my opinion it is the very life of the organization. The secretary, who is usually the head accounting official, should report directly to the general manager or executive head of the corporation. The best results are obtained from the accounting department if it is entirely independent of other sections of the management. All other departments should act in harmony with the accounting department, and endeavor in every way possible to assist it in securing the information requested by it, as such information is necessary for the reports and other statistics used for the officials and stockholders. The accounting officer should have authority to reach directly the sources from which information for accounts is obtained and to secure it when and as asked for. The operating man should remember that a large amount of the accuracy and efficiency of the accountants' records are dependent upon the operating reports submitted by him. On the other hand, the accounting official should use all the tact possible, as sometimes the "deadly parallel," as it is called, by comparison of this year's and last year's figures, tends to make the operating head antagonistic and this in time develops into indifference. The operating men know their activities are being checked, and in many cases blame the accounting officer for the restrictions, instead of going deeper into their own departments to see where expenses can be reduced.

## Relief Urged for Boston Elevated

Governor McCall has sent a message to the Massachusetts Legislature urging that the Public Service Commission during the continuance of the war and one year thereafter, or until the Legislature shall otherwise provide, be given power to fix just, reasonable and equal rates of fare upon the Boston Elevated Railway, and to set interim rates pending a hearing on the situation. The Governor is convinced that immediate action is necessary in the interests of the public as well as the company. Under the special legislative act under which the company operates, it is restricted from charging more than a 5-cent fare.

# Report on Rapid Transit System for Detroit

The Full Text of the Report by Barclay Parsons & Klapp  
 Recommends Partnership Arrangement with D. U. R.,  
 Flexible Fare and Combined Subway and Elevated Structure

THE firm of Barclay Parsons and Klapp, New York, whose first report on the transportation situation of Detroit was made three years ago and was published in abstract in the ELECTRIC RAILWAY JOURNAL for April 3, 1915, has just presented to the Board of Street Railway Commissioners a supplementary report on a suggested rapid transit system.

The present report, which is accompanied by a number of maps and tables, was prepared in answer to the commissioners' request for a statement as to whether the growth of the city, the increased traffic and the conditions of street congestion do not now warrant the initiation of a rapid transit program. The report says that they do and recommends a combined subway and elevated railway system comprising 5.66 route-miles of subway and 21.75 route-miles of elevated railway to be operated by the Detroit United Railway. This company, the report suggests, should enter into a partnership arrangement with the city for the operation of its system within the city limits on the basis of a valuation for its present property and division of net receipts after a return has been paid on this valuation and on the new capital required for rapid transit and surface construction and extensions. After careful consideration a flexible fare is recommended.

The report says that the population of the city and suburbs is increasing at a rapid rate and the prediction is made that by 1920 there will be 1,000,000, and by 1950, 2,000,000 people. This population, with existing density of population, residential locations, and distance from points of occupation brings the city within the rapid transit class, that is, it has reached the stage where other cities have entered upon their rapid transit development. As Detroit is built on a practically level plane with no real physical obstructions to city ex-

tensions, the inevitable character of its growth must be toward residence districts of relatively low population density, houses of the one and two-family type predominating. A population, therefore, of more than 1,000,000 people distributed at about twenty per acre involves a city area of about 100 square miles or the necessity of hauling many passengers from 8 to 10 miles. This means, with ordinary electric railway service, a ride of about an hour. Table I shows actual and estimated passenger traffic from 1904 to 1950.

The report does not urge the commencement of actual subway construction in Detroit at the present time when all financial and construction resources in the country are under the strain of a great war. It points out that a considerable number of years must necessarily elapse between a decision to build and the commencement of successful operation, and that of this period much of the time must be employed in working out details of agreement, specifications and plans. This preliminary work does not involve expenditure of large amounts of money, but, when completed, would make immediate construction possible upon the resumption of normal conditions.

Table II gives the total passengers per mile of single track in Detroit, Chicago and New York, showing that the Woodward Avenue line carried in 1917 a denser traffic per mile of track than the heaviest rapid transit lines in this country with the single exception of the New York subway line in 1916. The density of traffic on Woodward Avenue is 44 per cent heavier than Halstead Street, the heaviest street car line in the city of Chicago. In fact, the reporting engineers say that so far as they have been able to ascertain there is no single line of surface cars operating over a distance of 7 or 8 miles that carries as heavy a traffic as this

TABLE I—SHOWING ACTUAL AND ESTIMATED PASSENGER TRAFFIC IN DETROIT

Year	Population	Passengers		Revenue Rides per Capita
		Total	Revenue	
1904		105,641,220	78,349,220	248
1910	500,982	194,388,505	141,690,525	282
1913	614,486	289,130,216	208,945,348	339
1914	660,000	310,010,104	219,606,056	333
1916	820,000	417,780,244	292,043,741	356
1917	914,000	440,544,836	315,498,478	361
1920	1,000,000	518,000,000	370,000,000	370
1930	1,330,000	708,000,000	507,000,000	380
1940	1,660,000	904,000,000	650,000,000	390
1950	2,000,000	1,110,000,000	800,000,000	400

TABLE III—SHOWING RECORD OF PASSENGERS IN DETROIT JUNE 27, 1917 (AN AVERAGE DAY)

Revenue passengers, six tickets for 25 cents	273
Revenue passengers, seven tickets for 25 cents	743,660
Revenue passengers, eight tickets for 25 cents	65,755
Revenue passengers, interurban tickets	2,283
Revenue passengers, 5-cent tickets	877
Revenue passengers, 5-cent cash fare each	51,455
Free riders (employees)	22,720
Transfers, single	275,957
Transfers, double	62,077
Total	1,225,057

TABLE II—SHOWING TOTAL PASSENGERS PER MILE SINGLE TRACK, DETROIT—CHICAGO—NEW YORK

Line	1914	1917	Per Cent Increase
Woodward	3,069,600	4,640,000	52.0
Michigan	1,737,900	2,280,000	31.1
Jefferson	1,716,500	2,290,000	33.4
Fort	1,074,000	1,400,000	30.3
Halstead Street, Chicago		3,230,000*	
Elevated Railways, Chicago	1,022,000	1,115,000*	9.2
Elevated Railways, Manhattan and Bronx, N. Y.	3,049,800	3,230,000	6.2
Elevated Railways, Brooklyn		1,295,000	
Hudson and Manhattan Tubes, N. Y.	3,447,200	3,673,000	6.6
Subway, New York	4,468,500	4,970,000*	11.3

\*1916.

TABLE IV—SHOWING COMPARISON OF COST AND FIXED CHARGES ON DETROIT TRANSIT SYSTEM WITHOUT AND WITH RAPID TRANSIT

Item	System	Cost	Interest at 6 per Cent
A	Present D. U. R. city surface lines and equipment	\$30,000,000	\$1,800,000
B	Item A, with Woodward Avenue subway and elevated, and equipment	51,000,000	3,060,000
C	Item B, with an east and west subway and elevated, and equipment	68,000,000	4,080,000
D	Item C, with surface line extensions to facilitate transfers between rapid transit and surface lines	75,500,000	4,530,000

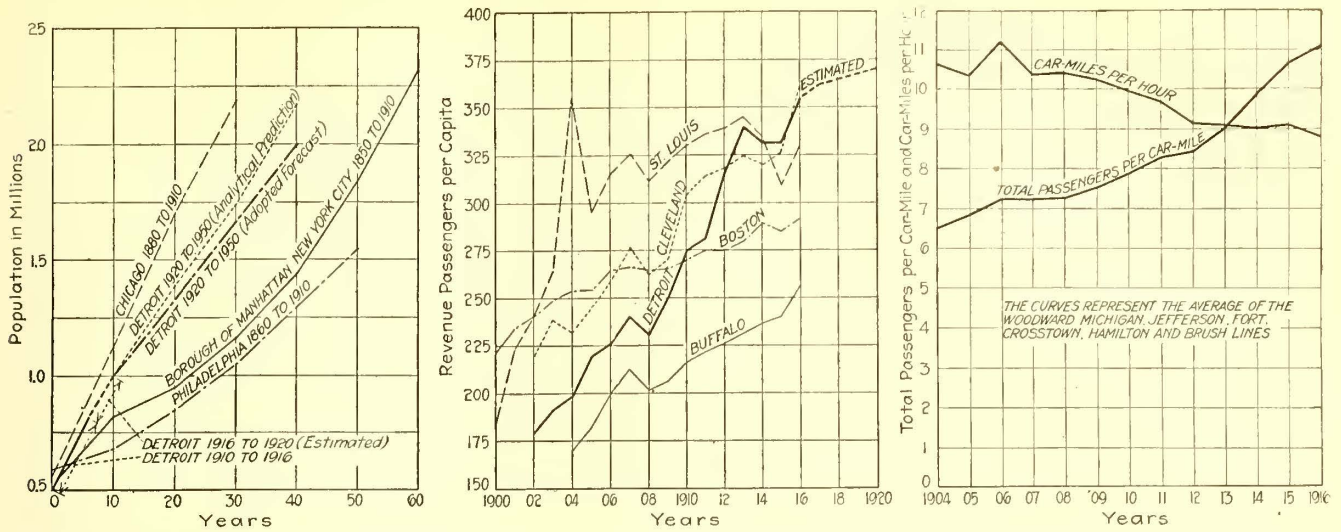


FIG. 1—PREDICTED POPULATION OF DETROIT COMPARED WITH ACTUAL GROWTH OF OTHER CITIES; FIG. 2—REVENUE RIDES PER CAPITA BY YEARS IN VARIOUS CITIES; FIG. 3—CAR-MILES PER HOUR WITH RELATION TO PASSENGERS PER CAR-MILE

Detroit line. Table III gives a record of passengers on June 27, 1907, a typical day, showing the classes with each kind of ticket.

Continuing, the report says that in the heart of the city where the congestion of vehicular and street car traffic and even pedestrian crossing traffic has become very serious, no other solution than by a subway system is possible. Outside of this congested central district overhead railways are recommended. These elevated lines for considerable part of their length, toward the downtown end, are to be built upon purchased right-of-way, using alleys and back ends of lots. Here a structure so designed as to span the right-of-way would be used, thus providing an additional vehicle highway underneath for trucks and commercial vehicles. Where the overhead structure is upon the street, a type with central columns placed between existing surface car tracks to offer the minimum obstruction to the street is recommended.

UNIFIED TRANSPORTATION SYSTEM RECOMMENDED

The report urges the unification of the surface and rapid transit systems to avoid duplication of investment in rapid transit and street car lines and maximum of

service with transfers between the two. Such a plan will encourage the use of the surface cars for short-haul local business and the rapid transit system for the long-haul passengers. A flat fare instead of the zone system is recommended, at least "within reasonable limits," and the report quotes from the decision of the Public Service Commission of Massachusetts in the Middlesex & Boston rate case in favor of a flat fare to support the decision. But the rate of fare should be made dependent upon the cost of service or else the city must be willing to pay the difference by levying taxes. Otherwise the city cannot hope to secure the necessary amount of capital for other rapid transit construction. The estimated cost of the system is given in Table IV.

Emphasis is laid upon the absolute necessity of an increase in fare over that at present in effect on the street car system of Detroit in order to support the proposed rapid transit system. The cost of a two-track elevated system of the type described would be eight times and that of the subway twenty-four times as much as the existing surface car line on the same street. The only way in which the present rate of fare has been maintained is through the constantly increasing total number of passengers per car-mile, with a

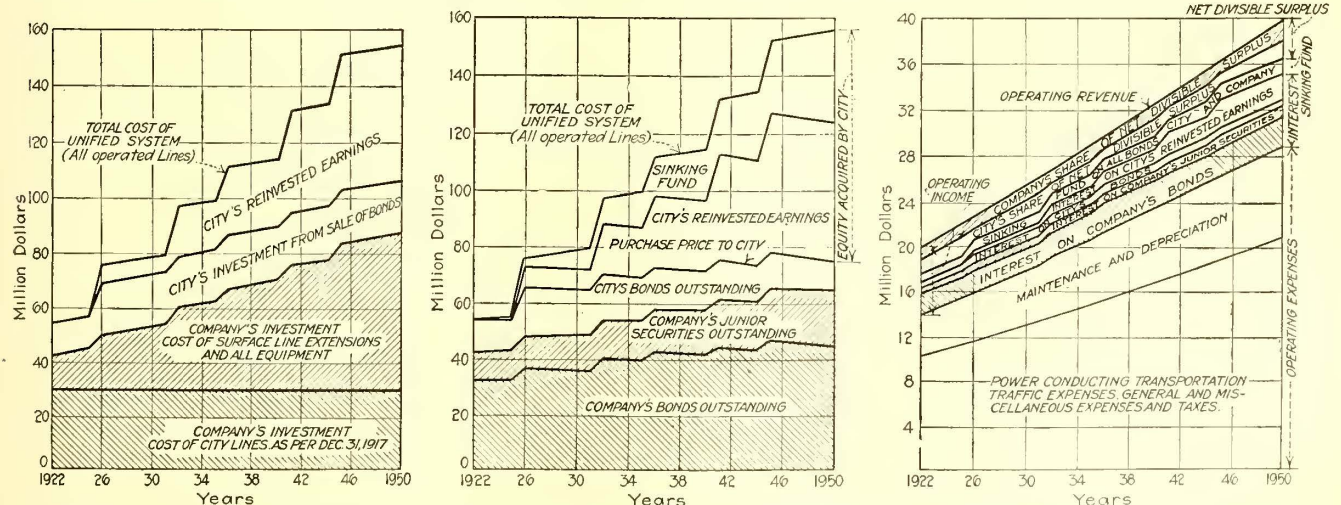


FIG. 4—DISBURSEMENTS FOR INVESTMENT IN ROAD AND EQUIPMENT, UNIFIED SYSTEM; FIG. 5—EQUITY IN INVESTMENT FOR ROAD AND EQUIPMENT AS AFFECTED BY THE SINKING FUND AND THE CITY'S REINVESTED EARNINGS, UNIFIED SYSTEM; FIG. 6—DISPOSITION OF OPERATING REVENUE, UNIFIED SYSTEM

## Fare Boxes Replacing Ticket Choppers on the Hudson Tunnel Lines

Convenience to Patrons Receives First Consideration  
—Forty-nine Boxes Will Be Used to Collect  
5 and 7-Cent Fares

THE Hudson & Manhattan Railroad, which operates more than 18 miles of third-rail track between New York City and points in New Jersey, through tunnels under the Hudson River, has made a study of fare collection methods for the past three years, during which time several tests on station fare boxes have been conducted. The result is that the sale of tickets is now being discontinued and all ticket boxes are being replaced with fare boxes made by the Johnson Fare Box Company.

The main consideration which has led to the adoption of the new system of fare collection has been that of convenience to the public. It is not believed by the railway company that there will be any material increase in revenue, and it is not proposed to lay off any employees. The men who have operated the ticket boxes will now operate the fare boxes and those who have sold tickets will make change.

Strange as it may seem, many people who ride every day on the subway lines of New York City prefer to stand in line and wait to buy a ticket each trip rather than invest a dollar or even 50 cents and save themselves inconvenience and delay nineteen or nine times, as the case may be. Because of this tendency in human nature and also considering the many persons who ride only occasionally and those of the poorer class who can

(Concluded from page 421)

falling off in the speed on practically every line in the city, as shown in Fig. 3. It would be futile to consider an average fare on the new rapid transit system of less than 5 cents per revenue passenger, according to the engineers, even if the undertaking was financed with the city credit.

Under the proposed plan, the city will contribute the funds necessary to build the rapid transit lines, and the company will contribute the existing street car system at a reasonable valuation, which is assumed in the report to be about \$30,000,000. Subsequent rapid transit construction is to be financed by the reinvestment in the new structure of the city's share in the surplus from operation. Operation of the entire system is to be by the company under a license which is to continue until terminated by default by the company or by the purchase of the property by the city. A sinking fund to retire the bonds of both the city and the company in sixty years is provided, the equity in the property represented by the bonds retired through the operation of the sinking fund reverting to the city. The net income, after setting aside the interest charges and sinking fund, is to be divided equally between the city and the company, provided the company's income does not exceed 8 per cent on its investment.

Fig. 4 shows the disbursements for investment as divided between the city and the company, Fig. 5 illustrates the equity in the road and equipment for different years, and Fig. 6 gives the disposition of the operating revenue on the basis of the traffic assumed, all as proposed in the report.

afford to buy only one or two tickets at a time, there is no doubt but that the waiting line at the ticket window can be reduced 50 per cent by the installation of fare boxes. The majority of the patrons, after they become familiar with the system, especially as no investment is necessary, will see to it that they have the proper change before entering the subway.

A total of forty-nine boxes are being installed, different combinations of mechanism being necessary at the various stations as the fare at some points is 5 cents while at others it is 7 cents. All boxes are operated by small motors, inclosed in the pedestal of the box. These draw current through resistors, from the third-rail circuit. The boxes stand rather high and the coins deposited pass down through a series of inclined plates onto a horizontal surface revolving endless-chain fashion. Here they lie in view of the operator and should a question arise as to the correct fare deposited, slight pressure on a small lever at the side of the fare box stops the motion of the box floor and holds the coins in sight. Otherwise the coins pass over the edge into a compartment so shaped that they fall flat against a disk revolving at an angle of approximately 45 deg. This disk has small projections so arranged that a coin is picked up and carried to the top, where it passes under a small wheel. This actuates a small pinion which engages a rack at the back of the disk directly opposite the projection. Each rack represents the denomination of the coin picked up, and records the amount on a counter at the front of the box. The projections for cents, nickels and dimes are so constructed that a coin of but one denomination will fit in a given position. A small "knock-off" hammer prevents more than one coin from passing through the recorder at once. After being recorded the coin drops down into a large container inclosed in the base of the pedestal.

The round base of the pedestal has a large revolving door in the front, the key to which is held by an employee who collects and exchanges the containers once a day. The operation of removing the container from position automatically revolves the top of the container in such a manner that by the time it is free from the pedestal, the top is closed and locked securely and the only key which will open it is held by the treasurer in the main office of the company. The container being removed from the pedestal, the revolving door is automatically locked open so that it is impossible to close it until a new container is placed in position. This is brought from the office of the treasurer with the top open, and should it become locked en route by accident, it is impossible to place it in position. Otherwise it is placed in the base of the pedestal and the revolving door closed and locked. Absentmindedness on the part of the employee is guarded against in that once the key is inserted and the revolving door opened even for the fraction of an inch the key cannot be withdrawn until the door has been opened, the container removed, a new container placed in position and the door firmly closed.

To give facility for making repairs all parts of the fare box have been made easily removable by the loosening of one or two thumb screws. The parts also have been standardized so that a damaged part can be replaced either from stock or in case of emergency from a near-by machine. The gears are packed in graphite grease in a case similar to that used to inclose the differential of an automobile.



## LETTERS TO THE EDITOR

### Should Larger Axles Be Used on Electric Railway Cars?

UNION TRACTION COMPANY OF INDIANA  
ANDERSON, IND., Feb. 23, 1918.

TO THE EDITORS:

I have read with much interest Norman Litchfield's article on axle design and manufacture. He has covered the subject quite thoroughly and has prepared a most interesting article.

However, I am wondering just what can be wrong that has required or prompted so much agitation on car-axle design and manufacturing specifications. As I read between the lines in the article by Mr. Litchfield as well as others which I have read by different authors, it seems as though a number of roads have experienced an unnecessary or possibly an undue amount of axle failure. I am happy to report that we have not experienced any trouble with axle breakage except with some extremely old axles which have possibly been in service for fifteen years. It would be almost natural to expect that axles which have been subjected to continuous vibration for this period of time would some day show fractures and possibly break off entirely.

Mr. Litchfield comments upon the increase in weight of equipment. He does not state whether or not the sizes of the axles have been increased to take care of this increased weight. There must also be taken into account the matters of track maintenance, railroad crossings, etc., and their influence upon the axle failures. I believe that track conditions on this property represent about the average prevailing condition of other properties, and we buy our axles under the American Electric Railway Engineering Association specifications.

We have never felt that we could afford to send a representative to the factory to check up the production of these axles, nor to make chemical analyses. This seems to be the practice on a number of properties, especially the large ones. The Union Traction Company of Indiana might be considered as one of the larger properties. For this reason and because, in spite of the fact that they seem to carry out to the letter the program of checking up axles and making chemical analyses of them, other properties experience so much axle failure compared to ours (which are practically *nil*) it would seem that there must be some other "bug" entering into these failures. They may be partially due to what I have previously mentioned, namely, to the use of axles of insufficient size to enable them to withstand the stresses incident to the service in which they are employed.

Mr. Litchfield's discussion of the testing of axles in service for the purpose of locating fractures interested me very much. I differ from Mr. Litchfield somewhat as to the method of testing, in so far as attempting to test the axles for failures with the wheels or gears on is concerned. I contend that this test cannot be made satisfactorily unless the axle is stripped (that is, to be perfectly safe about the matter), as in a number of cases, particularly with old axles, we have found fractures within those portions covered by the gear and

the wheel. If the wheel and the gear are left on the axle during the test such failures would escape detection and the axle might be passed as safe.

The method of procedure outlined by Mr. Litchfield, *i. e.*, dipping the axle in hot oil, wiping the surface dry and coating with whiting, is all right, only we have not found it necessary to dip the axles in hot oil.

In the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 11, 1916, page 1025, appeared an article by the writer in which this test for defective axles is described in detail and illustrated with photographs.

R. N. HEMMING,  
Superintendent of Motive Power.

### Better Co-operation Between Railways and Technical Schools Is Desirable

PURDUE UNIVERSITY  
LAFAYETTE, IND., Feb. 20, 1918.

TO THE EDITORS:

Referring to the editorial "Line Losses Are Not All in the Line" published in your issue for Jan. 12, I feel that the ideas set forth therein relative to the subject which forms the caption of this comment are well worth further emphasis. As you point out, the average railway operating official has little time for research work beyond that which occasional emergencies make absolutely necessary. It is also quite true that the special testing equipment which forms part of the necessary laboratory apparatus of the technical school is not available to most railway men.

Aside from the purely cultural portion of its work, I take it that the technical school has two principal functions. These are to develop the engineers of the future and to push back the present frontier boundaries of human knowledge and place in usable form to those interested the results of such pioneer work. Sometimes I am inclined to think that the second-named function is first in order of importance. In the main, America's technical schools have concentrated on the first function, leaving the other to saunter along by itself. As a result our technical schools are not nearly so well linked up with our industries as were the schools of Europe before the war. As a matter of fact, the technical departments in our federal land grant colleges and state universities might in many ways with profit to themselves emulate the endeavors of their agricultural brethren who, while getting a slower start, are now going forward at battle speed. Certain it is at any rate that there is far better co-operation between our agricultural industries and our agricultural schools than there is between our technical industries and our technical schools. But the blame for existing conditions does not all fall in one place. The schools tend to be conservative and, as they are largely supported from public funds, the industries have not felt free to bring to them their problems, despite the fact that the tax returns from the industries form a very important source of these same funds. Political conditions and the suspicion which the public tends to harbor against the industries are important factors in this lack of freedom. Nevertheless, greater co-operation between the industries and schools than now exists is highly desirable and the present national situation tends to increase rather than decrease that desirability.

As far as the electric railway industry is concerned,

co-operation is possible along several lines. University extension courses might be organized for railway employees. Just at present such courses for trainmen and power-house employees might be of special value in promoting fuel conservation. Railway operating problems not of an emergency character might be made the subjects of graduate and undergraduate research work. To illustrate, such problems as the relation of fare increases and passenger traffic, effect of type of car on interchange time, rail corrugation, effect of flat wheels, and transmission line and equipment tests of a special nature all furnish possibilities along the research line. Some of the manufacturing industries have established industrial fellowships at several of the larger universities. Similar fellowships maintained under the supervision of some such body as the American Electric Railway Association might well be worth while to the railway industry.

Co-operation of the nature indicated above would be of undoubted value to all concerned. The industry, of course, would be interested in the final results and the securing of the results would tend to quicken both the students and faculties of the schools involved. Everybody knows that the railways have many problems common to the industry as a whole which are yet unsolved. If at present the universities do not have the equipment and other facilities necessary for their share of the work in solving these problems the need will be supplied provided the demand is sufficient. It is partly up to the railways to create the demand.

As most technical schools require a thesis or something equivalent in the way of research work as a prerequisite to graduation, there is no doubt considerable work of a more or less sporadic nature now being done along railway lines by the students and faculties of our technical schools. The results of such work, presented in a style suited to the reading of busy operating officials, should be of some value. Periodicals such as the *ELECTRIC RAILWAY JOURNAL*, which are widely read by railway men, would seem to be the most desirable vehicles for such presentations. An effort to secure the publication of data from such scattered sources would at least constitute a start along the line of better co-operation.

D. D. EWING,

Associate Professor of Electric Railway Engineering.

### Labor Conditions on the Brooklyn Rapid Transit

ACCORDING to a report prepared by A. Maxwell, superintendent Brooklyn Rapid Transit Company, there were practically 50 per cent more appointments as conductors, motormen, guards and "miscellaneous" during 1917 than during 1916, while the number was practically double as compared with 1915. The respective numbers were 8292, 5775 and 4218. By aggressive advertising the company has been able to maintain a correspondingly large number of applications, but it has been necessary to reduce the requirements somewhat and to employ women. The respective numbers of applications for work during the three years mentioned were 34,169, 17,263 and 14,993.

The *B. R. T. Monthly* quotes Mr. Maxwell as saying that as a result of the short experience of the company with women in train service he is pleased to record *bona fide* successful results. Their functions to date

have been limited to those of conductors, guards, car cleaners and porters, but their employment as "motormen" is still problematical. The women have proved uniformly courteous and attentive to duty, they get their fares with a minimum of trouble and inconvenience to the public, whom they seem to have "with them," and there is no doubt (the novelty of their inauguration having had full time to subside) that women have come to stay and will become a permanent institution. As to pay and seniority women employees of the company are treated on equal terms with their male colleagues.

The company has now an excused list of men on leave on account of military or naval service which includes 473 names.

## AMERICAN ASSOCIATION NEWS

### Connecticut Company Section Visits Meriden

ONE of the most successful meetings of the Connecticut Company section to date was that held at Meriden on Feb. 19. The program was of a patriotic and musical character. After opening the meeting, President W. P. Bristol turned it over to Robert P. Lee, superintendent Meriden division, who spoke briefly, and introduced successively Hon. H. G. King, Mayor of Meriden; Charles H. Tredenick, local fuel administrator; and Dr. E. C. Bradstreet of Meriden. All of these speakers referred to the untiring efforts of the management to maintain good service in the city. John J. Daly, a prominent local editor, read an original poem, "A Toast to the Flag." A number of musical selections were interspersed with the addresses.

### Varied Program of the Chicago Section

VARIETY was the characteristic feature of the meeting of the Chicago Elevated Railroads company section on Feb. 20, which was attended by about 100 members and guests. The January meeting had been abandoned on account of weather conditions.

After the singing of "America" a motion picture on accident prevention, entitled "The Reason Why," furnished by the National Safety Council, was shown. G. T. Seely followed with an explanation of the objects and accomplishments of the Electric Railway War Board. Next came a film furnished by the Ford Motor Company on "Training Officers for the National Army," and also one on "The Eleventh Regiment, I. N. G., on Its Return from Springfield."

Some stories and recitations were followed by brief talks by H. A. Johnson and coasting instructors from two of the divisions on the successful results of the use of coasting clocks. Finally, the members were entertained by a demonstration of sleight-of-hand, and the meeting adjourned in a patriotic finale with the singing of "The Star Spangled Banner."

The Trenton & Mercer County Traction Corporation, Trenton, N. J., has placed placards in its cars requesting passengers to move up to the front of the car and save delays at crossings.

## Recent Happenings in Great Britain

### Tramway Workers Ask £1 a Week Bonus—War Causes Operating Problems—Interchange of Electrical Supply Considered

(From Our Regular Correspondent)

An application for an increase of war wages of £1 a week on pre-war rates has been made on behalf of all the tramway men and tramway women workers throughout England and is now under consideration. Nearly 100 municipal and private tramway authorities are concerned, and something like 35,000 workers. The advances already granted range from 8s. to £1 a week on pre-war rates, and by the new application it is hoped by the workers to secure a uniform bonus amounting to £1 a week.

The employees of the Keighley Corporation Tramway recently asked through their union, the Amalgamated Society of Tramway & Vehicle Workers, that the advance of 15s. a week over pre-war rates granted in November last to men more than twenty-one years of age should be extended to women and youths; that Sunday labor should be paid at the rate of time and a half and all overtime paid at the rate of time and a quarter, such Sunday and overtime rates to apply to all the traffic staff. The application was refused, and the matter was referred to the committee on production, which has announced its award. Boys and youths under twenty-one are granted an advance of 7s. 6d. a week above pre-war rates, beginning on the first full payday in January, payable at the rate of 1s. 3d. a day or shift worked. No order is made with respect to the women, having regard to the statutory rules and orders made by the Minister of Munitions in accordance with the munitions of war (amendment) act, 1916. The committee concludes that the claim for time and a half for Sunday labor and time and a quarter for all overtime has not been established by the employees.

#### MUNICIPAL PURCHASE

The London United Tramways has deposited a Parliamentary bill which states that the undertaking is purchasable compulsorily by the local authorities at different dates, the earliest of which is 1924. Owing to the financial difficulties of the company it is proposed to postpone the dates for purchase until 1960 or after and to repeal the whole of the enactments and agreements which compel the company to make annual payments amounting to about £4,000 a year to the local authorities for the use of the roads. The bill also purposes from the expiration of six months after the war to increase fares to 1d. a mile for ordinary passengers and a halfpenny a mile during the hours for workmen's cars. Provision is also made to enable the company, if it thinks fit, to take up and abandon certain of its lines in Kingston and part of its light railways in Uxbridge, Hayes, Southall, Norwood and Hillingdon.

War-time difficulties are responsible for several decisions which have been arrived at by the Leeds Corporation tramways committee. In the first place, in order to overcome the congestion of traffic in the center of the city, it is suggested that steps should be taken to rearrange stopping places, with a view to eliminating those which are unnecessary. As it is impossible to obtain new rails, the committee has decided to revise the tram service in order to set free sections of line which do not have to bear very heavy traffic. It is the intention of the committee to take up a single line of rails in each section in the first place, and utilize it for repairs elsewhere. Should it be necessary the other set of rails will be removed later. The committee has arrived at this decision with reluctance, but repairs are so urgently needed on some parts of the service that it feels there is no alternative. The scheme for carrying parcels on the trams, and thus relieving the transport difficulty to some extent, has been advanced a stage further, and it is hoped to begin such operation shortly. Tradesmen in the city have agreed to utilize the trams for the dispatch of parcels, and arrangements are being made to establish receiving stations in the outskirts of the city.

#### CARRYING WOUNDED SOLDIERS

Complaints were made recently by Birmingham residents that in districts where hospitals for wounded soldiers are situated civilians occasionally have to wait for a long while because the cars are filled with wounded soldiers. It was suggested that during the rush hours each day special cars might be run for the soldiers. The general manager of the tramways has replied that this is not possible, owing to the shortage of labor and materials. There has been a very heavy increase in traffic and there is a reduced number of cars. The tramways committee asked the hospital authorities to instruct the soldiers not to get on cars more than six at one time, but this has not been observed by the soldiers. In reference to a complaint respecting the removal of the covered tops of cars, the general manager stated that there was no system in vogue in the department for the taking away of any of the tops of cars. Certain tops had been removed because they were unstable and the proper material could not be obtained to put them right. In referring to the condition of the tramway track, the general manager said that the committee was faced by the shortage of materials and labor. The war conditions were such that the public had to be satisfied. The committee had not the same quantity of labor as before the war, and what it now had was not the equal in quality. Most of the pres-

ent employees were men unfit for service in the armed forces or else not acceptable on account of their age.

Negotiations have been completed between Sheffield and Rotherham for linking up the two centers by an interchange of electric supply. The expenditure involved is approximately £1,000,000. The terms provide that the cost of the cables and transformers, together with the metering arrangements estimated at £50,000, be apportioned equally between the two corporations. The cost of maintenance is to be apportioned equally and the supply is to be available for use by either corporation at such times and to such extent as may be agreed upon by the respective engineers. It is proposed to ask the government department concerned for a free grant of a portion of the cost of the linking-up arrangements. The Sheffield Corporation has been authorized to borrow £602,532 for the erection of a new electric power station at Blackburn Meadows.

#### ELECTRICAL EXTENSION

It was reported at a recent meeting of the Leeds City Council that the Ministry of Munitions, in sanctioning the purchase of a 6,000-kw. turbo-alternator by the electricity committee, recommended the consideration of a linking-up scheme between the Leeds and the Bradford electricity works. The manager of the Leeds undertaking is in communication with the city electrical engineer of Bradford on the subject. The refusal of permission for the carrying out of the main scheme for the extension of the Leeds generating station is in accordance with the Ministry's rule not to allow general developments except in connection with war work. The development was planned before the outbreak of the war. It is expected to cost upwards of £500,000. The work for which sanction is withheld for the present is the extension of the engine and boiler houses and the purchase of a 12,000-kw. turbo-generator at a cost of £300,000. The work with which the corporation will now proceed is the removal of two old engines with a capacity of 1400 kw. each and the installation of a 6000-kw. plant at an estimated cost of £35,000.

#### EDINBURGH RECEIPTS GAIN

The report of the Edinburgh & District Tramways for the year ended Dec. 31, 1917, states that the agreement between the corporation and the company for the purchase of the company's cars and plant at the expiry of the lease in 1919 has now been signed and sealed on behalf of the parties concerned. The revenue account shows that the total receipts were £375,987, an increase of £58,118 compared with the previous year. The total expenditure was £341,769, an increase of £13,299 over the previous year. The balance carried to net revenue account is £34,218, and after deducting the debit balance from previous year of £19,894, there is left a net credit balance of £14,324.

A. C. S.

# News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

## Labor Program Announced

Plan Outlined Is Designed to Secure Quick Action on Labor Troubles and Prevent Strikes

Secretary of Labor Wilson has asked Congress for appropriations of \$2,041,811 to put into operation a program of war labor administration worked out by the Council of National Defense and urged by President Wilson. The plans are designed to get quick action on labor troubles and stop them before strikes occur. For the fiscal year ending June 30 next \$485,451 is asked. The remainder is for the fiscal year 1919.

The program as set forth by the Secretary is:

A means of furnishing an adequate and stable supply of labor to war industries. This includes a system of labor exchanges, administration of training of workers, an agency for determining priorities of labor demands and agencies for dilution of skilled labor as and when needed.

Machinery which will provide for the immediate and equitable adjustment of disputes in accordance with principles to be agreed upon between labor and capital and without stoppage of work. Such machinery would deal with demands concerning wages, hours, shop conditions, etc.

Machinery for safeguarding conditions of labor in the production of war essentials. This to include industrial hygiene, safety, and also woman and child labor.

Machinery for safeguarding conditions of labor, including housing and transportation.

A fact-gathering body to assemble and present data collected through governmental agencies or independent research, to furnish information necessary for effective executive action.

Public and educational division to develop sound public sentiment, secure an exchange of information between departments of the labor administration and also promote industrial plants locally.

The personnel of the joint conference of employers and union leaders who will lay down a basis of relations between capital and labor during the war was published in the *ELECTRIC RAILWAY JOURNAL* for Feb. 23, page 381.

## Hostile Attitude Assumed

The City Council of Buffalo, N. Y., has voted to accept the recommendation of the municipal traffic commission appointed by the Mayor to start an action in the Supreme Court of Erie County to abrogate the franchise of the International Railway. The city law department is now studying the necessary pro-

cedure and the Attorney General of the State has also been asked for an opinion on the course of action that would be necessary.

The Council is allowing jitney buses to run through the city streets in violation of the law. The National League for Women's Service is operating a fleet of almost fifty jitney buses on west side streets. No fares are collected, but every passenger is asked to donate something to the league.

## MAYOR FAVORS JITNEYS

When he appeared before the war department at Washington, Mayor George S. Buck painted a picture of munition plants being forced to close down because of lack of adequate transportation and said that the only solution of the problem was the operation of large fleets of jitney buses under public ownership or by a private corporation.

In replying to an inquiry from the Council of National Defense asking for his opinion of the skip-stop plan, which is in operation on local lines of the International Railway, Mayor Buck replied: "A bad situation can be made no worse by the skip stop."

## Park Street Station Overcrowded

Downtown Subway Loop Suggested by Boston Transit Commission to Relieve Boston Congestion

The Boston Transit Commission has sent to the Legislature of Massachusetts a new plan regarding transportation facilities in Greater Boston designed to relieve congestion in the Tremont Street Subway, with special emphasis upon conditions at Park Street station.

Referring briefly to the legislative act which provided for the enlargement of the Park Street Terminal, now accomplished, the commission points out that no further enlargement of platform areas is expedient, and that the present congestion of traffic during rush hours is intolerable, due to the use of the station by too many passengers boarding cars at this point.

The only remedy, it is stated, is the distribution of traffic over a number of stations. A downtown loop is recommended, with several stations in the business district, instead of the former scheme of continuing the Boylston Street Subway to Post Office Square. The commission does not recommend a route at this time or discuss the financing of the proposed construction. Unless further extended its term of office will expire on June 30.

## M. O. Experience in Lincoln

City of 10,000 Population Reports Success with Short Road Previously Abandoned

The service on the electric railway at Lincoln, Ill., taken over by the city last summer, has been greatly improved and the patronage has been good. According to H. C. Mathein, Jr., the city clerk, a profit has been shown each month under the method of accounting prescribed by the Interstate Commerce Commission. There is still a balance in the bond fund and a considerable balance in the operating fund. The property consists of about 8 miles of road serving 10,000 people.

The election at which the matter of municipal ownership for Lincoln was decided was held on June 19, 1917. The electors decided the question by a vote of ten to one and authorized a bond issue of \$30,000 for the purchase of the line.

## VARIED PRIVATE CAREER

During its twenty-five years' existence the local railway had a varied career and changed hands many times. It was ever confronted with the problem of paving its right-of-way and for that reason its several owners contended that it was a losing proposition. The last owner had a heating franchise, but allowed his contracts for heating public buildings to lapse and in the winter of 1916 he shut down the plant, discontinuing both heating and railway service. Many attempts were made to sell the plant and railway, but no buyer could be found. After the property had been idle several months, the Lincoln Commercial Club, the merchants of the city and the city officials, after a concerted effort and campaign, convinced the people that municipal ownership was the only means of keeping the railway in operation.

The sum of \$11,500 was paid for the plant, equipment and rolling stock, much of which was little more than junk, and \$1,650 was paid the owners of the extension line for their track to the cemeteries and to Chautauqua Park.

## HOW THE ROAD IS RUN

The Mayor has assumed control of the management and operation of the system, and the auditing, accounting, etc., is done by the city clerk. Three used cars, in very good condition, were purchased, and the plant and tracks put in running condition. After about a month, it was found that the manufacture of power with the old machinery was very expensive and it was decided to dismantle and discontinue the operation of the plant. Power was purchased

## Utility Efficiency Is Vital to Nation

President Wilson and Secretary McAdoo Express Conviction that All Steps Reasonably Possible Should Be Taken to Insure Maximum Efficiency

Within the last few days much encouragement has been given to public utilities by government authorities. No less a person than President Wilson has formally recognized the importance of utilities in connection with the national welfare and their needs in order to secure maximum efficiency.

The progress thus far made in securing a better understanding of utility problems has been well summarized by a committee composed of P. H. Gasden, E. K. Hall and H. H. Crowell. These men were appointed to represent the American Electric Railway Association, the National Electric Light Association, the American Gas Institute and the National Commercial Gas Association in bringing to the attention of Washington authorities the critical position of utilities under war conditions. The committee feels that the outlook is decidedly more encouraging than it was two months ago, for

"In the matter of rates, the President of the United States, the Secretary of the Treasury and the Comptroller of the Currency have officially recognized that it is in the public interest that public utilities be maintained at their maximum efficiency and their rates be adjusted to meet the increased costs of doing business.

"The national government through the capital issues committee has outlined a national policy seeking to discourage unnecessary employment of money, labor and materials during the period of the war.

"The war finance bill, now on its passage, makes provision for financing the maturing obligations of public utilities and provides a method for financing necessary extensions and enlargements."

### EXPLAINING THE SITUATION

The four phases of the situation to be taken care of, as explained by the committee to the Treasury officials, are as follows:

1. Rates must be increased sufficiently to absorb the increased costs of producing the service.

2. The utilities must be relieved during the period of the war of all non-essential and unproductive requirements, such as paving, undergrounding of wires, duplication and unnecessary extension of service.

3. Some way must be found to enable the utilities to take care of obligations maturing while the war lasts.

4. Assistance must be provided to en-

*(Concluded from page 426.)*

from the Illinois Traction System for a period of about two and one-half months when a contract was entered into with the Lincoln Water & Light Company, a privately-owned local corporation, for power for a period of ten years at a much lower rate than it could be generated by the city itself or purchased by it elsewhere.

able the companies to finance the unavoidable extensions of service made necessary by the nation's war program.

As a result of comments upon this situation by the Comptroller of the Currency, previously mentioned in these pages, and also as the result of additional memoranda and letters given by the committee to W. G. McAdoo, Secretary of the Treasury, the latter presented the matter to the attention of President Wilson in a letter dated Feb. 15. He enclosed the data submitted to the Treasury Department.

### SECRETARY MCADOO'S LETTER

In commenting upon the inclosures Mr. McAdoo said:

"These papers indicate the existence of genuine apprehension regarding the adequacy, under present conditions, of the services and rates of local public utilities. The view is expressed that increased wages and the high cost of essential materials and supplies have affected them as they have affected everybody else, and that united effort will be necessary in order to meet alike the public requirements for service and the corporate financial needs upon which that service depends.

"As Secretary of the Treasury, I must take official notice of these matters. It is obvious that every part of our industrial and economic life should be maintained at its maximum strength in order that each may contribute in the fullest measure to the vigorous prosecution of the war. Our local public utilities must not be permitted to become weakened. The transportation of workers to and from our vital industries and the health and comfort of our citizens in their homes are dependent upon them, and the necessary power to drive many of our war industries and many other industries essential to the war is produced by them.

"It may be that here and there, because of the prominence given to less important interests immediately at hand, state and local authorities do not always appreciate the close connection between the soundness and efficiency of these local utilities and the national strength and vigor, and do not resort with sufficient promptness to the call for remedial measures. In such cases I am confident that all such state and local authorities will respond promptly to the national needs when the matter is fairly and properly brought before them.

"Our public service utilities are closely connected with and are an essential part of our preparations for and successful prosecution of the war, and the unfavorable tendencies which the accompanying papers reveal may most effectively be checked, wherever they may be found to exist, and the needed relief obtained only by prompt action on the part of the respective local authorities.

"I earnestly hope that you may feel justified in expressing the conviction that the vital part which the public utilities companies represent in the life and war-making energy of the nation ought to receive fair and just recognition by state and local authorities."

### PRESIDENT WILSON'S REPLY

On Feb. 19 President Wilson sent to Mr. McAdoo the following answer, expressing the nation's interest in the proper solution of the utility problem:

"I have examined with care the memoranda and letters which you transmitted to me with your letter of the fifteenth. I fully share the views you express regarding the importance of the public service utilities as a part of our national equipment, especially in war time. It is essential that these utilities should be maintained at their maximum efficiency and that everything reasonably possible should be done with that end in view. I hope that state and local authorities, where they have not already done so, will, when the facts are properly laid before them, respond promptly to the necessities of the situation.

"I shall be glad to have you communicate with the local authorities whenever the information in your possession suggests that such a course is desirable and in the national interest."

### UTILITY ASSOCIATIONS TO HELP

The committee has prepared two circulars, one containing its report on the situation and the other the statements by the Comptroller of the Currency, the Secretary of the Treasury and the President. These, it is said, should be distributed generally by the national utility associations among company officers and employees.

The committee recommends that the associations take steps to present this general matter to the commissions in the different states as a national question, entirely dissociated from any concrete local rate question. Until then it suggests that the associations urge their members not to submit formally to the commissions the President's and the other letters, except when immediately necessary in pending cases.

The committee also directs attention to the fact that the authorities in Washington are already overburdened with tremendous and overwhelming responsibilities, and it suggests that under the circumstances members should appeal to Washington only in cases of imperative necessity, and then only after consulting with the secretary of their own association.

### H. & M. Under U.S. Control

W. G. McAdoo, director general of the railroads, issued a formal statement on Feb. 22 explaining why the government had taken over the Hudson & Manhattan Railroad with the steam railroads. The transfer, it seems, was only part of the general scheme, as the Hudson tubes are considered a terminal property, specifically included within the President's proclamation.

## Skip-Stop Order Possible

**Dr. Garfield Regards It With Favor as Means for Economizing on Fuel Consumption**

Dr. H. A. Garfield, Federal Fuel Administrator, expects to reach a decision shortly as to the proposed skip-stop order for the electric railways of the country. Under the proposed order, if carried out, he informed the Washington correspondent of the *ELECTRIC RAILWAY JOURNAL* this week, Dr. Garfield is convinced a considerable saving in coal will be effected.

"We have had the proposed order under consideration for some time now," Dr. Garfield said; "and it would have been put into effect before this if it were not for the fact that it will undoubtedly cause great criticism, based on misunderstanding, and, perhaps, inconvenience, to the people in large communities such as New York and Chicago, where there is much density of electric railway traffic. In smaller communities, where there is not such a great volume of traffic, there would not be such criticism and such inconvenience."

Dr. Garfield's attention was called to the fact that the people of Washington have made no complaint and have in fact welcomed changes involving skip stops, in certain sections of the capital, just put into effect, although Washington now has a volume of traffic, because of the war, considerably greater than it has ever been.

He said he was glad to know it and remarked that a readjustment of traffic conditions as to stops might be a worthy thing in many cities of the country.

"I was living in Cleveland some years ago," Dr. Garfield said, "when a skip-stop system was put into effect there, as one of the early experiments along that line, and it worked well, according to my observation. I shall have a conference with my associates, as soon as some of them who are now out of town have returned, and I will then decide as to what is to be done in this matter. There is no question in my mind that a tremendous saving in coal could be effected by such an order, and I am informed that the electric railway companies would welcome the order."

It is possible, it is believed in Washington, that a national skip-stop order may be put into effect with several exceptions or modifications in very large cities where there is very dense electric railway traffic.

## Short Industrial Line to Be Electrified

The Board of Public Improvements, St. Louis, Mo., on Feb. 19, granted a permit for the electrification in part of the Manufacturers' Railway.

At the offices of the company it was said the change would involve putting two electric locomotives in service in the central portion of the company's yards between the river and Thirteenth Street and Arsenal and Dorcus Streets in the neighborhood of the Anheuser-

Busch Brewery, which controls the railway.

The construction of the new Bevo plant, at Broadway and Pestalozzi Street, is such that it will be necessary to run loading trains into the building. Because of the smoke made by steam locomotives it was decided to substitute electrical equipment. On the remainder of the company's terminal system steam will be used. Current will be furnished from the Keokuk dam.

## Men Explain Car Situation

**Invite Council and Public to Inspect Shops and Carhouse at Youngstown**

The International Brotherhood of Electrical Workers Local No. 694, composed of employees of the carhouses and shops of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, recently published and paid for the following advertisement addressed to the public:

"This organization consists of the employees of the car shops and carhouses of the Mahoning & Shenango Railway & Light Company, and comprises some 200 men of all trades.

"We wish to state that on account of the continual snows and protracted cold weather for the last six weeks there have been more disabled cars in the shops and carhouses of the company than in any similar period in our knowledge and that we have been working day and night as long as our strength could stand, in the effort to keep the cars in condition to operate.

"We wish further to state that the company has to our knowledge spared neither time nor money to keep the cars moving, and we pledge our whole-hearted co-operation in restoring normal conditions as soon as possible.

"We cordially invite any member of the Youngstown City Council or any interested citizens to visit our shops at Haselton so that they may see that these statements are entirely true and correct."

## Wage Increase in Dallas

**Savings on Accidents Will Be Shared With Its Men by Dallas Railway**

Employees of the Dallas (Tex.) Railway have been granted an increase in wages amounting to 2 cents an hour. At the same time announcement was made of a profit-sharing plan by which employees who by vigilance are able to reduce the number of accidents may increase their earnings and share in the distribution of \$60,750, this amount being three-fourths of the annual appropriation of 4½ per cent of the company's gross receipts set aside for accidents as provided in the service-at-cost franchise. The new scale of wages is as follows: First six months, 27 cents an hour; second six months, 28 cents; two years' service, 29 cents; three years' service, 30 cents; four years' service, 31 cents; five years' service or longer, 32 cents an hour.

## Government Takes a Hand

**Action in Washington, D. C., Telephone Rate Case Opens Question of Control—May Involve Other Utilities**

Postmaster-General Burleson, through Washington city post-office officials, has offered to the Public Utilities Commission of the District of Columbia the opportunity to take over the control and the operation of the Chesapeake & Potomac Telephone Company in and around Washington for the period of the war, agreeing, if the offer is accepted, to maintain present standards of pay to telephone employees and guarantee to investors the present rate of return on their holdings. It is believed in Washington that the Public Utilities Commission has no power to accept such an offer, although it is understood that the President could issue an executive order making it possible for the commission to accept such an offer if he deemed it wise to do so. The offer has grown out of the application of the company, long pending, for permission to increase rates owing to increased expenses.

The Washington situation as to public utilities is of special interest because of the power which Congress has given various government departments to act as their exigencies seem to require in regard to public utilities. The Navy Department obtained from Congress some time ago legislation which gave it absolute power to enforce additional electric railway facilities at plants making naval munitions of war; the Shipping Board is now obtaining in legislation just about to pass Congress power to buy electric railway cars under an appropriation for "housing," transportation to and from homes and shipbuilding plants being considered to be part of the housing problem; and other departments are seeking to obtain similar legislation.

Secretary McAdoo of the Treasury Department is quoted as having said in private conversation within the last few days that he does not believe that the government has the right, under either the Presidential proclamation or the pending railroad bill, to take control of the electric railways of the country, but that the people of the United States are now prepared for government control and operation and that he means to open that subject soon. It may be that the plan of the Postmaster-General to bring the Washington telephone system under government control will open up the whole question of municipal ownership of public utilities in Washington.

## M. O. Conference in New York

Mayors and other officials of cities in New York State will meet on March 6 at Newburgh in annual conference. It is said that one of the matters they will consider is the subject of State-wide indorsement of the municipal ownership movement. The conference has been called by Mayor Burns of Troy. Opinion among city officials is said to favor a permissive municipal ownership bill with provision for referendum.

## Wage Demands Presented

### St. Louis Union Submits Terms Practically the Same as Those That Caused Strike—City Says Commission Cannot Raise Fare

The organized employees of the United Railways, St. Louis, Mo., on Feb. 19 presented to the company in contract form their demands for wages, hours and improved working conditions.

The employees ask for a wage of 40 and 45 cents an hour, an increase of 54 per cent, for conductors and motormen; an eight-hour day, and time and a half for overtime. These are the same demands, as to hours and wages, as those before the recent strike, the settlement of which was noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 16, page 323. General improvement in working conditions is asked for, and grievances that cannot be settled otherwise shall be arbitrated.

A virtual "closed shop" is provided for in a section which says that the company also shall suspend an employee who has been suspended by the union and shall not reinstate him until the union raises the suspension.

The new contract is intended to supplant the strike settlement agreement made on Feb. 8 and will continue in force for one year. All its provisions date back as of Feb. 1, the day preceding the strike.

The present wage of motormen and conductors is 26 cents an hour the first year and a rising scale of 1 cent an hour each year for four years, and one-half cent an hour for four years to reach a maximum wage of 32 cents an hour. Extra men are guaranteed \$60 a month.

A time limit is fixed within which the company is to answer the demands. In the event that they are not granted an arbitration committee will be formed.

#### COMPANY WANTS ORDINANCE AMENDED

T. M. Pierce and Charles A. Houts, attorneys for the United Railways, appeared before the Public Service Board on Feb. 19 to request a reduction of the tax on gross income from 3 to 2 per cent in the franchise ordinance now in the hands of the board.

The avowed purpose in seeking the reduction is to help raise funds to meet the demands of the employees for increased wages. According to a statement made by Richard McCulloch, president of the company, the increase sought would impose an additional expense of \$1,400,000 on the company, while working conditions also demanded by the men would impose a further expense of \$700,000, making an annual increase of \$2,100,000. The reduction of the tax would save the company about \$120,000 a year.

The attorneys also requested the extension of the time limit for acceptance of the ordinance by the company from nine months after its passage, as the ordinance provides, to within six months after the close of the war. They based this request upon the claim that it will be impractical, uneconomical and unpatriotic to float a bond issue for reorganization during the war. The re-

quests of the company were taken under consideration.

The Missouri Public Service Commission decided on Feb. 21 that the question of its jurisdiction in considering the appeal of the United Railways for right to increase fares must be settled before a hearing on the company's plea is given.

#### CITY FIGHTS FARE INCREASE

The decision followed the objections raised by City Counselor Daues and attorneys for the company and for the city were instructed to file their briefs in Jefferson City by Feb. 25. The legal questions as to jurisdiction will be considered until March 4, when testimony

will be presented, if the commission believes it has the right to alter the company's rates.

It is Mr. Daues' contention that a constitutional provision exists in Missouri which vests in local authorities plenary power to give or withhold consent to operate electric railways; that such powers carry the right to impose conditions, and that such conditions, when accepted by the company, are binding and beyond interference by any legislative commission.

Mr. Daues is reported to have said that if the commission decides it has power to increase the 5-cent rate fixed in the present franchises of the United Railways, he will ask the commission to make a new valuation of the property. The State commission, it is said, never has made or ratified a valuation of the United Railways, but has authority to do so.

## Critical Labor Situation in Boston

### Unofficial Introduction of Accident-Negligence Bill Precipitates Unrest—Two-Cent Increase Granted Despite Existing Agreement

A threatened strike of union employees of the Boston (Mass.) Elevated Railway has been averted by a wage increase of 2 cents an hour, despite the existing agreement effective until May 1, 1919. A strike was set for midnight on Monday, Feb. 25, but after extended conferences a mass meeting voted to postpone the strike for seventy-two hours.

After a conference lasting almost all of Wednesday, between company and union leaders and H. B. Endicott, executive manager of the Public Safety Committee, the latter recommended an increased wage of 2 cents an hour effective March 1. This was accepted for the company by its officers, and the union officials agreed to recommend acceptance by the men at a mass meeting called for Thursday night. At this meeting the men voted to accept the increase.

Mayor Peters of Boston, the Board of the Massachusetts Public Service Commission, the State Board of Conciliation and Arbitration, Governor McCall of Massachusetts, F. P. Colpoys (a federal mediator) and Secretary of Labor Wilson all sent communications urging that a strike be avoided in the interests of patriotism until all other means had been exhausted.

The unrest among the employees seems to have arisen in this way: On Feb. 14 a bill was introduced into the Massachusetts Legislature by Russell A. Sears, general attorney of the company, to place the burden of accident payments upon car-service employees who might be the cause of such accidents through negligence or carelessness. Mr. Sears, who is a director in the Liberty Mutual Insurance Company (the State insurance company organized at the time the Massachusetts workmen's compensation law was enacted), introduced this bill solely upon his own responsibility, without the company's knowledge.

Mr. Sears is deeply interested in the study of industrial accidents and their prevention, and for a long time he has been trying to create a legal stimulus to reduce industrial and other accidents. During many years of able service at the head of the company's legal department, he was not unaccustomed to introduce upon his own responsibility bills which he deemed meritorious.

The bill was seized by the union representatives as a bone of contention, and a concerted active effort was at once developed to secure a wage increase upon the pretext that the company had violated the agreement. It was asserted also that the burdens of the men had been increased and that higher wages should be granted to cover the increased cost of living since the United States entered the war. A vote to strike on Monday night was passed almost unanimously by 7000 employees on Feb. 21.

Before the Feb. 21 meeting was held, a statement emphasizing the call of the strike meeting and attacking the company over the names of the local union officials was published in the Boston dailies.

A letter was then addressed by President Brush to the union officials on the day of the scheduled meeting. This communication reviewed the relations between the company and the union officials under the agreement and outlined the various conferences held with regard to the possibility of some modification of wages, notwithstanding the agreement, through change in outside hours. The firm adherence of the company to the arbitration of all disputed matters was set forth.

To this letter the union replied on Feb. 22, claiming that its members are suffering hardships due to war prices, that many companies outside Massachusetts have voluntarily increased wages despite agreements, and that legislative relief for the company's

revenue situation is problematical. On the same day the company replied in full. In this communication President Brush again reviewed the frankness of the relations between the union and the company until the taking of the strike vote. He informed the union that the measure was his own personal idea and asked for permission to withdraw it. The letter made a strong patriotic appeal to the men to refrain from striking.

On Feb. 25 the Public Service Commission sent to the union leaders a letter reading in part as follows:

"The commission has viewed with grave concern the possibility of a strike by the employees of the Boston Elevated Railway. The results of a tie-up of local transportation in the metropolitan district would be a serious catastrophe in time of peace, but at the present juncture the interruption of war work at the Charlestown Navy Yard, the Watertown Arsenal, the Fore River Shipbuilding Company, the Victory Plant at Squantum and a large number of private plants engaged in war work would be a national calamity. We believe that public sentiment would not approve any interruption of service, especially under present conditions, until every reasonable and honorable effort has been made by both parties to reach a peaceful adjustment of the present controversy."

## Strikers Disregard Federal Recommendation

**Twin City Ex-Employees Demand That They Be Taken Back in a Body, But Company Refuses**

Foster Hannaford, general manager Twin City Rapid Transit Company, Minneapolis, Minn., conferred on Feb. 20 with a delegation of former employees, who presented a demand that the several hundred strikers be taken back in a body. The demand was rejected.

The demand of the men arose from their peculiar interpretation of the findings of President Wilson's mediation commission. This body, as stated in the issue of Feb. 23, recommended that the former employees should offer themselves for reinstatement as rapidly as vacancies occurred. The delegation, according to a statement given out by Mr. Hannaford after the conference, insisted that the ex-employees should be taken back in a body at once and reinstated in their old positions and with the old standings. Mr. Hannaford stated, however, that since the men had left the employment of the company, the company had been forced to hire a number of men. The new men had entered the employ of the company in good faith, and the company could not fairly and honestly now discharge them to make vacancies for the strikers who were now out of employment. Mr. Hannaford also said that a number of the ex-employees had already applied for work and were now in the company's service.

## News Notes

**Philadelphia Lease Now Before P.S.C.**—At a meeting of the directors of the Philadelphia (Pa.) Rapid Transit Company on Feb. 18, the new rapid transit lease between the company and the city was ratified, and the document was signed by President Mitten and Mayor Smith. The lease has now been sent to Harrisburg for the final approval, that of the Public Service Commission.

**Toledo Came Through Safely.**—Although the Water Street power station of the Toledo Railways & Light Company, Toledo, Ohio, formed an island in a great flood that covered the low ground along the Maumee River for a week, operation was maintained almost at normal. As the water rose about the building the doors were walled up and the pumps kept the seepage below the level of the furnaces and machinery.

**M. O. Bill Killed.**—The bill to permit New York City to buy and operate public utilities has been killed following a statement by Senator Brown that "there is not enough money in treasury of New York City over and above debt limit to furnish cigarettes for the present administration during its four years in office." The legislature apparently was not willing that the city should experiment even with the Fifth Avenue Coach Company.

**Commission Appointments Confirmed.**—The Senate of New Jersey has confirmed Governor Whitman's nomination of Thomas F. Fennell, Elmira, and Charles B. Hill, Buffalo, as members of the Public Service Commission for the Second District succeeding Commissioners Carr and Van Santvoord, respectively. Commissioner Fennell gets a two-year term and Commissioner Hill a five-year term. The chairman of the commission has not yet been designated by the Governor.

**Freight by Day in New Jersey.**—The Legislature of New Jersey has passed a bill introduced by Assemblyman James J. McAteer, Kearny, allowing electric railways operating in streets of municipalities to carry freight. The bill was passed after it had been proved that merchants and manufacturers had difficulty in receiving freight because of the congestion on the railroads. A similar bill was enacted in 1909, but this covered only the night operation of electric railways for freight purposes.

**Trenton Indictments Argued.**—Argument was concluded in the Supreme Court at Trenton, N. J., on Feb. 21 in the appeal of the officers and directors of the Trenton & Mercer County Traction Corporation from indictments found against them by the Mercer County Grand Jury at the instance of the City Commission for the illegal use

of certain streets of the City of Trenton. The officials set up thirteen assignments why the indictments should be set aside, all of them based upon the drawing of the grand jury and the alleged lack of evidence submitted.

**Increase in Wages in Des Moines.**—The Des Moines (Iowa) City Railway has announced a wage increase effective on March 1. The increase affects only motormen and conductors who have been in the employ of the company for one year and less than two years. The new scale is 33 cents whereas these men are now receiving 29 cents an hour. It is estimated that the new scale will cost the railway an additional \$1,000 a month. The increase is voluntary on the part of the company. Some time ago the union officials made an informal application for a general wage increase. They were advised that if the men would use their influence toward securing a rate advance their request would be granted if the rate increase was successful. This the men voted down.

**New Use Suggested for Hudson Tunnels.**—Governor Edge of New Jersey has written to William G. McAdoo, Federal Director-General of Railroads, suggesting the connection of the New Jersey Central, the Lehigh Valley and the Baltimore & Ohio Railroads with the Hudson & Manhattan Railroad, operating under the Hudson River, in order that thousands of New Jersey citizens living along these lines may have quicker and more convenient access to New York. In a reply on Feb. 24 Mr. McAdoo declared that the project might be feasible, now that the government had taken over the railroads. He thought that a surface connection between the terminal of the New Jersey Central and the old Pennsylvania Station in Jersey City might prove the solution. Mr. McAdoo said that the problem would be taken up as soon as other projects of a more vital nature were carried out.

## Programs of Meetings

**Arkansas Association of Public Utility Operators**

There will be a meeting of the Arkansas Association of Public Utility Operators at Hot Springs, Ark., May 21-23. Headquarters will be at the Arlington Hotel.

**Air Brake Association**

The Air Brake Association will hold its annual convention May 7-10 at Cleveland, Ohio. Hotel Winton has been selected as convention headquarters. A more detailed program will be made public later, but it is announced that D. L. McBain, superintendent motive power of the New York Central Lines, and Walter V. Turner of the Westinghouse Air Brake Company will deliver addresses. The decision of the association to hold a convention was prompted by the belief that the safety features provided by the air-brake should be kept up to the highest notch in railroad transportation in war as well as peace times.



# Financial and Corporate

## Full Financing Data Required

Federal Reserve Board Committee Advises Applicants Desiring Approval for New Securities—Conference with Commissions

The capital issues committee of the Federal Reserve Board has prepared a "questionnaire" to be sent to all applicants desiring approval for new security issues. No prescribed form of application is to be required, but suggestions are made to guide applicants. All applications should be addressed to the committee, 718 Metropolitan Bank Building, Washington, D. C.

The committee suggests the following:

"If the purpose is to refund, pay or extend outstanding obligations, describe fully the character of the bonds, etc. If any war purposes are involved, reference should be made to the proper governmental authorities at Washington and elsewhere.

"If the issue is deemed necessary on account of any governmental requirement, national, state or municipal, or of any commission or public authority, describe the same in full. If the issue is deemed necessary for reasons of public health or welfare, or other public economic necessity, describe the same in full.

"In all cases full reason should be given why the proposed issues cannot be postponed until after the war or why the necessity is greater than the need of the national government in conserving the financial resources, materials and labor of the country for the war.

"It will be necessary to identify accurately the issues before a final opinion is expressed. The following information should be furnished:

### EVIDENCES OF INDEBTEDNESS

1. Name, amount, date and dates of maturity and serial number of the proposed bonds, notes or other securities.
2. Amount of total authorized issue of which proposed issue is part.
3. Attested copies of votes, ordinances or resolutions authorizing proposed issue.
4. Attested copy of mortgage, deed of trust or similar instrument under which proposed issue is made or by which it is to be secured.
5. Last balance sheet if a corporation and copy of charter and by-laws if in print.

### SHARES OF STOCK

1. Total capitalization of company.
2. Last balance sheet and copy of charter and by-laws if in print.
3. Total authorized issue of stock of which proposed issue is part.
4. Amount of proposed issue, method and dates of issue, whether by offer to shareholders, sale or public subscription.
5. Attested copies of votes authorizing proposed issues.

A conference was held on Feb. 28 between the capital issues committee and its advisory committee and representatives of the public service commis-

sions of the whole United States. This conference was indeed of especial value and interest in view of the President's letter to Secretary McAdoo (noted elsewhere in this issue), inviting him actively to promote an earnest consideration on the part of these commissions of the bearing of the exercise of their functions upon the national interests at this time. The committee presented to the commissions in a favorable manner the utility briefs and the Presidential correspondence.

The capital issues committee is interested as to whether or not, and how, it may be possible for the commissions to use their influence in postponing at this time construction and development work, even if contracted for or even though stipulated in franchises, whenever such work is not absolutely and immediately necessary for either the public welfare or the successful prosecution of the war. It must be the committee's effort, it is said, to secure the sympathetic co-operation of the commissions to reduce, as far as may be practicable, any unnecessary use of credit, saving power, material and labor.

## Toronto Net Drops Increase in Gross Earnings for 1917 Is More Than Offset by Higher Operating Costs

While the gross earnings of the Toronto (Ont.) Railway for the calendar year 1917 showed an increase, the net earnings were adversely affected by the

in the last year to \$1,187,031, an increase of \$74,021. The passengers carried totaled 158,087,984, an increase of 8,558,230; and transfers numbered 62,301,636, an increase of 958,873.

After paying four dividends of 2 per cent each and taking in the 1916 surplus, the surplus at the end of 1917 amounted to \$5,543,683.

## Federal Finance Bill Amended

Bill for War Finance Corporation Now Specifically Covers Utilities—Early Passage Expected—Government Aid Waiting

The war finance corporation bill, it is said, will probably become a law by the end of next week. This has been amended by the insertion of the words "public utilities" to show that they are to be included in the benefits of the law. The amendment to the bill reads as follows:

Section D.: To make advances directly (1) to any corporation conducting (directly or through stock ownership) any railroad or other public utility; and (2) to any firm, corporation, or association conducting an established and going business whose operations are necessary or contributory to the prosecution of the war; provided that such advances shall be made only in such cases as the board of directors in their discretion shall determine to be of exceptional importance to the public interest. Such advances may be made for periods not exceeding five years from the passage of this act, upon such terms and upon such security and subject to such rules and regulations as may be prescribed from time to time by the board of directors of the corporation with the approval of the Secretary of the Treasury. The corporation shall have and retain power to require additional security from time to time.

It is pointed out in Washington that this amendment allows the public utility company to deal directly with the war finance corporation and obviates the doing of business with bankers. This is regarded as an advantage, in

INCOME STATEMENT OF TORONTO (ONT.) RAILWAY

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings .....	\$6,291,759	100.0	\$5,973,161	100.0
Operating expenses .....	3,815,278	60.7	3,350,658	56.1
Net earnings .....	\$2,476,481	39.3	\$2,622,503	43.9
Interest on bonds .....	\$146,888	2.3	\$156,122	2.6
Percentage on earnings .....	970,512	15.4	909,881	15.2
Pavements, taxes .....	264,271	4.2	215,707	3.6
Total .....	\$1,381,671	21.9	\$1,281,710	21.4
Surplus earnings .....	\$1,094,810	17.4	\$1,340,793	22.5

increase in wages and the material increases in the prices of supplies owing to the abnormal war conditions. The company's income statement for 1916 and 1917 is shown in the accompanying table.

The passenger earnings in the last year showed an increase of \$321,057 or 5.4 per cent, the totals being \$5,881,505 for 1916 and \$6,202,562 for 1917. The gross earnings gained \$318,598 or 5.3 per cent. The operating expenses, however, rose \$464,629 or 13.08 per cent. As a result the net earnings declined \$146,022 or 5.5 per cent. The operating ratio was 61.5 per cent in 1917 as compared to 57 per cent in 1916. The payments made to the city of Toronto amounted

view of the war circumstances under which all other forms of industry in the whole country are operating.

It is not yet settled whether the officials of the War Board of the American Electric Railway Association are to appear before the House ways and means committee, as they did before the Senate finance committee, nor whether other public utility representatives will be heard. Secretary McAdoo, however, has appeared before the House committee in support of the public utilities, and it will apparently not be necessary for public utility men to repeat their case before the House committee, for no one has appeared there in opposition to them.

Contrary to reports in the newspapers, no government financing of public utilities that is worth mentioning is going on in Washington, and there is not likely to be any until the war finance corporation bill is passed. The exception is in the case of additional railway equipment which may be required in Philadelphia by the Shipping Board, under its appropriation for housing. This appropriation passed Congress Feb. 26 and will be signed by the President.

There have been reports in the newspapers that the Navy Department is financing the building of a short electric railway line at Norfolk. This is categorically denied at the Navy Department. Only the Navy Department has legislation which would permit the financing of public utilities, except that just passed for the Shipping Board.

### Electric Railway Statistics

Comparison of Returns for November, 1917, With Those for 1916, Show Slump in Net Earnings

A comparison of electric railway statistics for the month of November, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses of electric railways in the United States are constantly increasing faster than the revenues.

Data for November, representing 7370 miles of line of companies scattered throughout the country, figured on the per mile of line basis, show an increase in operating revenues of 5.62 per cent, an increase in operating expenses of 14.30 per cent, and a decrease in net earnings of 9.17 per cent. Data representing approximately 75 per cent of this mileage indicate an increase in the amount of taxes paid of 9.84 per

cent and a decrease in operating income of 16.60 per cent.

The returns from the city and inter-urban electric railway companies, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Of the three groups shown, returns for the Eastern, representing 4759 miles of line, indicate an increase in operating revenues of 4.14 per cent, an increase in operating expenses of 12.38 per cent and a decrease in net earnings of 10.33 per cent. Taxes paid by companies represented by approximately 70 per cent of this mileage increased 9.82 per cent, while the operating income of these companies decreased 20.51 per cent.

Returns for the Southern and Western groups show that both have been affected by the rising costs of operation. The operating income of the Southern groups decreased 0.41 per cent, while that of the Western decreased 15.01 per cent. Both groups show increases in the amount of taxes paid.

The operating ratio for the country as a whole has increased from 63.01 in 1916 to 68.19 in 1917. The operating ratio of the Eastern district has increased from 63.71 in 1916 to 68.75 in 1917. The operating ratios of the South and West have also risen.

### Third Avenue Passes Income Bond Interest

The directors of the Third Avenue Railway, New York, N. Y., on Feb. 26 adopted a resolution passing the semi-annual interest due April 1 on the \$22,536,000 of 5 per cent adjustment income

bonds. The resolution stated that "there is no available surplus income of the period of six months ended Dec. 31, 1917, applicable to the payment of the interest." This statement was borne out by the income account, which showed a deficit of \$69,014 after all charges. The directors also adopted a resolution deducting \$494,386 from the company's income for the six months ended Dec. 31 to secure the proper, safe and adequate maintenance, equipment and operation of its railroad and other properties and to preserve its earning capacity. No part of the money is to be used for construction or the purchase of additional lines.

### B. R. T. Defers Dividend Vote

Quarterly Dividend Was Earned, But Company Is Waiting Until Question of Maturing Note Issue Is Settled

The board of directors of the Brooklyn (N. Y.) Rapid Transit Company on Feb. 25 voted to defer for the present consideration of the April 1 dividend. It is customary to declare this dividend at the February meeting.

President Williams said that the net profits justified the usual dividend. It is felt, however, that pending the consummation of negotiations relative to the \$57,735,000 of notes issued for rapid transit purposes and maturing on July 1 next, it would be wise not to take action on the current dividend.

The question of the maturity of the notes has been taken up with the federal authorities, and it is understood a decision has been reached that taking care of the notes is not incompatible with the interests of the government. A definite decision as to ways and means has not been reached. Officials of the company declined to comment on the probable issue of preferred stock for the purpose of providing for the maturity of the notes.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS IN NOVEMBER, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
	Amount, November, 1917	Per Mile of Line			Amount, November, 1917	Per Mile of Line			Amount, November, 1917	Per Mile of Line			Amount, November, 1917	Per Mile of Line		
		1917	1916	Increase Over 1916, per Cent		1917	1916	Increase Over 1916, per Cent		1917	1916	Increase Over 1916, per Cent		1917	1916	Increase Over 1916, per Cent
Operating revenues	\$13,993,085	\$1,899	\$1,798	5.62	\$8,986,304	\$1,888	\$1,813	4.14	\$1,098,078	\$1,293	\$1,274	1.49	\$3,908,703	\$2,219	\$2,002	10.84
Operating expenses	9,540,820	1,295	1,133	14.30	6,175,157	1,298	1,155	12.38	653,137	769	740	3.92	2,712,526	1,540	1,253	22.91
Net earnings	4,452,265	604	665	19.17	2,811,147	590	658	10.33	444,941	524	534	1.87	1,196,177	679	749	19.35
Operating ratio, per cent.	1917, 68.19; 1916, 63.01				1917, 68.75; 1916, 63.71				1917, 59.47; 1916, 58.08				1917, 69.40; 1916, 62.59			
Av. No. of miles of line represented.	1917, 7,370; 1916, 7,264				1917, 4,759; 1916, 4,726				1917, 849; 1916, 804				1917, 1,762; 1916, 1,734			

COMPANIES REPORTING TAXES

Operating revenues	\$10,377,261	\$1,836	\$1,734	5.88	\$6,047,557	\$1,713	\$1,658	3.32	\$779,462	\$1,462	\$1,354	7.98	\$3,550,242	\$2,233	\$2,034	9.78
Operating expenses	7,318,454	1,295	1,124	15.21	4,392,618	1,245	1,112	11.96	451,976	848	756	12.17	2,473,860	1,556	1,274	22.14
Net earnings	3,058,807	541	610	11.31	1,654,939	468	546	14.29	327,486	614	598	2.68	1,076,382	677	760	10.92
Taxes	755,849	134	122	9.84	435,512	123	112	9.82	71,599	134	116	15.52	248,738	156	147	6.12
Operating income	2,302,958	407	488	16.60	1,219,427	345	434	20.51	255,887	480	482	10.41	827,644	521	613	15.01
Operating ratio, per cent.	1917, 70.53; 1916, 64.82				1917, 72.68; 1916, 67.07				1917, 58.00; 1916, 55.83				1917, 69.68; 1916, 62.63			
Av. No. of miles of line represented.	1917, 5,652; 1916, 5,593				1917, 3,529; 1916, 3,496				1917, 533; 1916, 533				1917, 1,590; 1916, 1,564			

†Decrease.

# Financial News Notes

**Dividend Action Put Over.**—Holders of the 5 per cent cumulative preferred stock of the British Columbia Electric Railway, Vancouver, B. C., will not receive their interim dividend as usual this year as the directors have decided to postpone consideration of it until the end of the financial year in June.

**Protective Committee for Unsecured Notes.**—Owing to the receivership of the Bay State Street Railway, Boston, Mass., the holders of unsecured notes have been asked to deposit the securities at once with the First National Bank, Boston. This applies to either serial debenture notes or notes given to banks and other institutions.

**Oakland Plan Being Distributed.**—Copies of the reorganization plan for the Oakland, Antioch & Eastern Railway, Oakland, Cal., are now being distributed to security holders with the request for prompt assent and deposit of holdings with the Union Trust Company of San Francisco. The plan was outlined in the ELECTRIC RAILWAY JOURNAL of Jan. 12.

**R. T. Sullivan a Republic Director.**—R. T. Sullivan, general manager of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has been elected a director of the Republic Railway & Light Company, which controls the utility property at Youngstown. The membership of the board has been cut from twelve to nine.

**Another Line to Be Sold.**—Herbert Bucklen, South Bend, Ind., receiver for the St. Joseph Valley Railway, has received an order from the Circuit Court of St. Joseph County to advertise the road for sale on March 20 at Elkhart, Ind., to the highest bidder. The road will first be offered as a going concern. If not sold that way it will be offered in parcels. The ties, rails and rolling stock will even be junked if necessary.

**Havana Bonds Listed.**—The New York Stock Exchange has listed \$455,000 of general mortgage 5 per cent sinking fund bonds, series A, of the Havana Electric Railway, Light & Power Company, Havana, Cuba. Moreover, authority is granted to add to the list on or before July 1, 1918, \$763,000 of the bonds on official notice of sale. The total then listed will be \$6,660,000.

**Offering of Manhattan Second Fours.**—Hambleton & Company, New York, are offering at 73 and interest to yield 5½ per cent, a block of second mortgage 4 per cent gold bonds of the Manhattan Railway, the elevated division of the Interborough Rapid Transit Company. The bonds are due in 2013. The total authorized is \$5,409,000 and bonds aggregating \$4,523,000 are outstanding.

**Annual Meeting of Texas Line.**—The annual meeting of the stockholders of the Texas Electric Railway, Dallas, Tex., was held on Jan. 29, at which annual reports of officers were submitted and officers and directors were elected. The net income of the company for 1917 amounted to \$515,848; gross earnings from operation, \$2,138,268; operating expenses, including taxes, \$1,147,631; net earnings from operation, \$990,636; interest on bonds, debentures and floating debt, \$474,788. J. F. Strickland, president, reported that business is good.

**Wants to Sell Long-Term Bonds.**—The Tidewater Southern Railway, which operates a railroad from Stockton, Cal., to Merced and Turlock, has filed with the California Railroad Commission an application for authority to sell \$500,000 first mortgage 5 per cent thirty-year gold bonds, at a price sufficient to yield the company 80 per cent of par. The company wants the money to complete its main line from Stockton to Turlock and Hilmar, to build a branch line from its main line at Small to Manteca, and to make an extension from Hilmar to Stevenson.

**Fort Wayne Notes to Be Paid.**—It is stated that payment of all amounts due will be made on March 4 at the Central Trust Company, New York, by George C. Holt, special master, to the holders of Fort Wayne & Northern Indiana Traction Company's 6 per cent

five-year collateral gold notes, on the presentation for cancellation of notes, coupons or claims for interest. The sale of \$1,941,000 of first and refunding 5 per cent bonds, pledged as security for \$1,146,000 of the notes, was recently held in New York, as announced in the issue of Jan. 19.

**Railway Wins Tax Case.**—The city of Springfield, Ill., has lost its case against the Springfield Consolidated Railway for money claimed to be due under the pole tax ordinance. The Illinois Supreme Court has denied the motion of attorneys for the city to have the case reviewed on a petition for certiorari. The original suit was filed by the city in the Sangamon County Circuit Court in 1915, and judgment was entered for \$1,720. The case was taken into the Appellate Court of the Third District, where the judgment of the trial court was reversed on the ground that the pole rental ordinance was not passed by the city until some time after the franchise was granted to the company.

**Exchange of Bonds for Notes.**—The Eastern Power & Light Corporation, New York City, N. Y., announces that for the 5 per cent five-year convertible gold bonds of the company aggregating \$2,327,500, which fall due on March 1, it offers in exchange par for par 7 per cent collateral trust notes dated March 1, 1918, due on Sept. 1, 1918, \$2,327,500 of these notes having been authorized by the directors. The notes are to be issued under a collateral trust indenture to the Equitable Trust Company, New York, trustee, and secured by an equal amount of the maturing bonds when deposited by the present bondholders in exchange for the proposed new notes. The notes will be redeemable at par and interest at any time on thirty days' published notice. The March 1, 1918, coupons of the maturing bonds will be paid in the usual way. Satisfactory extensions of bank loans have been effected. Owing to the large additions and extensions that have been made to take care of increased business, the company has borrowed more than \$900,000 from banks. The company contemplated issuing and selling new securities to pay off both its bonds and bank loans.

## Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.						RHODE ISLAND COMPANY, PROVIDENCE, R. I.					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '17	\$58,916	*\$107,057	†\$48,141	\$14,877	†\$33,695	1m., Dec., '17	\$498,252	*\$479,060	\$19,192	\$122,381	\$102,347
1 " " '16	87,477	*57,445	30,032	27,550	†2,618	1 " " '16	481,638	*389,001	92,631	119,634	†\$26,107
12 " " '17	1,058,729	*1,011,991	46,738	317,907	†\$234,361	12 " " '17	6,000,602	*5,174,253	826,349	1,454,681	†\$512,849
12 " " '16	999,886	*814,969	184,917	316,667	†\$129,480	12 " " '16	5,811,996	*4,226,232	1,585,764	1,401,410	†\$303,318
CONNECTICUT COMPANY, NEW HAVEN, CONN.						NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.					
1m., Dec., '17	\$837,646	*\$1,121,520	†\$283,874	\$109,900	†\$371,427	1m., Dec., '17	\$45,843	*\$79,325	†\$33,482	\$8,808	†\$59,515
1 " " '16	808,198	*682,285	125,913	103,218	†45,262	1 " " '16	49,155	*55,436	†6,281	\$9,922	†\$14,900
12 " " '17	10,023,162	*8,415,514	1,607,648	1,208,720	†619,848	12 " " '17	555,413	*587,926	†32,513	\$86,315	†\$108,096
12 " " '16	9,566,434	*6,976,986	2,589,448	1,182,555	†1,678,488	12 " " '16	564,653	*591,392	†26,739	\$95,314	†\$75,104
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.						WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.					
1m., Dec., '17	\$24,376	*\$43,287	†\$18,911	\$7,982	†\$26,848	1m., Dec., '17	\$17,564	*\$69,300	†\$51,736	\$2,653	†\$54,357
1 " " '16	25,295	*24,709	586	7,987	†\$7,366	1 " " '16	14,763	*16,249	†1,486	2,018	†\$3,480
12 " " '17	394,259	*358,141	36,118	95,801	†\$59,017	12 " " '17	246,023	*326,073	†\$80,050	27,284	†\$106,988
12 " " '16	357,815	*295,615	62,200	95,823	†\$33,082	12 " " '16	225,734	*242,393	†\$16,659	22,032	†\$38,378

\*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

## New York Passenger Traffic

**A Total of 1,900,000,000 Fares Were Collected in a Year—More Than 5,000,000 Fares a Day**

The Public Service Commission for the First District of New York in its report to the Legislature says that the electric railway strikes of 1916 in New York City had a material effect upon traffic growth during the fiscal year 1916-1917, reducing to 353 the per capita number of rides taken upon all surface railroads and rapid transit lines from 356, the total for the year previous. In the aggregate this meant less travel than was expected, as the total increase for the year was about 20,000,000 passengers, against an increase of 91,000,000 for the fiscal year 1915-1916. The reduced increase is almost entirely due to the effect of the strike, in the opinion of experts, as in all probability, had there been no strike, the growth for the year would have equaled that for 1915-1916. The loss was the greatest where strike conditions were most severe.

### PUBLIC PAYS \$94,000,000 IN FARES

The number of passenger fares collected during the year 1916-1917 was 1,918,812,226 as against 1,898,735,615 in the year previous. The daily average of rides was 5,284,417, while the amount paid to the various companies for transportation was \$94,547,916, an increase of \$1,300,000 or about 1½ per cent. The payment for street railroad transportation during the year is equivalent to \$17.19 per capita. Active passenger car-miles decreased 7,146,733 during 1916-1917 due undoubtedly to strike conditions. The thirty-six operating companies had a total trackage of 1839 miles and operated 12,583 cars, a substantial increase over the previous year.

### BILLION MARK PASSED

Within the classification of street railroads are included elevated railroads and subways as well as street surface lines. Elevated railroads and subways had a total traffic for the year of 1,058,646,596, passing the billion mark for the first time, while the street surface railroads had 860,165,630. The elevated and subway lines showed an increase of 104,502,679, while there was a net decrease of traffic upon the surface lines of 84,426,068. The largest single increase was upon the lines of the first subway, operated by the Interborough Rapid Transit Company, where the traffic total was 414,193,992 or an increase of 42,688,674 over the preceding year. Next in importance are the figures of traffic on Interborough elevated lines, where a total of 349,380,093 and an increase of 37,133,

297 are shown. Subway and elevated lines operated by the Brooklyn company carried a total of 226,515,512 passengers, an increase of 19,417,243. The effects of the street surface railroad strike in 1916-1917 were felt most seriously in Manhattan Borough where, with 349,788,114 passengers carried on the surface cars, there was a decrease of 77,585,733 from the previous year, which had shown an increase of nearly 12,000,000 over 1915-1916.

## Would Anticipate Fare Move

**Corporation Counsel of Seattle, Wash., Wants City to Appraise Value of Railway Property**

Hugh M. Caldwell, corporation counsel, Seattle, Wash., has presented a bill to the City Council providing for the expenditure of from \$50,000 to \$100,000 to employ experts to make a valuation of the railway properties of the Puget Sound Traction, Light & Power Company. The request is made in anticipation of the company petitioning the State Public Service Commission for an order permitting an increase in the rate of fare from 5 cents to 6 cents. Officials of the company have not definitely stated that such an increase will be asked for, although the Public Service Commission in a recent order denying the company the right to employ women as conductors, announced that such a petition would receive consideration.

In transmitting a draft of the ordinance to the Council, Mr. Caldwell said in part:

"The public service commission law does not compel the company to submit its books and accounts to an investigation by the city, but only to an examination by the commission. The employment of experts by the city would, therefore, avail us nothing unless the company agreed to permit a thorough examination of its account by the city, and kept such agreement. The unprecedented action of the commission in the 4-cent ticket case of the company, in accepting the unsupported verbal statement of an official of the company that the property used in railway business was valued at \$16,000,000, may be taken as an indication of what is to be expected of the commission in the event that the company applies for, or the commission desires to grant an increase in its rates beyond the 5-cent limit."

The Council has taken no action as yet on the ordinance.

E. F. Blaine, chairman of the Public Service Commission, has advised the City Council that the valuation of the railway property of the company, undertaken several years ago, and abandoned because of a lack of funds,

is to be completed. Chairman Blaine states that while the company has made no application for an increase in fares, the commission expects that such application will be made.

## Rerouting in New Orleans

**Changes Made Conserve Coal, Eliminate Congestion and Permit More Even Headway**

Rerouting of cars of the New Orleans Railways & Light Company to conserve coal, as a war measure, became effective in the city of New Orleans, La., on Dec. 23, 1917. Because of the granting of early competitive franchises, and the building of competitive lines, wasteful and unnecessary service has long been furnished. This caused excessive consumption of coal and created congestion and delay.

New Orleans is peculiar in that it has four live operating tracks through the main street for a distance of approximately 1 mile, in addition to four long sidings, or stand tracks, used for lay-over purposes, together with loops.

It was the practice, prior to the rerouting, for practically all of the lines to use Canal Street for a considerable distance beyond the center of the city to a point known as Liberty Place, near the river. A considerable portion of this journey was made with very few passengers. Traffic checks indicate that approximately sixty-five seats were furnished to each passenger hauled. The congestion and delay occasioned by reason of this unnecessary service was tremendous.

After a careful study, it was found feasible to remove a number of lines from the Canal Street loop by reason of entering Canal by use of the outside track in the direction of traffic on Canal for a short distance. By this short loop system all passengers from lines terminating at Canal Street are landed in the center of the city, within a radius of five city blocks. Those desiring to continue in Canal to the river may do so by use of transfer and passage on any of the six heavy trunk lines, with double-truck cars and frequent headway, using Canal in both directions between Rampart and Liberty Place.

This change conserved the use of approximately 5000 tons of coal per annum, eliminated congestion and permitted a more even headway, aside from speeding up car movement, etc. The following tables show the number of cars moved in each direction through Canal during the peak, before and after the change:

TO THE RIVER			
	Before	After	Decrease
Track 1.....	111	80	31
Track 2.....	119	65	54
FROM THE RIVER			
	Before	After	Decrease
Track 1.....	111	80	31
Track 2.....	119	77	42

Several days before these changes became effective the public was notified by posters in the end windows of each

## Hearing on Increased Fares in Reading

Company Values Its Railway Property at \$8,350,428 and Shows What a Six-Cent Fare Will Mean in 1918 as Compared With Other Years

A five-hour hearing was held at Reading, Pa., on Feb. 8 before the Public Service Commission of Pennsylvania on the protests of several municipalities against the 6-cent fare put into effect recently by the Reading Transit & Light Company.

### HOW THE RATES WERE CHANGED

On Nov. 6 the rates were increased from 5 cents to 6 cents on all of the suburban lines of the company's system, which comprises about 200 miles of railway extending for a distance of about 15 miles west of Lebanon, Pa., to the city of Philadelphia. On Jan. 10 the rates were increased from 5 cents to 6 cents, with a corresponding 20 per cent increase in commutation rates and other forms of transportation, in the cities of Lebanon, Reading, Norristown and Philadelphia. Protests were filed with the Public Service Commission of Pennsylvania by Lebanon, Reading and Norristown prior to the effective date. As a result, the hearing on the Reading division took place at Reading on Feb. 8. The entire day was consumed with the direct testimony of the Reading Transit & Light Company. The hearing closed without cross-examination, this being indefinitely postponed to come before another hearing, a date for which has not been set.

### VALUATION PREPARED WITH GREAT CARE

The company submitted a valuation of its physical property based on average prices for the last five years, and also on the average prices for 1917. The company considers the law at present to be based on the court decision in the Ohio Valley Water case, rendered on Oct. 8, and appealed to the Supreme Court by the Public Service Commission, which decision states that a valuation should be based on the value of the property at the time the rates are questioned. The five-year average figures were submitted for the information of the commission. The 1917 valuation indicated an increase of approximately 31½ per cent over the valuation based on the average prices for the last five years.

The earnings and expenses of the company for the five-year period were submitted as evidence, together with the estimated earnings and expenses for 1918. The increase in earnings,

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car. The daily newspapers made comprehensive announcement of the change, and in order to avoid annoyance and possible confusion, supervisors were located at the prominent street corners for the purpose of properly directing passengers unfamiliar with the change. The patrons of the company have taken kindly to the new system, which appears to have received the approval of the general public.

due to the increase in rates, less the revenues which would be discouraged by the higher rates, was assumed to be 10 per cent over 1917. The operating expenses were based on actual figures for January, together with specific increase in various items. The net results of operation for 1918 were shown to be slightly less than those for 1917.

The valuation was prepared with the greatest of care. It consisted of a complete inventory of the company's physical property, and all prices were taken from actual prices paid for materials and labor during the last five years. The costs of bridges, buildings, real estate, special track work, etc., were based on actual quotations from manufacturers, or bids for replacement by some of the best steel bridge companies in the country. The prices of cars were based on actual prices paid or on prices obtained from the manu-

facturer who built the cars. The quotations and contractors' bids were all based on average prices for the last five years and for the year 1917.

As one of the local newspapers put it, the company "told everything and denied nothing." It showed what it costs to operate the system; what is done with the fares collected and what a 6-cent fare during 1918 would mean in dollars and cents compared with the revenues of other years.

It was brought out that the present value of the railway property in service in Reading and its suburbs is \$8,350,428. This is the reproduction cost at normal 1917 prices, after allowing for depreciation. The estimated income for 1918 with 6-cent fare and allowance for depreciation, gives a net return on the above valuation of \$75,451, or nine-tenths of 1 per cent. The present value of the property, being its reproduction cost at average prices prevailing for five years ending with 1917, was found to be \$6,344,175, with a net return, after deducting depreciation, of \$135,451, or 2.12 per cent.

## Lincoln Emergency Petition Denied

Railway Commission of Nebraska Rules Against Emergency Measure, but Will Consider Permanent Appeal

The amended application of the Lincoln (Neb.) Street Railway for emergency rates has been denied by the State Railway Commission, and the original application of the company for a permanent increase in fares is set for hearing before the commission on March 4. In an amended petition filed with the commission the company had alleged that the company's inability to pay operating expenses, interest and 6 per cent dividends upon its preferred stock, constituted an emergency that should be provided for immediately.

### THE COMMISSION'S CONCLUSION

In concluding its opinion in the case the commission said in part:

"If a failure to pay dividends on the preferred stock because not earned during the period constituted an emergency, we should have the following results: Net surplus, \$109,011; dividends at 6 per cent on the preferred stock, \$110,587, leaving a deficit of \$1,575.

"Before the commission would declare an emergency and make a temporary rate to take care of a shortage of \$1,575, as a result of nineteen months' operation, it certainly would make an investigation as to the surplus balances created and in possession of the company prior to the period under consideration. Here we find that there is a surplus of approximately \$159,000 and this should be available for dividends on the preferred stock; but this surplus has been invested in more properties and is not available as ready cash for that purpose.

"From a further analysis, however, we find that the first five months of 1917 cut the surplus that accumulated during the last seven months of 1916, \$4,451, and the last seven months of

1917 made another cut of \$21,303, making a total deficit for the year of \$25,755. This would indicate that if the surplus of \$159,000, above referred to, were available cash it would soon be depleted.

"It is apparent that if the operating ratio developed during 1917 is to continue, a greater operating income must come from some source. The evidence is not before the commission to enable it to say what portion of such increase should come from the heating plant, the light and power plant, or from the transportation plant. The commission will have to have full and complete information as to the relation between these several plants, including all operating revenues severally, and the disbursements of the same; information of the allocations of the physical properties devoted to each particular branch of the service, and a complete allocation of the preferred stock and bonds to the several properties before it can intelligently make rates to be paid for transportation.

### PREFERRED STOCKHOLDERS REAL PARTIES IN INTEREST

"Another matter of paramount importance necessary to be considered is the relation of the preferred stock to the common stock. The outstanding preferred stock amounts to \$1,183,700; the outstanding common stock amounts to \$1,652,000. The preferred stockholders are the real parties in interest; the common stock, representing little or no property investment, directs the policies and manages the entire properties through its voting power. Through its management it has paid to itself since Sept. 1, 1912, \$198,000 in dividends and has invested in betterments and extensions \$159,000 out of the oper-

## Electric Does Its Bit

North Shore Road Out of Chicago Comes to the Aid of the Government

The unusually efficient record made by the Chicago, Milwaukee & North Shore Railroad, Highwood, Ill., during the recent severe snowstorm in the Lake region has not passed unnoticed by the daily press. The Evanston *Index* said:

"The day before the first storm broke in all its fury the electric line delivered ninety cars of coal to the Great Lakes naval training station. But for the timely assistance of the electric line the great training camp with its 20,000 jackies would have suffered for lack of fuel.

"From the Borden Condensed Milk Company at Evanston the railroad received two carloads of milk, which were distributed in the towns along the line, thus averting a serious milk famine.

"When the naval station was threatened with a bread shortage in the midst of the storm an electric train crew, under tremendous difficulties, pulled a carload of bread from Libertyville to Great Lakes.

"So successful was the electric road in getting meat cars through and averting a meat shortage in a number of towns that Armour & Company have taken advantage of the facilities and shipped several more carloads of meat from their Evanston branch to supply all north shore towns along the electric line.

### ELECTRIC PROVED SUPERIOR

"In other ways the electric line proved its superiority over the steam roads during the storm. Several carloads of motor trucks were hauled from Kenosha to Milwaukee through the snowdrifts when the steam roads could not handle them. The road has made many new friends, who have found that under its present management it is really the 'road of service.'"

## Traffic Problems in Kansas City

The Kansas City (Mo.) Railways has recently asked the Public Service Commission of Missouri to consider its proposed plan of rerouting cars. The company has also asked the commission to permit the extension of the skip-stop system to certain lines. These are two of the many matters which heretofore have been the subject of city ordinance and which are now taken up directly by the Public Service Commission. This course is apparently the result of an investigation by Edward Flad, a member of the Public Service

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ating income. The management now finds itself unable to replace the \$159,000 into the surplus account, and is therefore unable to pay the dividends upon the preferred stock. Certainly this condition would not have arisen had the preferred stockholders (the real parties in interest) been in control of their own properties."

Commission, who was assigned to Kansas City for the purpose of helping the railway work out solutions for some of its problems.

Many of the regulatory measures affecting the company are held in abeyance temporarily because of the closer co-operation of the Public Service Commission and the railway. The City Council had, for instance, passed an ordinance requiring the railway to abolish its one-man cars. This ordinance had been signed by the Mayor, but on the request of a Council committee the matter was referred back to it. Another ordinance passed by both houses of the Council required the railway to pay the wages of the crossing patrolmen.

The Aldermen who presented the ordinance made the point that the service of the crossing patrolmen was for the benefit of the railway and that the onus of payment was therefore upon the railway. This ordinance, however, has not yet been called out for the final step to make its operation effective.

## Fare Rehearings Asked

Village of Peekskill Wants New York Commission to Reconsider Its Order of Last December

The village of Peekskill on Feb. 15 filed petitions with the Public Service Commission of the Second District of New York asking for rehearings on petitions of the Peekskill Lighting & Railroad Company and the Putnam & Westchester Traction Company for authority to increase railroad fares.

The commission in December granted the petitions of the companies and the increased fares are now in force. The village authorities ask that the proceedings be reopened and that the commission's order of Dec. 27 be suspended on the ground that the order is erroneous and unlawful.

### REASONS FOR REQUEST

1. Because a 5-cent provision in the franchises is a contract and was accepted by the Putnam & Westchester Traction Company and by the predecessor of the Peekskill Lighting & Railroad Company as a contract and was granted under Sec. 18, Article 3 of the Constitution.

2. That the evidence is insufficient to justify the conclusion that the fares heretofore charged were insufficient to yield reasonable compensation or were unjust.

3. That the part of the order providing for the cancellation of the contract as to transfers in Peekskill between the Peekskill Lighting & Railroad Company and the Putnam & Westchester Traction Company is unjust in that it results in the payment of two 7-cent fares by certain passengers.

The decision of the commission in the cases of the Peekskill Lighting & Railroad Company and the Putnam & Westchester Traction Company were referred to in the article "Some More Rays of Hope" published in the *ELECTRIC RAILWAY JOURNAL* of Dec. 22, 1917, page 1122.

## Full Car Signs Go

Maryland Commission Modifies Its Order With Respect to Car Capacity in Baltimore

The Public Service Commission of Maryland has passed an order making less stringent the rules that govern the loading of cars on the lines of the United Railways & Electric Company, Baltimore, Md., which operates 404 miles of electric railway. The new order does away with the full-car sign under the order adopted by the commission in the month of June, 1916, and reviewed in the *ELECTRIC RAILWAY JOURNAL* of June 17, 1916, page 1159.

### WHAT NEW RULES REQUIRE

Under the new rules the requirement is that in the downtown district there shall be operated in the non-rush hours in each thirty-minute period such cars as will provide 100 seats for each 100 passengers. It is provided, however, that if less than five cars of any one line pass at any point where a check is being made, then the average number of seats carried by three consecutive cars shall not be less than the aggregate number of passengers carried by these cars in the same direction.

As to the rush hours, it is required that there shall be provided 100 seats for each 100 passengers carried in any thirty-minute period, provided on lines where the average headway is three minutes or less the cars passing any point in the downtown district in any fifteen-minute period shall contain 100 seats for every 150 passengers carried during that period.

The company, however, is not permitted to carry in any car a greater maximum than that prescribed for each class of car. Under this rule the company may carry forty-seven standing passengers in a car that has seats for only fifty-two and forty-two standing in a car that has seats for forty-six and so on in proportion to the size and seating capacity of each type of car.

## Municipal Line to Reduce Fares

Councilman Erickson of the City Council of Seattle, Wash., states that within two months the fare on the city-owned railway between Third Avenue and Pine Street and Leary Avenue and Market Street in Ballard will be fixed at 3 cents.

This decision comes in spite of the fact that Seattle's municipal railway lines were operated between June 1, 1914, and Feb. 1, 1918, at a loss of about \$150,000. Within two months the city expects to receive half a dozen or more one-man cars, and they will be utilized in the equipment of the 3-cent route which measures a fraction less than 5½ miles. Councilman Erickson points out that the line between Pine Street and Market Street will relieve the congestion on the system as a whole, and that a ride for 3 cents will attract the patronage of those who now walk a dozen or more blocks rather than pay a 5-cent fare.

## Will Not Pass on Jurisdiction

Attorney General of Oregon Refuses Opinion to Commission on Question of Jurisdiction in 6-Cent Fare Case

Attorney-General Brown at Salem, Ore., recently refused to give the Public Service Commission an opinion upon the question of whether or not it had jurisdiction in the Portland Railway, Light & Power Company's 6-cent fare case. He gave as his reason the fact that the voters of Portland had enacted a charter in 1913 giving to the City Council power in the regulation of utilities. In his refusal he cited numerous authorities, upholding his contention that he, as attorney-general, should not give an opinion on a question which is involved in litigation now before the courts.

Although refusing an opinion, Attorney-General Brown said that should the courts hold that the commission had been without jurisdiction to issue its recent order granting the Portland Railway, Light & Power Company a 6-cent fare, the commission would be automatically divested of jurisdiction over most of the public utilities of the State. Cities and towns throughout the State have enacted charters with provisions similar to that in the Portland charter, and if these provisions override the commission's authority, the work of the commission for the last five years will practically be destroyed.

The Public Service Commission, through Chairman Miller, has notified the Portland Railway, Light & Power Company that the attention of the commission has been called to the fact that the company is not furnishing adequate service on its electric railway lines, and that this condition must be immediately remedied. Commissioner Miller also directed Examiner Rasch of Portland to make a survey of traffic conditions immediately and report to the commission. Chairman Miller also asked the company to furnish a comparative statement of the traffic handled as of the present time and thirty days prior.

## Electric for Steam

California Commission Recommends Electric Lines as Substitutes for Steam Railroad Service

In a report transmitted to William G. McAdoo, the Director General of Railroads at Washington, the Railroad Commission of California recommends the elimination of all unnecessary passenger service. The commission reaches the conclusion that it is "evident at once that in almost all cases where steam lines compete with electric interurban lines, the latter can as a rule render the service more satisfactorily and more economically, and are able in a number of cases to relieve the steam lines of such competing business altogether."

The commission recommended that in the case of the Los Angeles territory where the Pacific Electric Railway competes with three railroads—the Southern Pacific, the Santa Fé and the Salt Lake lines—the steam lines concerned

immediately institute a survey with the view of determining to what extent the Pacific Electric Railway can furnish the necessary passenger service, and to what extent competing steam line service could be eliminated. In this connection the commission says that authority to make such a survey and to put this recommendation into effect should be secured from the Director General of Railroads.

## One-Man Cars in Seattle

Puget Sound Company Already Has Two Cars in Operation and Is Planning to Run Twenty-three More

The Puget Sound Traction, Light & Power Company, Seattle, Wash., acting under authority granted ten months ago by the Public Service Commission to operate one-man cars wherever it seemed feasible in the city of Seattle, plans to put twenty-five new one-man cars of the Birney type in operation immediately on the close-in runs. Two of the one-man cars have already been placed in operation on the Summit line. The other twenty-three are being set up, and will be in operation in the near future. A. L. Kempster, general manager, states the company has fifteen more of the small cars on order. The cars now being put on will supplement the present service.

At a joint meeting of the franchise and judiciary committees of the City Council it was decided that the Council would not interfere with the operation of one-man cars, although resolutions had been passed directing the Mayor and the corporation counsel to resist the operation of such cars. Walter F. Meier, assistant corporation counsel, pointed out, however, that the Supreme Court has given the Public Service Commission jurisdiction over service, and that one-man cars might be argued as an improvement of service.

Operation of one-man cars on the Seattle & Rainier Valley Railway in Seattle, between Stewart and Rose Streets, is provided for in a bill recently introduced in the City Council and referred to the franchise and judiciary committees.

## N. Y. Fare Hearings Resumed

The Public Service Commission for the First District of New York on Feb. 21 resumed hearings upon the fare applications of several of the electric railways operating in New York City. These applications in most of the cases are for permission to charge 2 cents for transfers. Hearings in these cases were begun last spring, but were discontinued after a short time, first in order that various data desired by the commission might be secured and then in order that vacancies on the commission might be filled. The hearing on Feb. 21 was devoted to the presentation of new financial exhibits for the Third Avenue Railway, and adjournment was taken until Feb. 28 and March 1. The other fare cases are now scheduled to be taken up on March 11.

# Transportation News Notes

**Skip Stops in Harrisburg.**—Following a recommendation in the report by Bion J. Arnold, the Harrisburg (Pa.) Railways recently eliminated many "alley" stops on all city lines.

**Stops to Be Eliminated.**—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has been authorized by the City Commission to eliminate 101 stops on the various divisions of its Trenton line.

**Receipts Jump When Jitney is Curbed.**—Enforcement of the recently enacted jitney ordinance in Dallas, Tex., has increased the daily receipts of the Dallas Railways by more than \$300 according to Richard Meriwether, general superintendent of the company.

**New Rules for Filing Tariffs.**—The Public Service Commission of Pennsylvania has issued new rules to be followed by all public service companies of the State in filing and posting tariffs and supplements to tariffs. The new rules are effective on March 15.

**Fare Increase Sustained.**—The Railroad Commission of Michigan has sustained the Houghton County Traction Company, Houghton, Mich., in the case involving the recent increase in rates by the company between Houghton and Calumet from 25 cents to 30 cents.

**Reduced Rate Tickets Discontinued.**—The Hot Springs (Ark.) Street Railway has discontinued the sale of six tickets for 25 cents and books of twenty-five tickets for \$1. These reduced rates have been in effect for several years. A straight 5-cent cash fare is now charged.

**Scranton Fare Increase to Date from March 21.**—The Scranton (Pa.) Railway has announced that on March 21 it will increase the fare unit on its lines from 5 cents to 6 cents, in accordance with a tariff filed last August. To facilitate the making of change the company will have the conductors sell strips of five tickets for 30 cents, each ticket being good for one 6-cent fare. The discussion of fares by officers of the company before the city officials of Scranton was referred to in the ELECTRIC RAILWAY JOURNAL of Feb. 16.

**Seeks Six-Cent Fare.**—The New Jersey & Pennsylvania Traction Company, operating cars between Trenton, N. J., and Lambertville, Newtown, Doylestown, Yardley and Bristol, Pa., and Lawrenceville and Princeton, N. J., has petitioned the Public Service Commission of Pennsylvania for permission to put into effect a 6-cent fare in each of its zones in that State where 5 cents is now charged. The company would make the change on March 25. The company has not made any move for an increase on its New Jersey divisions.

## Legal Notes

### CALIFORNIA.—*Car Interferes with Fire Truck.*

Where defendant's motorman knows or should know that a fire truck is coming at a great speed and runs his car out on a crossing suddenly, forcing the fire truck to swerve to the walk and injure a passer-by, the company is negligent, whether violating an ordinance or not. (King vs. San Diego Elec. Ry., 168 Pac. Rep., 131.)

### CALIFORNIA.—*Widow Has New Cause of Action.*

Code Civ. Proc. Sec. 377, providing for action for damages against a person causing death by wrongful act creates an entirely new cause of action unknown at common law. Hence, as the damage of widow for the wrongful death of her husband includes not only financial loss, but loss of consortium, the husband's execution prior to his death of a release for damages from the injury which finally resulted fatally will not bar the widow's right of action. (Early vs. Pac. Elec. Ry. Co., 167 Pac. Rep., 513.)

### ILLINOIS.—*Under Workmen's Compensation Law, Accident Must Arise Out of Employment.*

Where the head fireman of an electric company, in disregard of signs, fences and rules, entered the transformer room on no business of the company, and was there accidentally killed, compensation was not recoverable for his death, although at other times he had frequently been called upon in performing the duties of the engineer to enter the transformer room. (Northern Illinois L. & Trac. Co. vs. Industrial Board of Illinois et al., 117 N. E. Rep., 95.)

### KENTUCKY.—*Passes Given as Consideration for Right-of-Way Are Void Under Anti-Pass Law.*

Const. Sec. 196, providing that passenger transportation shall be regulated to prevent unjust discrimination, and Sec. 197, prohibiting free passes, render void as against public policy a railroad's agreement to give free transportation in return for right-of-way deeded it, especially as anti-pass law (Laws 1916, c. 1), enacted pursuant to Sec. 196, specifically prohibits transportation except for a money consideration. (Kentucky Traction & Terminal Co. v. Murray, 195 Southwestern Rep., 1119.)

### NEW JERSEY.—*Gross Receipts Include Receipts from Sale of Power.*

Acts 1906 (P. L. p. 644) requiring an annual franchise tax upon the annual gross receipts of any street railway corporation or upon such proportion of such gross receipts as the length of its line in this State upon any street, etc., bears to the length of its whole

line, was intended to impose a franchise tax upon the total of the gross receipts of such companies, including receipts from current and power sold, in accordance with its precise language, and not upon gross receipts for transportation, as was the rule under P. L. 1903, p. 232, since the act of 1906 was intended to provide a specific scheme for the taxation of street railway corporations and to differentiate such corporations from those liable to a franchise tax under the act of 1903. (Atlantic Coast Electric Railway, v. State Board of Taxes and Assessments, 101 At. Rep., 64.)

### NEW YORK.—*Review by Court of Orders of Commissions.*

Mere allegations that it may be impossible for relators to obtain the cars within the time fixed by the Public Service Commission or within a reasonable time are insufficient to justify a review of the orders of the commission by a certiorari in view of public service commissions law (Consol. Laws, Chap. 48) Sec. 22, providing that, where facts arise subsequent to the making of an order which are deemed to entitle the companies to a modification of the order which the commission has made, the companies have no standing in court until they have exhausted the remedy afforded by the statute and have given the commission opportunity to afford suitably the relief desired. (People ex rel. Brooklyn Heights R.R. Co. vs. Public Service Commission, First District, 166 N. Y. Sup., 825.)

### NORTH CAROLINA.—*Use of Street by Freight Cars Does Not Constitute Additional Servitude.*

The use by a street railway of the streets of a city under an act of the Legislature and by authority of an ordinance to transport freight cars two at a time between a railroad's freight yard and various factories within the city, thus saving the expenses of breaking bulk, and minimizing the traffic on the streets is not an "additional servitude" on the streets entitling abutting owners to additional compensation. (Turner et al. vs. North Carolina Public Service Co. et al., 93 S.E. Rep., 998.)

### PENNSYLVANIA.—*Assent to Railway Construction Must Stand.*

Township officers who have knowingly and without objection permitted a street railway to be constructed in the township cannot compel its removal. (Wilson Township vs. Easton Transit Co., 101 At. Rep., 983.)

### PENNSYLVANIA.—*Validity of a Release Executed on Sunday.*

The law will not lend its aid to enforce an executory contract made on Sunday; but the parties to a contract fully executed on that day will be left where the law finds them, and no relief given to either.

Where a release of damages for personal injury was executed and delivered and the consideration paid on Sunday, the contract was executed and binding upon the parties, and if otherwise valid, discharged the party liable. (Williams vs. Philadelphia Rapid Transit Co., 101 At. Rep., 748.)

## New Publications

**Proceedings of Electric Railway Section Meeting, Sixth Annual Safety Congress, National Safety Council.** Published by the National Safety Council, Continental & Commercial Bank Building, Chicago, Ill. Illustrated. Seventy-eight pages. Paper.

The Council has issued in pamphlet form as Part 7 of the *Proceedings* of the Sixth Annual Safety Congress, held in New York City on Sept. 13, 1917, a full account of the electric railway section meeting. An abstract of the papers and discussions appeared in the issues of the *ELECTRIC RAILWAY JOURNAL* for Sept. 15, 1917, page 445, and Sept. 29, 1917, page 579. The tables referred to in the abstract are given in full in this pamphlet. The report could be read with profit by every man connected with an electric railway who is responsible for the safety of employees or the public.

### Eye Hazards in Industrial Occupations;

By Gordon L. Berry, field secretary National Committee for the Prevention of Blindness, with the cooperation of Lieut. Thomas P. Bradshaw, U. S. Army, formerly technical assistant to the director of American Museum of Safety. Published by the National Committee for the Prevention of Blindness, 130 East Twenty-second Street, New York, 150 pages, illust. Price 50 cents.

In this volume the author reviews the chief industrial hazards to eyesight in the industries of the United States. Case reports illustrate each section, the special dangers are described and recommendations made for such changes of working conditions, or installations of protective devices as have been found suitable for protecting workers. The publication is most completely illustrated.

### THE SCOPE OF THE BOOK

The following section headings indicate the scope of the book: statistics of eye accidents; chipping operations; machine operations; abrasive wheels; sand-blasting; "mushroomed" tools; riveting radiations from intense light and heat sources; ultra-violet rays in illuminants; radiant energy in arc welding and in molten metal; metallurgical operations; glassblowers' cataract; infections; gage glasses; acids and chemicals; treatment of acid burns; industrial poisons; removal of dangerous fumes, vapors and gases; spray process hazards; methyl alcohol; bottling accidents; mining and quarrying; agricultural hazards; goggles; garment trade hazards; industrial lighting; the safety movement.



## Personal Mention

**Paul C. Fratessa** has resigned as vice-president of the Fresno (Cal.) Interurban Railway.

**James F. Kieser** has been appointed roadmaster of the Mobile Light & Railroad Company, Mobile, Ala., to succeed L. A. Wilson, resigned.

**William Carpender** has been elected president of the Sixth Avenue Railway, New York, N. Y., now included in the New York Railways, to succeed the late Frank Curtiss.

**M. E. De France**, formerly electrical superintendent of the Hot Springs (Ark.) Street Railway, is now connected with the Deming Ice & Electric Company, Deming, N. M.

**C. S. Keever**, heretofore acting superintendent of transportation of the Union Traction Company of Indiana, Anderson, Ind., has been appointed superintendent of transportation of the company.

**Ralph Boardman**, a well-known young member of the Minnesota bar, has been appointed claim attorney for the Twin City Rapid Transit Company, Minneapolis, Minn. He succeeds John F. Dahl, who will enter private practice after ten years of service with the railway.

**Henry W. Killeen** has become a member of the law firm of Norton, Penney & Nye. Porton Norton, senior member of the firm, died a short time ago, and the new firm will be known as Penney, Killeen & Nye. The firm is counsel for the International Railway, Buffalo, N. Y., and Thomas Penney is vice-president of the railway. Mr. Killeen was city attorney of Buffalo from 1898 to 1902. He will make a specialty of legislative matters formerly handled by Mr. Norton.

**Robert Thompson, Jr.**, superintendent of transportation of the Toledo Railways & Light Company, the Maumee Valley Railways & Light Company, and the Toledo, Ottawa Beach & Northern Railways & Light Company, Toledo, Ohio, was placed in direct charge of car operation of the above lines, effective on Feb. 8. Mr. Thompson was formerly assistant general manager of the Manhattan & Queens Traction Corporation, Long Island City, N. Y. The companies at Toledo operate more than 150 miles of electric railway.

**A. M. Ludwig**, auditor Elmira Water, Light & Railroad Company, Elmira, N. Y., has been authorized to change his name to A. M. Lewis. Mr. Lewis, who was born in 1884, was employed from 1909 to 1915 as accountant in charge for the receivers of the Metropolitan Street Railway, New York City. Prior to taking up his present work early in 1917, he was associated as a general accountant with the United Gas & Electric Engineering

Corporation, New York City. Mr. Lewis has also been connected with the Western Union Telegraph Company as a traveling auditor and has served on the staffs of Haskins & Sells, C.P.A.; Deloitte, Plender, Griffiths & Company, C.A., and Patterson, Teele & Dennis, C.P.A., New York City.

**W. H. Wright** has been elected secretary of Georgia Railway & Power Company, Atlanta, Ga. This office has been held by W. H. Glenn, who is also vice-president and operating manager of the company. On account of Mr. Glenn's numerous duties as head of the operating department, it was decided



W. H. WRIGHT

that he should be relieved of the secretary's work. Mr. Wright began work with the Georgia Railway & Electric Company, the predecessor of the Georgia Railway & Power Company, in February, 1906, as secretary to H. M. Atkinson, chairman of the board. Mr. Wright is also private secretary to Mr. Atkinson, and is secretary of the Georgia Railway & Electric Company.

**G. A. Strain** has been promoted from superintendent of the gas department of the Helena Light & Railway Company, Helena, Mont., to the position of general superintendent of the following properties, with headquarters at Ithaca, N. Y.: Homer & Cortland Gas Light Company, Cortland, N. Y.; Ithaca Gas & Electric Corporation, Ithaca, N. Y.; Norwich Gas & Electric Company, Norwich, N. Y.; Oneonta Light & Power Company, Oneonta, N. Y.; Standard Light, Heat & Power Company, Sidney, N. Y.; Van Wert (Ohio) Gas Light Company; Cayuga Power Corporation, Ithaca, N. Y.; Groton (N. Y.) Electric Corporation; Ovid (N. Y.) Electric Company. Mr. Strain has been associated for the last twelve years with

the operating organization of the J. G. White Management Corporation, New York City, the managers of the aforementioned companies.

**H. W. Fuller** has been appointed vice-president in charge of operation of the Northern States Power Company, with headquarters at Minneapolis, Minn. In this capacity Mr. Fuller will relieve R. F. Pack, vice-president and general manager, of operating responsibilities which have increased greatly due to the rapid growth of the Northern States organization. Mr. Fuller has been with H. M. Byllesby & Company, Chicago, Ill., who control the Northern States Power Company, for seven years, devoting a large part of his time to the solution of special operating problems. He was born in New York and received his education in the public schools of Bayonne, N. J., the State Model School of New Jersey, and Rutgers College, graduating in 1891. He entered the service of the Consolidated Traction Company, Newark, and became assistant superintendent and assistant general manager, leaving this position in 1901 to become general manager of the Washington Railway & Electric Company and the Potomac Electric Power Company.

**J. W. Andrews** has severed his connection with the International Railway, Buffalo, N. Y., to investigate transportation conditions for the pomological division of the bureau of markets of the United States Department of Agriculture. Upon leaving Syracuse University, Mr. Andrews entered the employ of the Utica & Mohawk Valley Railway, Utica, N. Y., in the power department. Subsequently, he spent three years with the Lackawanna Steel Company, Buffalo, on electrical and mechanical work. In 1908 Mr. Andrews entered the wholesale commission business in Utica and later transferred to New York City. In 1910 he became connected with the Public Service Commission for the Second District of New York as an assistant in the electric railway division. After three years with the commission, Mr. Andrews resigned and became superintendent of the Buffalo-Olcott division of the International Railway, from which position a year later he was transferred to the general office staff of the company, where he has been engaged upon various passenger and freight transportation matters.

**August K. Tegtmeier** has been appointed engineer of maintenance of way of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, under Charles C. Beckman, superintendent of maintenance of way. Mr. Tegtmeier was born in Conshohocken, Pa., on June 25, 1894, and was educated in the public schools of that town and Conshohocken High School, from which he was graduated in 1910. In September of the same year he entered the University of Pennsylvania, spending the vacation periods in the employ of the Atlantic City & Shore Railroad, the American Bridge Company, and the New York Central Railroad. Mr. Tegtmeier was graduated from the civil en-

gineering department of the University of Pennsylvania in June, 1914. Immediately he re-entered the employ of the New York Central at Albany, but left there in the fall of 1915 to become an engineering inspector in the department of highways in the city of Philadelphia. Six months later he returned to railway work in an engineering position in the maintenance of way department of the New York State Railways at Rochester, N. Y. He continued with that company until June, 1917, when he became connected with the forces of the Republic Railway & Light Company, controlling the Mahoning & Shenango Railway & Light Company.

William R. Davis, chief engineer of Station A of the Springfield Gas & Electric Company, Springfield, Ill., controlled by the same interests that control the Springfield Consolidated Railway, loaned to the United States government for the period of the war, is credited with a very important invention in connection with wireless telegraphy. Mr. Davis has been serving for several months as chief instructor of the naval radio service training school, Minneapolis, Minn. The story of his invention is told in a full-page illustrated article in the *Scientific American*. The device is a high-frequency generator which reproduces the exact sound of the radio dot and dash, so that men to operate buzzers can be eliminated, while an unlimited number of students can be trained at one time. The invention combines the results obtainable from a dictaphone, a high-frequency generator and a telephone. The dictaphone records the message, which may be sent at any speed, the generator reproduces the exact sound of a wireless message, while the telephone transmits the message to the student. By the generator, which gives the high-pitched drone peculiar to wireless, messages are recorded on a wax dictaphone cylinder. Once inscribed, a cylinder may be used again and again to repeat the message, which is transmitted by means of a head phone to any number of students.

## Obituary

William J. Holliday, a director in the Indianapolis Street Railway and the Belt Railroad, Indianapolis, Ind., is dead at the age of eighty-nine.

W. B. Schofield, a member of the Illinois State Civil Service Commission and formerly a member of the Illinois Public Utilities Commission, recently died of heart disease at his home in Marshall, Ill.

G. W. Hatch, general superintendent of the Piedmont Railway & Electric Company, Burlington, N. C., is dead. He succumbed to injuries received in an accident to one of the cars of the company following a recent severe snow storm.

# Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (\*) indicates a project not previously reported.

## Recent Incorporations

**Middlesboro (Ky.) Street Railway.**—Chartered to construct an electric railway along Cumberland Avenue and other thoroughfares of the city of Middlesboro. The line will also make connections with the Yellow Creek mines and adjacent mining towns. Mayor E. P. Helpburn, Middlesboro, is interested. [Feb. 23, '18.]

## Franchises

\***Savannah, Ga.**—The Chatham County Traction Company has received a franchise from the County Commissioners to build a line from Stiles Avenue, on the Augusta Road, to the Brampton tract of the Foundation Shipbuilding Company. H. C. Foss, manager Savannah Electric Company, is reported interested.

**Muskegon, Mich.**—The matter of granting a thirty-year franchise to the Muskegon Traction & Lighting Company will be voted on in April.

**Chillicothe, Ohio.**—The Peoria & Chillicothe Electric Railway has received a two years' extension of time on its franchise to construct a line in Chillicothe. [Feb. 9, '18.]

## Track and Roadway

**Muscle Shoals Traction Company, Florence, Ala.**—A campaign has been begun by the Chamber of Commerce of Huntsville for the raising of the necessary money for the preliminary work on the proposed electric railway of the Muscle Shoals Traction Company to connect Huntsville and Florence. Thurston Allen, Florence, secretary. [Jan. 26, '18.]

\***Alameda, Cal.**—The City of Alameda will construct and operate an electric railway over 1 mile long to serve all the north side industries from Pearl Street westward in the territory reached by a track laid on Blanding Avenue east of Park Street and on Clement Avenue west of Park Street. The money for the construction of the line will be supplied by the city's electric light plant. The road will be a single-track line for freight only and the rolling stock will consist of electric locomotives driven by power from the municipal light plant.

**Clear Lake Suspended Monorail Company, Hopland, Cal.**—It is reported that

Director General of Railroads McAdoo has consented to a permit for the construction of the Clear Lake Suspended Monorail Company's line from Hopland to Lakeport. G. L. Hardison, San Francisco, is interested. [Jan. 26, '18.]

**Pacific Electric Railway, Los Angeles, Cal.**—This company will double-track its line between Long Beach and San Pedro, about 5 miles, at a cost of about \$200,000.

**Jacksonville (Fla.) Traction Company.**—The extension of the Jacksonville Traction Company's line through Brentwood to the Florida State Fair Grounds has been completed and operation has been begun on the line.

**Atlanta, Birmingham & Atlantic Railway, Atlanta, Ga.**—A storage-battery car will be used by the Atlanta, Birmingham & Atlantic Railway for passenger service on its line between Brunswick and Thalman.

**Suburban Railroad, Chicago, Ill.**—A petition has been filed by the Suburban Railroad with the Public Utilities Commission of Illinois to sell all its corporate property and assets to the Chicago & West Towns Railway, by which it is controlled.

**Wichita-Walnut Valley Interurban Railway, Wichita, Kan.**—The Public Utilities Commission of Kansas has granted the Wichita-Walnut Valley Interurban Railway permission to issue \$1,000,000 first mortgage bonds and \$200,000 in common stock. The order of the commission grants permission to the company to acquire and own real estate for rights-of-way, terminal and station purposes and to construct and equip that portion of the line which connects Wichita, El Dorado and Augusta, about 41 miles, all in accordance with the terms of a contract dated Dec. 19, 1917, between the company and John R. Scott of St. Louis, Mo., which contract is to be secured by a bond of \$500,000, when bonds are underwritten in the amount of \$1,000,000. Charles Payne, secretary. [Jan. 5, '18.]

\***Jenkins (Ky.) Street Railway.**—The city of Jenkins plans the construction of a 7-mile electric railway in the near future. Connections will also be made with McRoberts, Fleming, Dunham and Burdine.

**Kansas City, Lees Summit, Lone Jack & Eastern Railway, Kansas City, Mo.**—It is reported that work has been begun on the construction of the proposed line of the Kansas City, Lees Summit, Lone Jack & Eastern Railway. Grading has been completed part of the way to Lee's Summit. The Kansas City terminus of the line will be about Thirty-first Street and Hardesty Avenue. The construction within the city limits will cost about \$200,000 and outside of the city \$1,000,000. W. E. Winner, Kansas City, is interested. [Nov. 3, '17.]

**Columbus, Delaware & Marion Electric Company, Columbus, Ohio.**—It has been announced that the Columbus, Delaware & Marion Electric Company plans to spend about \$1,000,000 for track and power plant improvements in Marion. It is proposed to centralize all general offices in Marion.

**\*Lorain, Ohio.**—The City Council has asked Chalmers C. Miller, city engineer, to draw up specifications showing the probable cost of a single-track railway line with two cars from the loop to the Cromwell Steel plant.

**Oregon Electric Railway, Portland, Ore.**—The Public Service Commission of Oregon has refused to issue an order compelling the Oregon Electric Railway and Southern Pacific Railway to maintain a common user of the Oregon Electric Railway tracks in Hillsboro and a union station in that city, basing their refusal upon the fact that the labor and material required for such joint facilities can be used more advantageously for more important and necessary purposes during the war.

**Portland Railway, Light & Power Company, Portland, Ore.**—In answer to complaints of the neglect of streets in Portland by the Portland Railway, Light & Power Company, officials have notified the City Department of Public Works that work of repairing tracks and pavement between tracks has been undertaken on a large scale. It is claimed that in two months the traction company has spent \$10,000 in making repairs and in rushing other work as fast as possible. Other work to cost \$5,000 will be started soon.

**Manila Electric Railroad & Light Corporation, Manila, P. I.**—A report from the Manila Electric Railroad & Light Corporation states that it will reconstruct 2 miles of track.

**Nashville-Gallatin Interurban Railway, Nashville, Tenn.**—A preliminary survey will be made by the Nashville-Gallatin Interurban Railway for an extension from Madison to Neeley's Bend Ferry to serve the government powder plant.

**Nashville Railway & Light Company, Nashville, Tenn.**—Surveys will soon be begun by the Nashville Railway & Light Company for an extension of its Gallatin turnpike line to near Hadleys Bend and also for an extension of the Fairfield line along the Lebanon Road.

**Bamberger Electric Railway, Salt Lake City, Utah.**—Announcement has been made by the Bamberger Electric Railway that automatic block signals will be installed between Robbins and Layton and Kaysville, thus making the entire line either double-tracked or protected by automatic block signals.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—Announcement has been made by the Monongahela Valley Traction Company that the company plans to extend its lines from Clarksburg to Salem, Philippi and Grafton; from Weston to Orlando and from Fairmont to Morgantown. Work to the amount of \$3,000,000 is planned this year.

## Shops and Buildings

**Chicago, North Shore & Milwaukee Electric Railroad, Highwood, Ill.**—This company has leased the building at 185 Second Street, Milwaukee, for a station. Work on remodeling the lower floor will be begun at once. The erection of a station at Sixth and Sycamore Streets has been abandoned for the period of the war on account of the order of the government to railroads to curtail expenditures as much as possible.

**International Railway, Buffalo, N. Y.**—This company has leased the carhouse of the Niagara Gorge Railroad above the river bank at Second Street, where a car repair shop will be installed.

**Sand Springs (Okla.) Railway.**—A contract has been awarded by the Sand Springs Railway to H. L. Weir Contracting Company for the construction of a new carhouse.

**Portland Railway, Light & Power Company, Portland, Ore.**—Residents of Oak Grove have petitioned the Portland Railway, Light & Power Company to construct a new station at Oak Grove.

**Philadelphia, Pa.**—Sealed proposals will be received by the Department of City Transit, William S. Twining, director, until 12 o'clock noon on March 5 for the following work appurtenant to the Frankford Elevated Railway: Contract No. 529—Furnishing and delivering cast-iron fillet brackets for columns in Frankford Avenue between Church Street and Dye Street. Sealed proposals will also be received until 12 o'clock noon on March 12 for the following work: Contract No. 537—Erection of brick and reinforced concrete station buildings at the northeast and southwest corners of Kensington and Allegheny Avenues, including the removal of existing buildings on these sites. Contract No. 538—Erection of brick and reinforced concrete station buildings at the southwest and southeast corners of Kensington Avenue and Somerset Street, including the removal of existing buildings from these sites. Copies of plans and specifications may be obtained upon deposit of \$10, to be refunded upon return of plans.

**Texas Electric Railway, Dallas, Tex.**—The new union interurban express building being constructed by the Texas Electric Railway for the Electric Express & Baggage Company has been practically completed. The new structure, which will cost about \$30,000, has accommodations for loading and unloading ten interurban express cars and twenty-one trucks at the same time. Delay in the arrival of rails prevents the opening of the building, which covers most of the block bounded by Young, Wood, Market and Jefferson Streets. The structure is fireproof and of modern design. The new building will handle express carried by the interurban railways operating between Waco, Denison and Corsicana.

**Virginia Railway & Power Company, Richmond, Va.**—This company will repair its brick warehouse at the foot of Twelfth Street, Richmond, at a cost of about \$6,000.

**Wheeling (W. Va.) Traction Company.**—Plans are being drawn by the Wheeling Traction Company for the reconstruction of its Bay Island carhouse recently destroyed by fire.

## Power Houses and Substations

**Alabama City, Gadsden & Attalla Railway, Gadsden, Ala.**—The turbine engines and generators of the Alabama City, Gadsden & Attalla Railway have been sold to the Chicago Utilities Development Corporation and the company will purchase a new outfit.

**Little Rock Railway & Electric Company, Little Rock, Ark.**—A contract has been awarded by the Little Rock Railway & Electric Company for the installation of a turbine in its power plant to provide improved lighting and electric railway service, at a cost of about \$200,000.

**Pensacola (Fla.) Electric Company.**—The erection of a 13,200-volt transmission line to the Pensacola Naval Station is being considered by the Pensacola Electric Company.

**Georgia Railway & Power Company, Atlanta, Ga.**—This company has completed its transmission line connecting Royston with its Gregg Shoals plant near Elberton.

**Vicksburg Light & Traction Company, Vicksburg, Miss.**—A new 1500-kw. turbine is being installed by the Vicksburg Light & Traction Company at its power plant in Vicksburg.

**Charleston Consolidated Railway & Light Company, Charleston, S. C.**—This company is considering increasing the output of its Meeting Street power house.

**Valley Railways, Lemoyne, Pa.**—New machinery is being installed at the power plant of the Valley Railways in Lemoyne.

**South Carolina Light, Power & Railways Company, Spartanburg, S. C.**—Extensive improvements are now being made on the gas plant of the South Carolina Light, Power & Railways Company and a new generator, with a capacity of 50,000 cu. ft. of gas, will be installed.

**Washington Water Power Company, Spokane, Wash.**—A contract has been awarded by the Washington Water Power Company to the General Electric Company for the installation of a new 22,500-hp. generator at its Long Lake power plant, which will increase the present capacity of the hydroelectric development by 50 per cent and will, with the two other units installed, utilize about three-fourths of the water power available there. The cost of the new equipment is reported to be more than \$250,000.

# Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

## Boiler Market Best in East

**Business Off in Middle West—Deliveries Six to Eight Months Without Priority Order**

The business in boilers of large steam capacity can at the present time be divided into three general classifications for analysis. They are, first, commercial business in the district between Pittsburgh and New York; second, commercial business west of Pittsburgh, and, third, marine business. East of Pittsburgh inquiries and orders are being handled in volumes above normal. This is due largely to the great amount of strictly war work in that territory, creating extraordinary demands for power that must be supplied. In the Middle West, where there is less war work, the boiler business while still good has fallen off somewhat. The largest buyers of boilers—the utilities—are not in the market for any more equipment than they must of necessity purchase. A better market for boilers in the Middle West is expected to prevail in the coming months regardless of whether the war continues or ends quickly. If the war continues, it seems inevitable that the war business will spread over a wider territory than it now takes in. There are several good fuel fields west of Pittsburgh, and it is believed that the logic of distributing government business more widely, from a geographical standpoint, will become recognized.

### DELIVERIES 6 TO 9 MONTHS

This naturally is expected to help boiler business in the Middle West. On the other hand, if the war suddenly stops, public-service business is expected to again flourish, since the lack of capital is all that is preventing extensions of plant. The business in marine boilers is so heavy that some of the prominent factories are looking for ways to get the business divided between their competitors rather than trying to do all of the work themselves. On the whole, the boiler manufacturing industry is far behind with its orders. Deliveries on commercial boilers are from six to nine months without a priority order. With an A-1 priority order a commercial customer might get a delivery anywhere from two to three months.

Some of the boiler manufacturers are taking advantage of the "sellers' market" that conditions have created to put into effect selling policies that they believe are for the ultimate good of customers but which there was no way of enforcing under ordinary conditions. Manufacturers claim that cen-

tral stations and some industrial plants are apt to make the mistake of wanting to install boilers that are too large. No boiler in a plant, say these manufacturers, should be so large that its loss in times of peak load will affect the operation of the plant if it is a station that stands alone, or will affect the operation of the system if it is an interconnected plant. In the past all argument to this effect has had little effect on customers. They thought they knew what they wanted and ought to have. In some cases boilers too large for the plant have been sold with a written protest from the manufacturers as a part of the contract. Nevertheless, this has not prevented the customer from coming back on the manufacturer if the boiler went wrong as was predicted. Nothing seems able to prevent that. So at least one company now is making it an absolute rule not to sell boilers that it knows are too large for the plant in which they are to operate. If it cannot convince a customer that he should buy boilers of sensible sizes, it is willing that some other manufacturer should get the business and thereby make himself responsible for future unpleasant developments.

## Car Deliveries in Five to Six Months

**Materials and Labor Situation Govern—One Large Priority Order Taken on Three Months' Delivery**

Nic Le Grand, general sales agent, St. Louis Car Company, is authority for the statement that car builders are now shipping cars as a rule within five or six months from the receipt of the order. He writes commenting upon a note in this department quoting a longer delivery than the period mentioned, and says a longer time is not necessary. He continues:

"Car builders are experiencing some difficulty in obtaining materials promptly, the labor situation is not the best, but notwithstanding these drawbacks the St. Louis Car Company is manufacturing and shipping cars within five to six months from date of contract, delivery depending upon type of car. While we are serving the government to the best of our ability, we are soliciting and actually obtaining car work and can, as already stated, make deliveries of from five to six months."

Confirming Mr. Le Grand is a delivery quotation of three months on a priority order placed within the past month for a large number of cars for use in carrying workmen to and from a shipyard.

## New Differentials on Iron and Steel Scrap

**Basic Prices Which Were Approved by President Wilson as of Dec. 27 Remain Unchanged**

Price differentials on iron and steel scrap, prepared on Dec. 27 last, have been revised by the American Iron and Steel Institute. The fixed base prices as approved by the President are retained, namely:

No. 1 heavy melting, \$30 per gross ton; No. 1 railroad wrought, \$35 per gross ton; machine shop turnings and cast-iron borings, \$20 per gross ton, all delivered to consumer's mill.

On Dec. 28, by the authority of the President, these base prices were continued operative until March 31, 1918.

By this announcement it was intended that no one—producer, consumer, merchant or broker—should buy, sell or deal in scrap iron and steel at any figure in excess of the base prices announced.

The differentials announced on Dec. 27 are canceled, together with any interpretation subsequently announced.

The maximum prices, using the new differentials from the base, on iron and steel scrap as recommended by the sub-committee on scrap iron and steel and approved by the committee on steel and steel products are as listed below:

1. No. 1 heavy melting steel (base).....	\$30.00
2. Low phosphorous steel scrap:	
Grade A .....	40.00
Grade B .....	37.50
Grade C .....	35.00
3. Steel rails, structural steel, etc.....	35.00
4. Standard section old steel tee rails.....	35.00
5. Nickel steel (1 per cent nickel).....	34.00
(\$4 additional per unit of nickel.)	
6. No. 1 railroad wrought.....	35.00
7. Iron and steel railway axles.....	47.50
8. Cast iron scrap:	
Grade A .....	30.00
Grade B .....	35.00
Grade C .....	30.00
Grade D .....	35.00
9. Machine shop turnings:	
Grade A base.....	20.00
Grade B base.....	25.00
Grade C base.....	25.00
(Plus a differential of not more than \$4 per unit of nickel content.)	
10. Cast iron borings:	
Grade A base.....	20.00
Grade B base.....	25.00

The above prices are the maximum which may be paid; buyers and sellers may contract at any price below the figures named.

All the above prices and differentials are per gross ton of 2240 lb., and in all cases include all freight and charges delivered f.o.b. cars at the consuming mill. Further information may be had by communicating with W. Vernon Phillips, chairman, sub-committee on scrap iron and steel, American Iron and Steel Institute, Pennsylvania Building, Philadelphia, Pa.

## Power House Equipment Quiet

Prices Are Not Softening—Deliveries Running Farther Behind—  
Much Priority Work in Hand

Power houses have not been buying very heavily of equipment for quite some time. Companies which had made commitments for several years ahead, as in normal times, were confronted with the fact that other arrangements had to be made for lack of capital requirements. Machinery and apparatus purchased for 1918 delivery will doubtless be accepted, but it is a question whether or not contracts entered into for 1919 and 1920 can be canceled or deferred. It is said negotiations of this kind have been under way, but no one feels disposed either to confirm or deny the statement.

Whatever the outcome, it is certain no abatement of price has occurred, and deliveries have not greatly improved. It was judged that if cancellations could be arranged it would have favorably affected both prices and deliveries. One prominent manufacturer, whose line has a world-wide reputation, said very little new development work was being undertaken, and such additions to power plants as had been made or were under way were necessary. He stated there had been no change of price in six months, and, so far as could be understood, none was expected for a long time ahead, unless the unforeseen happened.

Remarks of this nature, however, failed to convince the observant that the volume of buying in the aggregate represented anything but respectable figures. Also it was evident that if guaranteed promises of delivery could be secured the purchase of apparatus, accessories, material and supplies for power houses would be still more active. A manufacturer, in offering the explanation that everything above 200 kva. was rated power-house apparatus, also added that goods of this kind were back from five to nearly eight months on delivery. On a recent order for three transformers of 1000 kva. by special pressure delivery was promised in four and a half months, and generators, which were all of a special type and size to suit requirements, could not be shipped sooner than twenty to thirty weeks, possibly five and a half months. Turbines could not be promised under a year. On the larger sizes the delivery time was very long, from one year to the latter part of 1920. Motors of 25 hp. for auxiliary equipment would not be ready for shipment in from six to eight months. Generators were to be had quickly only on priority orders from the War Industries Board for plants either engaged in the manufacture of munitions or other war material and needing additional power or for established power house or central stations supplying energy either for other industries of the same class or for military or naval needs. These orders superseded everything, and apparatus on order for private uses is being commandeered and appropriated, no matter how essential it might be in

the regular business of a commercial enterprise.

Condensers are reported as being in comparatively little demand by power houses. Public utility companies were practically out of the market for the present owing to the abnormal conditions. Deliveries are from nine to eighteen months late. Raw material is difficult to obtain, particularly to fill commercial orders. Advances in price had been made for a while almost every month, though none has been reported since the first of the year, and no further advance is anticipated. Pumps, according to another manufacturer, are a little better on delivery, which for larger size were directly or indirectly for the government.

### BUSINESS MAINLY GOVERNMENT WORK

Another manufacturer stated power-house development now was mainly in connection with government work. On commercial orders for engines, boilers, steam superheaters and mechanical stokers, which were all either special types or assembled for special needs, which was the same thing, deliveries were from five to eight months in arrears. No change had occurred in prices and none was expected.

Switchboards, circuit breakers, meters and all current-measuring devices are from seven to nine months behind on delivery. The only material that has decreased in price is copper, but this is so small as scarcely to affect the cost of the finished article. Steel is hard to obtain.

A cable manufacturer stated that no change in the price of his products has occurred since Jan. 1. Very little sale of power-house cable could be reported, and business has fallen off, excepting as regards government orders. Last year at this time the same producer remarked he had orders for several hundred thousand feet of cable on delivery for June and July. This year he had not booked a single order. He could only account for it on the score of slow payment on the part of utilities, which therefore could not assume additional obligations. A second manufacturer was of the opinion that notwithstanding the sale of underground cable was slow, before the end of the year a large and profitable power business would be booked. This assertion was based on the growing demand for energy, which the shortage of fuel had greatly emphasized, and was sure to expand the call for additional service.

### New Ordnance Department Official

Waldo H. Marshall, formerly president of the American Locomotive Company and now associated with J. P. Morgan & Company, has been appointed assistant chief of the Division of Production of the Ordnance Department.

### Rolling Stock

St. Louis (Mo.) Car Company has received an order from the Saginaw-Bay City Street Railway Company, Saginaw, Mich., for seven 28-ft. double-end, double-truck city cars, and fourteen one-man light safety cars. Ten of the latter will be for double-end operation and four for single-end operation. Both the double-truck and one-man cars will be mounted on St. Louis Car Company trucks. The ELECTRIC RAILWAY JOURNAL of Jan. 5 mentioned the fire that destroyed thirty-five cars and a section of the carhouse, the loss being placed at \$200,000.

Capital Traction Company, Washington, D. C., is reported as about to add twenty new cars to its rolling stock equipment. The Public Service Commission of the district has been notified by J. H. Hanna, vice-president of the company and in charge of operation, who is investigating the type of cars to be purchased.

Wheeling (W. Va.) Traction Company is reported to be in the market for new cars, following the fire, on Feb. 4, which destroyed twenty-nine cars and the carhouse, reported in the ELECTRIC RAILWAY JOURNAL of Feb. 9. The Jewett Car Company has an order from the Wheeling Company for fourteen double-truck cars, the delivery of which will be hastened. In the meantime the company plans to reconstruct all of the old motors and trucks as soon as the Westinghouse Electric & Manufacturing Company can supply the needed equipment. The Bay Island carhouse will be rebuilt as soon as possible.

Philadelphia (Pa.) Rapid Transit Company.—In the order for 100 cars now being built by the J. G. Brill Company, as mentioned in the ELECTRIC RAILWAY JOURNAL of Feb. 9, the following equipment was supplied by Holden & White, Inc.: 800 Garland ventilators, 400 Perry side bearings and 400 Anderson slack adjusters; by the National Railway Appliance Company, 400 each of gears and pinions, and 200 Wasson trolley bases; by the General Electric Company, 100 quadruple motor equipment (four motors to a car) and 100 air brakes. The cars are to be 40 ft. long, of the type now in use by the Philadelphia Company, and are to be delivered in ninety days. The order came through the Emergency Fleet Corporation and goes through on a priority certificate, as the new rolling stock is to be operated on the line to the Hog Island shipyards of the American International Corporation.

Brooklyn (N. Y.) Rapid Transit Company, in compliance with the recommendation of the Public Service Commission, First District, referred to in last week's ELECTRIC RAILWAY JOURNAL, to supply fifty trail cars, will rebuild and re-equip the rolling stock in its own shops, and also convert the 100 center-entrance cars for multiple-unit

operation, besides the fifty motor cars to serve as leaders for the two-car trains.

**Trade Notes**

**Babcock & Wilcox Company, New York, N. Y.**, has moved its Boston, Mass., office from 35 to 49 Federal Street.

**Asbestos Protected Metal Company, Pittsburgh, Pa.**, announces the removal of its Boston, Mass., office to the State Mutual Building, to be in charge of William H. Cummings.

**Wagner Electric Manufacturing Company, St. Louis, Mo.**, has insured its 3000 employees, up to \$1,000 each, for 1918. The company pays the premium on the entire amount of insurance.

**C. W. Hunt Company, Inc., New York, N. Y.**, manufacturer of coal-shoveling machinery, has removed its offices from 45 Broadway to the Astor Trust Building, 501 Fifth Avenue.

**Department of Commerce, Washington, D. C.**, has published "Foreign Tariff Notes" No. 26, issued by the Bureau of Foreign and Domestic Commerce. The pamphlet has a special chapter on "Effect of the War on Tariff Policies."

**General Electric Co., Lynn, Mass.**, on Feb. 5 distributed bonuses to about 13,000 employees who have worked continuously for it for five years. Five per cent of the total earnings of the past six months was paid, and the total amount disbursed was about \$100,000.

**Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.**, announces the removal of its branch office from Phoenix to Tucson, Ariz. J. H. Knost and W. G. Wilson, the company's representatives, will have headquarters in the Immigration Building.

**Swan & Finch Company, New York**, has just celebrated its sixty-fifth birthday, having started in February, 1853, in a small way. At the present day the company has classified 103 industries in which one or more of its products are used. Its main plant at Bayway, N. J., covers more than 15 acres.

**H. W. Johns-Manville Company, New York, N. Y.**, has opened a branch house in its new building, corner of Olive and

Eleventh Streets, St. Louis, Mo. It is a six-story structure of modern fire-proof construction. Whenever practicable the company's products were used in the finishing of the building.

**Esterline Company, Indianapolis, Ind.**, announces the appointment of the Northern Electric Company, whose main office is at Montreal, as exclusive distributors of Esterline products for the entire Dominion of Canada. The Northern company has branch offices in Halifax, Ottawa, Toronto, London, Winnipeg, Calgary and Vancouver.

**Schweitzer & Conrad, Inc., Chicago, Ill.**, has recently appointed the Frankline Sales Company, Denver, Col., district representative for Wyoming, Colorado, New Mexico, Arizona, Utah, the western portion of Nebraska and the eastern portion of Montana and Idaho. The Frankline company will sell the entire line of S. & C. protecting and switching devices.

**Maxwell Engineering & Manufacturing Company, New York, N. Y.**, is a new company established at 61 Broadway to manufacture electrical specialties, transmission line equipment, transmission line hardware and outdoor and indoor substations. Mr. Maxwell, president and general manager of the company, was for the past five years sales agent for the Hickey & Schneider line.

**National Railway Appliance Company, New York**, has taken the agency for the South, New England and New York State for "Rimco" rubber insulated pliers, manufactured by the Rubber Insulated Metals Corporation, Plainfield, N. J. The Electrical Service Supplies Company, Philadelphia, Pa., has the sale of this specialty in its territory. The Plainfield company is reported as about bringing out a complete lineman's kit of moulded rubber insulation.

**Western Contracting Company, San Francisco**, has the contract for constructing two tracks on Market Street, between Geary Street and Van Ness Avenue, for the San Francisco Municipal Railway. The contract calls for the installation of 13,000 ft. of single track, with eighteen pieces of special track work, crossings, branch-offs, etc. The Western Contracting Company was formerly the Western Motor Driving Company. A. J. Crocker, 351 Noe Street, San Francisco, is president.

**New Advertising Literature**

**Harvey Hubbell, Inc., Bridgeport, Conn.**: Leaflet descriptive of its Hubbell lamp guard.

**W. N. Matthews & Bro., Inc., St. Louis, Mo.**: Catalog descriptive of its line-material specialties.

**Ohio Brass Company, Mansfield, Ohio**: Folder descriptive of its luminous and incandescent type of headlights.

**Thompson Electric Company, Cleveland, Ohio**: New catalog, which is more comprehensive than anything the company has had heretofore. Copies may be had by writing.

**Fred T. Ley & Company, Inc., Springfield, Mass.**: Illustrated catalogs descriptive of the company's transmission systems and power houses, the latter having been built within the last two or three years.

**Manganese Track Society and Manganese Steel Founders' Society, Chicago**, have just issued Booklet No. 7, giving rules and detailed design for laying out solid manganese steel frogs. The previous books of recommended standards issued have been: No. 1, steam railroad frogs; No. 2, steam railroad crossings; No. 3, manganese steel switch points; No. 4, groove and flare in guard in crossings and frogs; No. 5, manganese steel track work for steam railroads; No. 6, railbound manganese steel frogs.

**Farnsworth Company, Conshohocken, Pa.**: Illustrated bulletin descriptive of its condensation utilities. The following apparatus are described: Duplex boiler feeder, duplex condenser-vacuum boiler-feed pump, duplex pumping trap, duplex condenser-vacuum pumping trap, direct-return condenser-vacuum trap, direct-return trap, pumping trap, condenser-vacuum pumping trap, high-vacuum trap, separating or non-return trap, variable-pressure trap or combined pumping and non-return or separating trap, and variable-pressure condenser-vacuum pumping and separating trap. A chart showing the coal which can be saved by increasing the temperatures of the feed water by using the machines made by this company with closed system, or keeping the condensation under pressure, is given.

**RAILWAY MATERIALS**

	Feb. 20	Feb. 27
Rubber-covered wire base, New York, cents per lb.	27-34	27-30
Weatherproof wire (100 lb. lots), cents per lb.		
New York	28 1/4 to 34 1/4	28 1/4 to 34 1/4
Weatherproof wire (100 lb. lots), cents per lb.		
Chicago	33 1/2 to 38.35	33 1/2 to 38
Rails, heavy, Bessemer, Pittsburgh	\$55.00	\$55.00
Rails, heavy, O. H. Pittsburgh, per gross ton	\$57.00	\$57.00
Wire nails, Pittsburgh, per 100 lb.	\$3.50	\$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	\$3.90	\$3.90
Steel bars, Pittsburgh, per 100 lb.	\$5.00	\$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$4.85	\$4.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$5.80	\$5.80
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.35	\$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$3.95	\$3.95
Cement (carload lots), New York, per hbl.	\$2.25	\$2.25
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.	\$1.33	\$1.35
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.34	\$1.36
White lead (100 lb. keg), New York, cents per lb.	10	10
Turpentine (bbl. lots), New York, cents per gal.	47 1/2	46 1/2

\*Nominal.

**NEW YORK METAL MARKET PRICES**

	Feb. 20	Feb. 27
Copper, ingot, cents per lb.	23 1/2	23 1/2
Copper wire base, cents per lb.	27	27
Lead, cents per lb.	7	7 1/4
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8	8
Tin, Straits, cents per lb.	\$85.00	\$85.00
Aluminum, 98 to 99 per cent, cents per lb.	34-36	35-37

**OLD METAL PRICES—NEW YORK**

	Feb. 20	Feb. 27
Heavy copper, cents per lb.	22	22
Light copper, cents per lb.	19 1/2	19 1/2
Red brass, cents per lb.	17 1/2	18
Yellow brass, cents per lb.	13	13
Lead, heavy, cents per lb.	6	6
Zinc, cents per lb.	5 1/2	5 1/2
Steel car axles, Chicago, per net ton	\$42.42	\$42.41
Old car wheels, Chicago, per gross ton	\$30.00	\$30.00
Steel rails (scrap), Chicago, per gross ton	\$35.00	\$35.00
Steel rails (relaying), Chicago, per gross ton	\$60.00	\$60.00
Machine shop turnings, Chicago, per net ton	\$17.00	\$17.00