

# Electric Railway Journal

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## Detroit United "Seizes the Bull by the Horns"

**L**AST week's experience of the Detroit United Railway shows that there are some advantages to a railway company in not working under a franchise. For one thing, fares can be raised, if necessary, and this is

just what the company did on Dec. 2. Incidentally, the raise was only to 5 cents, and that only on the high-fare line. The so-called "Three-Cent Line" continued its former low fares, and workmen's tickets are still being sold on the high-fare line at the rate of eight for 25 cents. Nevertheless, the raise has caused considerable commotion. Opinions may differ as to whether the Council or patrons received sufficient notice of the contemplated act. The Council thinks it did not, and all sorts of retaliatory measures are being discussed; but for the benefit of both parties we trust that the proposed suggestion of a careful investigation of the whole situation by an experienced firm of engineers will be undertaken. No one can recommend the continuance of electric railway operation without a franchise, and both the city and the company were at fault for allowing this anomalous condition

to continue. Undoubtedly the company has been the gainer from the delay, because if a franchise had been drafted two or three years ago its provisions would hardly have contemplated war conditions, with its high prices for materials and labor. The prominence of Detroit as a manufacturing city makes the settlement of the controversy promptly a matter of national interest. Detroit needs good electric railway service, and we have no doubt is willing to pay a reasonable price for it. The company has always given good service, and we assume all that it asks is a reasonable fare. Let both get together and adopt a permanent agreement under which the company will be warranted in giving the city the service which it should have.

## The Opportunity of Women for Transportation Service

**T**HE employment of women in train service by the Brooklyn Rapid Transit Company and the New York Railways constitutes an important step in the right direction. Although the word comes from other quarters

that they are being considered for work as conductors, and in other positions in train service, these roads are, so far as we know, the pioneers in this country in this regard. While such a step would have appeared radical a year or even six months ago, it is far from such now. The war, and a knowledge of what other countries have done, have changed all this. In the same week that the New York conductors are starting in on their work the general post office in New York has put on a number of women letter carriers. The steam railroads have had crossing watchwomen and women working in other public positions for months. Unfortunately, a change of this kind encounters a certain amount of inertia, not because the work is so vitally different from other work done by women in the past, but because it brings them more before the public.

In fact, however, the experi-

ence has been where they are now in transportation service that the public scarcely notices the change. The policy of the New York Railways of giving first choice of vacant positions to dependent relatives of employees doing military service deserves hearty commendation. If the duration of this conflict is to be a matter of years, every individual must be willing to contribute his or her part, be it service or sacrifice. We can be regarded on a successful war footing only when, as in the stricken countries of our allies, fashion shall have become largely obsolete, and the chief ambition of every man, woman and child is to do the utmost to insure a victorious end. Women doing car platform work will provide a valuable lesson to the community.

## This Means You

**T**HE Government of the United States of America is at war—real war. It needs for the most effective carrying on of that war every ton of coal that you can dispense with. It's up to you and your carmen to accelerate and brake faster, to shorten your stops, to coast more and to eliminate needless mileage and excessive heating. It's up to the employers of your community to stagger the working hours of their employees so that the curse of the peak will be cut down if not cut out; and it's up to your patrons and your regulators to permit the elimination of time-killing and power-wasting stops.

You have never had such an opportunity before to cast off the abuses and inefficiencies in your business. Are you going to help yourselves in helping your nation, or are you going to wail: "It may be possible elsewhere, but our conditions are different"? If you know you can save coal and need the help of Commissioner Garfield and the War Board to do so, ask for it. This means YOU.

## There Is No Use in

### Taking Up Publicity Half-Heartedly

**P**RESIDENT JOHNSON of the Trenton & Mercer County Traction Corporation has gone into publicity with a will, with his sleeves rolled up. It will be most interesting to watch the outcome. Realizing that "faith without works is dead"—that publicity without service to back it up is effort wasted—he has wisely set about forestalling criticism by going to the limit of the company's resources to improve the service. Mr. Johnson's welcome to Peter Witt, who has been retained by the city authorities to investigate the service in Trenton, and his offer to co-operate with this expert, are representative of the kind of publicity which, on its merits, should make real headway with the public. Some electric railway managers may not agree with Mr. Johnson, but it is certain that no one can point to any company that has made any progress by taking the other tack. Yet it has been tried often enough.

## Voltage Rise in Third-Rail

**A**LTHOUGH comparatively few of the readers of this paper are directly affected by the extra voltage produced in a third-rail when a heavy short-circuit current is suddenly interrupted therein, there are principles involved in this phenomenon which should be understood by every distribution engineer. On the Michigan Railway 1200-volt line, with 80-lb. third-rail, it was found necessary to install aluminum cells to discharge the surges produced by such interruptions. On lower voltage railways it has not been necessary to follow this plan, although the possible effects of the collapse of the magnetic field in the rail have not been overlooked by any means. As far back as 1901 the engineers of the Manhattan Elevated Railway, New York City, noted that on a line having few cars the fuse on a train passing near a yard where experimental work was going on was apt to blow when a fuse blew in the yard. There is now no surge trouble on the Interborough lines, however on account of the large number of cars in operation.

While the whole subject has been under investigation for many years there is very little information in print regarding it, hence the contribution by Prof. D. D. Ewing printed this week is a distinct addition to the available literature. The article is based upon experimental data, and, therefore, contains first-hand information. The methods used for the tests are in themselves instructive and the results have been put into such form as to be readily understood and compared. The closeness with which the experimental results check with the calculations gives confidence in the theory, which after all must be the basis of substantial progress. As explained, the work is preliminary, but at least a good beginning has been made. We hope that this article will suggest to those having other experimental data in hand the desirability of bringing them out of the archives and putting them where they will do some good.

## Employers Can Prevent Solicitation of Men Hired on Non-Union Basis

**T**HE United States Supreme Court this week handed down two decisions that have a most important bearing upon the frequent efforts of labor unions and agitators to foment trouble on local properties. The meaning of the decisions in the Hitchman Coal & Coke Company and the Eagle Glass Manufacturing Company cases seems to be simply this: When men accept employment under an agreement not to affiliate with any union, attempts should not be made by the unions to extend their membership among these men in order to force the breaking of the agreement. In the cases considered the court held that none of the employees under the agreements had a right to remain at work after joining the unions, and the unions' deliberate policy of secret penetration, looking toward the stoppage of work by strike, was "unlawful and malicious." In other words, when a company has established a working agreement with its men, it has a right to be protected in the resulting status and injunctions can be secured against outside interference. Such opinions from the highest court in the land should be encouraging to those who are interested in overcoming the menace of foreign irresponsible labor leaders.

## It Is Not Usually Desirable to Manufacture Stock Articles

**A**T THIS time when so many makers of electric railway equipment are gravely concerned at the inability of their customers to order the apparatus necessary to keep up standards of service, it is apropos to call attention to abuses of the principle of home manufacture. Generally speaking, we do not believe that a railway company can manufacture parts of electric railway apparatus or even complete cars as cheaply as it can purchase them in the general market. Sometimes the figures on the cost of such work when done in an electric railway shop appear to show a saving, but there is nothing so easy, in cases of this kind, as to underestimate the overhead expenses. The time of the master mechanic in planning the work, that of the other officials in giving oversight and that of the accounting department in keeping the records, the proper charge for rent for the space occupied and interest and insurance on the shop, tools and materials under construction—all these are matters which are apt to be overlooked in part when an estimate of the cost of home manufacture is made.

But even if all overhead expenses are included and the comparison still shows a saving for home manufacture, there are several remaining factors which tend to turn the scales in favor of the purchased article. One of these is that as the manufacturer is devoting his entire attention to the manufacture of his particular device and is watching its performance as well as that of other similar apparatus all over the country, he is in a better position than a single railway company to introduce improvements into both its manufacture and design. If this is done to any considerable extent and the improvements are patented, the railway company will

have on its hands what are practically obsolete patterns and tools for the manufacture of that device. Conditions also may so change that it will no longer be desirable for a company to make some particular article, or to make it on so large a scale, so that in this way also the special tools may become largely unusable. The temptation to continue the use of obsolete equipment under such circumstances is great, so that the net result of home manufacture is often to keep a company behind the times by the use of old-fashioned equipment.

The reference to patents suggests another reason why a company should be very wary about engaging in home manufacture. Much of the electric railway apparatus developed during the last few years is still protected by patents, and any user making this equipment without the permission of the patentee is liable to heavy damages for infringement. In some cases of this kind, the manufacturer finds the copy of his apparatus thinly disguised by so-called "improvements," but on other occasions it is imitated outright, often with inferior materials and inferior workmanship. Indeed, conversation with manufacturers discloses the fact that there are railway properties to-day which are looked at askance when they ask for sample outfits. Past experience makes the manufacturer fear that the sample outfit is requested so that the railway will determine if it cannot make the mechanism itself without paying royalty or how nearly it can imitate it without running the risk of infringement. Experience also shows that by a curious inconsistency in human nature many of those users who are most reluctant to acknowledge patent rights are often the first to demand a royalty for anything that they invent in the same field.

From both an economic and a utilitarian point of view, therefore, the desirability of much home manufacture is doubtful, and if railway companies have not had the question of legal liability brought home to them oftener, it has been due simply to the natural desire of the manufacturer to avoid incurring the ill-will of possible patrons.

### The Industry Assumes a New Outlook and Responsibility

AS the work rapidly progresses in organizing and preparing the electric railway industry for the important part it bids fair to take in the nation's transportation requirements, the possibilities for immense service to our government and for increased revenue to the railways assume a constantly expanding magnitude. Fortunate now are those roads which have been prepared in the past for handling freight, as has been so strongly and persistently advocated by this journal, for not only have they materially increased their earnings heretofore, but they are now in a commanding position to secure unprecedented quantities of government business and business usually routed in normal times over the steam lines. Whether formerly accepting freight shipments or not, the electric railways should now immediately take steps in co-operation with the Electric Railway War Board at Washington to handle all the local freight traffic

within reach of their lines and thus relieve an immense number of steam road cars for the long-haul shipments and thereby greatly alleviate the congestion on the steam lines.

Certain points should be borne in mind as the electric railways solicit and assume this greater responsibility, many of them for the first time. One of the principal of these is that the electric railways as a group should depend on their own resources. In some of the conferences which have been held there has been some planning of how a section of steam line might be used to interconnect two electric lines in cases where steam lines paralleled one or both of the electric lines to the destinations under consideration; or how in Chicago, for instance, the steam railway belt lines could be used in transferring freight cars from one to another of the interurban lines radiating out of the city, but having no physical interconnection. Plans involving such schemes are in general fallacious. The great assistance which the electric railways can be to the government will be in what they can do to relieve the strain on the steam lines and to themselves in the better service they can give the shippers. The terminals are the most congested points of the steam lines, so that any plan which contemplates the use by the electric lines of these facilities for interconnection defeats its purpose both to the government and the electric roads themselves because it adds to the congestion and delays their own service.

Nor can the electric railways expect in general to bring about joint arrangement with steam lines whereby they will secure the use of the latter's terminal buildings and facilities. Such an advantage can be logically sought only in instances where a satisfactory amount of tonnage originates at the steam road terminal for shipment to points on the electric line not reached by the steam railroad. The more complete the reliance on strictly electric railway properties, the greater will be their assistance and their revenue.

Then there is the problem of rates, especially for those lines which will begin for the first time to carry freight. If the amount of business available is very large, as is anticipated in many quarters, there will be an inclination already manifested though not put in practice to charge an exorbitant rate. On the other hand there is a tendency perhaps more general to charge the same as steam road rates and thus avoid the necessity of any particular selling talk. Neither of these stands, in our opinion, is best. A proper rate would be one which was commensurate with the service rendered; that is, it would be higher than steam road rates in view of the practically express service which can be given and in order to offset a possibly higher terminal charge, and yet it should not be high enough to bear any of the earmarks of an "all-the-traffic-will-bear" scale. There will, of course, be some latitude in the establishment of rates where new tariffs are filed, and these should be most thoroughly considered before being placed in the final petition. They should be sufficient to assure a reasonable profit, but not so high as to suggest a "hold-up."

# Tramways Render Invaluable Service in Halifax Disaster

Company Escaped with Loss of Few Employees and Comparatively Little Damage to Power Plant, Track and Rolling Stock—United States Bluejackets Assisted in Restoring Railway Property



PART OF THE HARBOR OF HALIFAX, N. S., AND SURROUNDINGS AFTER THE DISASTER OF DEC. 6

**F**OUR thousand tons of T. N. T. exploded on board the French munitions ship *Mont Blanc*, at Halifax, Nova Scotia, at 9.05 a. m. on Thursday of last week, killing more than 1250 persons, injuring many thousands and destroying approximately 5 square miles of the city and adjacent suburbs on the north side of the Nova Scotia capital. The explosion followed a collision in the narrows of Halifax harbor between the *Mont Blanc* and the Belgium relief ship *Imo*, and immediately led to a conflagration which transformed the afflicted area within a few hours into a waste of ruin. About 25,000 people were rendered homeless by the disaster, and scarcely a building in Halifax or neighboring Dartmouth went free from injury. The property loss is roughly estimated at \$20,000,000. Despite the terrible and widespread devastation caused by the calamity, the public utilities of the city have in the main escaped crippling losses, and in the period of rescue and revival now under way are rendering service of untold value to the community.

## ELECTRIC RAILWAY CONDITIONS

A representative of the ELECTRIC RAILWAY JOURNAL went to Halifax immediately after the disaster and reported that, in general, the Nova Scotia Tramways & Power Company's power plant equipment and repair shop proved almost immune from damage excepting the destruction of windows and doors from the concussion. As might be expected, the rolling stock of the company suffered considerably where it was in service on the streets. Five platform men were killed in the per-

formance of their duties and four of the company's outside mechanics lost their lives. As yet it is impossible to tell how many laborers succumbed. Out of forty box cars in service thirteen are in first-class condition. Two were so badly damaged that they will have to be completely rebuilt. Twenty-five others suffered minor injuries, such as broken windows, door frames blown out or in, warped bodies, etc. One car body was torn off its truck and landed upon a sidewalk at the north end of the city.

Fortunately for the company, very little damage was done to track and roadbed on the system as a whole. The company operated only about 1 mile of track (60-lb. Lorain T-rail) in the worst part of the explosion zone, and this appears not to be in very bad shape. A few cars were started out on the system Friday morning, but unfortunately a blizzard descended upon the city. Automobiles and cars became stalled, and it was impossible to resume passenger service until Sunday morning. On Saturday night 150 United States bluejackets assisted the tramway company in track cleaning. Managing Director H. R. Mallison states that the aid rendered by these men enabled considerable progress to be made in the direction of opening the system for traffic, and that their unstinted service will never be forgotten either by the citizens or by the company. Eight cars were in operation by 10.20 a. m. Sunday. The railway distribution system was not seriously damaged except in the districts closely involved in the explosion. The company is well supplied with line material of all kinds, but is short of car carpenters and glass.

As its name indicates, the Tramways & Power Company supplies electric railway, light and power service in this district. It also manufactures and sells gas in Halifax. The total population served is about 65,000.

The company's generating plant is located on the west side of Halifax harbor, about one-half mile from the business section of the city and about 2½ miles south of the explosion center. The company also owns important water rights on the Gaspereau River, 55 miles from Halifax.

The generating capacity of the steam plant is 5700 kw., produced in two horizontal turbo-alternators supplied by the Canadian General Electric Company and two 600-kw. units direct-connected to Rice & Sargent engines. The turbines are rated at 1500 kw. and 3000 kw. respectively. The boiler plant consists of seven 350-hp. and seven 300-hp. Babcock & Wilcox units, the former being equipped with Jones underfeed stokers and the latter with B. & W. chain-grate stokers. There are two Alphons - Custodis stacks, one 90 ft. high and of 7 ft. inside diameter, the other 175 ft. high, with an inside diameter of 8 ft.

For the tramway supply four motor-generator sets are operated in the power plant, including three of 225-kw. capacity each and one of 500-kw. capacity. A 1000-kw. unit will also be placed in service in the near future.

The explosion destroyed the greater part of the overhead lines in the so-called Richmond district of Halifax, as well as in Dartmouth. Breaks and short-circuits in the distribution system of the Tramways & Power Company necessitated the shutting down of the generating plant for a short period, but within an hour the station was again supplying energy through all

parts of its territory outside the explosion zone. The fall of overhead circuits, trolley wire and feeders opened a large number of automatic breakers and switches at the power plant. Practically all the win-

dows and doors on the north side of the station were blown into the building, debris scattering about the operating room for a distance of 40 to 50 ft. from the wall. As in many other parts of the city, the tremendous air currents set in motion by the explosion wave knocked down some of the employees. None of those in the station, however, was seriously injured. The windows on the north side of the station were of wired glass set in steel sashes, but these were blown to bits by the force of the blast. A large amount of glass was blown into the motor-generators near the north wall, and the railway switchboard was also subjected to a shower of this material. Little damage was done, however, either in the station or in the adjacent car repair shop of the company. The boiler room suffered little if at all.

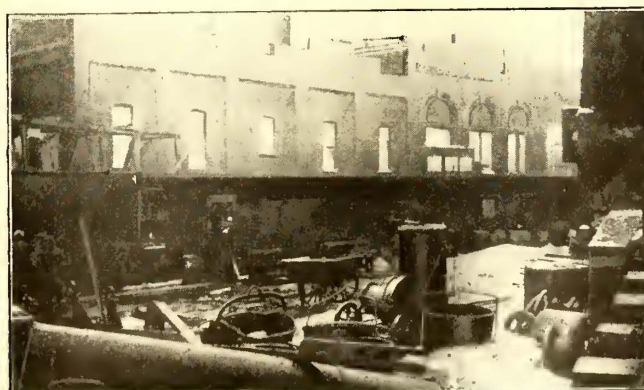
Many of the short-circuits on the distribution system were quickly burned out. As soon as possible after the explosion the company's line superintendent and two men proceeded to the vicinity of the North Street station (the Halifax railroad passenger terminal) and cut clear across

the city, beginning at North Street, all the overhead lines of the company entering the devastated district. This work was completed during the afternoon.

Prior to the disaster the average peak load upon the power station was 3100 kw., but the curtailment of demand resulting from the destruction of so large an area has reduced this to about 1500 kw.

### The Local Utilities and the Halifax Disaster

The central station and electric railway service at Halifax, N. S., had a remarkable escape from crippling in the disaster which occurred in the harbor of that city. The explosion killed five carmen and four mechanics, but all the linemen, plant employees and officials were reported safe on Dec. 10. The overhead distribution system in the stricken districts was wrecked and the windows of the steam plant, 2.7 miles from the munitions ship, were blown in. This plant resumed service within one hour of the disaster. Two cars of the local electric railway were utterly wrecked and twenty-five others were damaged. Car service was resumed partially the same evening that the disaster occurred, but the cars were stalled by the blizzard until Sunday, Dec. 9. The station peak and output were halved by the explosion. The company needs car carpenters. The supply of line material is ample. The track and road-bed were little damaged. The telephone service was well maintained outside the fire area, but the overhead toll lines were badly damaged. The telegraph facilities were rapidly improving on Dec. 10. At first only radio communication was possible with the mainland. The water and sewerage systems appear to have suffered very little. The railroads and the dockyards in the vicinity of the explosion were hard hit. The gas plant was damaged, but service was restored on Dec. 9. It was considered doubtful on Dec. 10 if the property loss to the tramway and the power company would exceed \$100,000, but it is expected that the loss of revenue will be heavy. Business was still almost demoralized on Dec. 10. The loss of life was more than 1250, while many thousands of persons were reported to be injured. Nearly all the buildings in Halifax were damaged.



VIEW OF TROLLEY CAR DAMAGED BY EXPLOSION, AND VICINITY OF POWER PLANT OF TRAMWAY & POWER COMPANY, HALIFAX, N. S.

# Going at Publicity Whole-Heartedly

How the Trenton & Mercer County Traction Corporation Is Trying to Overcome Public Abuse by Efforts to Improve Service and by a Frank Appeal for Constructive Criticisms

**M**ANY electric railways have started publicity campaigns, but few have gone at it whole-heartedly. They write and speak as though they were afraid that somebody was going to say something disagreeable to them. Managers are probably not accustomed to trying to get the public's point of view, and it is natural that at first much of their publicity should appear half-hearted. But this really comes only from stage fright. Once they get into it and see how whole-hearted publicity helps them in their relations with the public, they will gain confidence in telling their story.

The Trenton & Mercer County Traction Corporation, operating in Trenton, N. J., and surrounding country, has adopted a policy of publicity, and it has gone into it with a will and a speed that are admirable. The

company with an annual deficit. There was only one way to get the story to the public, and that was through the medium of the cars.

While Mr. Johnson was getting the material printed for distribution in this way, he published the following advertisement in the Trenton newspapers, the object being to focus immediate attention on the new efforts of the company:

## *We Ask Your Help*

We are striving to give Trenton a good electric railway service. We ask your help. We want constructive criticism. If your service is poor and you know why, tell us why. Be specific, not general. For instance, don't say "Your cars are dirty." If you see a car with a dirty floor or windows, tell us. Give the number of the car. Your suggestions will receive prompt attention and serious consideration. Your cars may not run on time. If so, tell us. We want to know it. If it is the company's fault we can eliminate the cause. If it is due to something over which we have no control, maybe you can help us to remedy matters. This company is poor. We haven't paid a cent of dividends. We hope eventually to prosper, but we realize we cannot prosper unless we give good service—unless you know your service is as good as that of any other city of Trenton's size. There are many problems confronting the company about which the people of Trenton should know. We are going to tell you about them through little leaflets we shall distribute in our cars. Help us with your suggestions.

The *Times* rose to the occasion, as was expected. The day after the advertisement appeared it printed an editorial which said, in effect, that it was too bad the company did not mean what it said: "There is no hope," was the optimistic view of the newspaper.

The company's second step was to put small four-page folders in its cars. These folders, the front page of which is reproduced on page 1069, are 4 in. wide and 5½ in. long. Boxes marked "Take One," placed in conspicuous places in the cars, offer the folders to the public. The first folder read in part as follows:

## *We Ask Your Help*

If you can tell us something we can do to improve our car service, you will help us.

We don't think we know it all.

If we do not adopt your suggestion it will be for a good reason, and we will tell you what it is.

We want the people of Trenton to know that the primary aim of this company is to give good service. We believe that is the best way eventually to make our company prosperous.

We want to know of every failure of service so we can, if possible, correct the causes.

We are in favor of anything proposed that looks to bettering service. The more investigation the better.

At the same time the company posted in the car windows placards reading as follows:

## *We Ask Your Help*

If there is anything about our service you don't like, please tell us. Make it specific. We want all the constructive criticism we can get.

In three days the company had its publicity-campaign well under way. More important, the people of

## We Ask Your Help

If there is anything about our service you don't like, please tell us. Make it specific. We want all the constructive criticism we can get.

*Rankin Johnson*  
President, Trenton and Mercer County  
Traction Corporation

FIRST CAR CARD USED BY TRENTON COMPANY

company has left little room for any one to impugn either its motives or its intentions.

For many years the company has been the target for local politicians and a hostile press, particularly the *Trenton Times*, an influential afternoon newspaper. Its officers and directors have been held up to public scorn as amateurs, promoters and stock-waterers, but no reply has been made.

### GETTING THE PUBLIC'S ATTENTION

It became evident to Rankin Johnson, president of the company, however, that this campaign of abuse was seriously undermining the *esprit de corps* of his employees, making it harder and harder to maintain good service on an already insufficient income. Mr. Johnson realized that he must get his story before the people of Trenton or suffer the consequences of the diatribes of his opponents being accepted as gospel truth. But the company could not get its story printed in the newspapers except in the advertising columns, and such a procedure was entirely too expensive for a

Trenton were talking about it and beginning to appreciate that there was something in the company's story.

#### PUBLICITY HAD INTERNAL EFFECT

The principle that publicity does as much good within a company's own organization as it does with the public, and does it first, is borne out in the case of the Trenton company. The first thing the company did was to take steps to see that the field of criticism was pre-empted in so far as this covered those features of the service which it could control.

There had been charges that the company's cars were dirty. President Johnson admitted that his cars had not always been as clean as they might have been, but he said that this was due to the impossibility of securing enough car cleaners. This excuse being good only after every source of labor was exhausted, Mr. Johnson inserted an advertisement—a display ad, not just a little want ad—announcing that the company must have cleaners, men or women. The result was fairly successful. The supply of male labor was as scarce as ever, but some women cleaners were secured, and the company is now trying them.

Right there the publicity opportunity afforded by the subject of clean cars was seized upon. It would have been a grievous oversight not to do so. An electric railway's cars are constant points of contact with the public. Is it not natural that a company which always presents to its passengers exceptionally clean cars, with shining windows, clean floors and woodwork free from grime and dust should create a good impression?

#### WELCOMING AN INVESTIGATOR FOR THE CITY

About the time the company began its publicity campaign, the city authorities sent a committee to Cleveland to look into street-car conditions there and engage an expert to make an investigation of the service in Trenton. Peter Witt was the expert selected.

Here, then, was an opportunity for the Trenton company to show whether it really was going in for the only kind of publicity that is effective—the whole-hearted kind that lets the public see all sides, the good and the bad. The company had before it two courses which oftentimes have presented themselves to other companies. Should Mr. Johnson welcome Mr. Witt and co-operate whole-heartedly with him in his effort to suggest things that would improve the service, or should he take it for granted that Mr. Witt, brought to Trenton by a city administration openly hostile, was not intent upon a helpful mission, and treat him as an avowed enemy.

Here is the way the Trenton company met the opposition. The following advertisement appeared in the Trenton papers as soon as it was announced that Mr. Witt had been engaged by the city:

#### *Welcome to Peter Witt*

We are glad the city has secured the services of Peter Witt, of Cleveland, to look into our street car service.

Mr. Witt was at one time Street Railway Commissioner in Cleveland. He knows the problems of electric railways.

Trenton and the company are both to be congratulated on Mr. Witt's selection as an expert to come here.

We are sure Mr. Witt will give us some valuable suggestions.

We are up against the same problem—constantly increasing costs of operation—that a few days ago led the Cleveland Railway, with the city's approval, to increase its fare from 3 cents to 4 cents, with 1 cent extra for transfers.

The Cleveland street-car situation is unique in this country. In Cleveland the company escapes a large portion of the usual paving charges.

In Trenton the company's paving costs amount to about \$25,000 a year.

The Cleveland company pays no franchise tax. We pay 5 per cent of our gross receipts. It amounted to about \$32,000 last year.

Cleveland runs trailer cars, which few cities in this country tolerate.

Cleveland's cars, in the larger part of the city, stop only every other block.

We would like to secure in Trenton some of the conditions that exist in Cleveland. We believe we would be in a better position to improve our service.

We want the people of Trenton to know that every facility of this company will be placed at Mr. Witt's disposal to help him in his work.

We are in favor of this investigation of our service with all our hearts, because we firmly believe it will be helpful and constructive.

### We Ask Your Help

If you can tell us something we can do to improve our car service you will help us.

We don't think we know it all.

If we do not adopt your suggestion it will be for a good reason, and we will tell you what it is.

We are keenly alive to our obligation to the people of Trenton. That feeling underlies all our policies.

COPIES OF FOLDERS  
USED IN "TAKE  
ONE" BOXES IN  
TRENTON CARS

## Ask Mr. Witt, He Knows

PETER WITT, formerly Street Railway Commissioner of Cleveland, who is here to help us improve our trolley service, made an address in Cleveland on November 21. He declared that three-cent fares in Cleveland had been maintained by crippling the service.

Mr. Witt said that if the city administration had continued to buy cars and maintain service at a standard set when he left office the maximum rate of fare would be in effect.

Mr. Witt's visit to Trenton presented an excellent opportunity for the company to come out before the public in a forceful way and at a time when the point of contact existed, with the all-governing reason why the company could not provide all the convenience of service known to the art of electric railroading.

The second poster displayed in the Trenton car windows quoted Mr. Witt as saying that low fares have been kept in Cleveland by crippling the service, and then it continued as follows: "We can't give you the service you ought to have on six tickets for a quarter. Read the little folders in the 'Take One' boxes. They tell the whole story."

The folder referred to in the card read in part this way:

#### *Ask Mr. Witt, He Knows*

Peter Witt, formerly Street Railway Commissioner of Cleveland, who is here to help us improve our trolley service, made an address in Cleveland on Nov. 21. He declared that 3-cent fares in Cleveland had been maintained by crippling the service.

Mr. Witt said that if the city administration had continued to buy cars and maintain service at a standard set when he left office the maximum rate of fare would be in effect.

We are sure Mr. Witt will tell you that when you want good service you can get it only by paying for it.

Every man, woman and child in Trenton ought to go to the City Commission and the Public Utility Commission and protest against keeping trolley fares so low that their service is held below the standard they ought to have.

We will do everything we can with our present facilities. But we do not fool ourselves, and we are not going to try to fool the people of Trenton.

A company that is permitted to earn a fair return on money actually invested in your trolley lines can give good service. No other company can do it.

#### GOOD START HAS BEEN MADE

The company has announced to its patrons that it will give the best service possible with the facilities and means at its command. It has even intimated that it will increase those facilities if it is permitted to earn sufficient revenue. Figuratively speaking, it has told the people that in the matter of service it is going to hitch its wagon to a star. To carry out this figure, the company is placing a large blue star in the background of all its car posters. The idea back of this is similar to the idea back of the colored band that has charac-

terized the posters which the Interborough Rapid Transit Company has been displaying in its cars in the New York subway and elevated lines. That this adds to the eye-catching qualities of the posters has been proved amply.

The Trenton company has just started, but it has made a running start. If President Johnson keeps his promise to its patrons that he will, up to the limit of his resources, leave nothing undone to improve the service, and if, at the same time, he keeps talking to his passengers about his problems through the medium of his folders and posters, it should not take long to convince the people of Trenton that he means what he says. If the service is good and the public knows it, and knows that the management is earnestly trying to please its patrons, the company has little to fear from unfair criticism. Such criticism will react upon itself.

## Utah Electrification Embodies Latest Developments

Automatic Substations with 1500-Volt Motor-Generator Sets, and All-Steel Cars with Equipment for Automatic Acceleration and Constant-Potential Motor-Generator Sets for Supplying Energy to the Control and Lighting Circuits Are Features of Salt Lake, Garfield & Western Electrification and Extension

**W**HAT promises to be one of the most interesting electric railway installations of the country is under way and promised for completion by May 1, 1918, at Salt Lake City, Utah. The Salt Lake, Garfield & Western Railway, which extends from Salt Lake City to Great Salt Lake and Saltair Beach, a distance of 15 miles, and has been operated with steam for the last ten years, is being electrified and extended to Garfield and to the plant of the American Smelting & Refining Company, making a total of 20 miles of single-track electric line. The special features of this installation include the use of automatic substations equipped with motor-generator sets for supplying power to the trolley at 1500 volts. These will be the first motor-generator sets to be thus operated, for all previous automatic substation installations have been for rotary converter control. Another new development is the use of a small motor-generator set on each car to supply energy for the control system, headlight and interior car lights. This energy is supplied at constant voltage even with an extremely wide variation in the trolley voltage.

#### TRACK AND OVERHEAD CONSTRUCTION

A 66-ft. right-of-way has been purchased for the extension. While only 20 per cent of the line as built at this time will be double track, the one track is so situated that a second track can be added without changing the overhead or present roadbed construction. About 25 per cent of the grading on the extension has been completed.

The track is being laid with 60-lb. T-rail and No. 1 grade Western cedar ties with 24-in. spacing on gravel ballast with 6 in. of gravel beneath the ties. Four-bolt angle bars and ordinary drive spikes will be

used to fasten the rails. Tie plates and rail braces will be used where needed. A No. 0000 American Steel & Wire Company gas-welded bond will be placed on every joint, and No. 0000 cross-bonds will be installed 600 ft. apart. The locations of the cross-bonds will coincide with the 200 Garton-Daniels lightning arrester installations and with the feed-in points, should a feeder be necessitated later by heavier traffic. Burdette oxygen torches and gas supplied by the Burdette Oxygen Company of Salt Lake City, and by the Prest-O-Lite Company of Los Angeles, are being used in putting on the rail bonds.

The drawing showing a cross-section of the right-of-way gives an idea of the construction of the overhead, which is to be of a direct-suspended cross-span type. The cross-spans will be  $\frac{3}{8}$ -in. Siemens-Martin steel strand, suspended from Western cedar poles. The length of cross-spans will be 35 ft., and the spacing of poles 90 ft. Thirty-five-foot poles will be used on one side of the right-of-way and 30-ft. poles on the other side. The longer poles will carry a cross-arm above the trolley suspension for future feeder cables, and the shorter poles will carry a cross-arm on which will be mounted two pairs of No. 10 gage galvanized-iron wire for a private telephone system. Every pole on the system will be guyed and anchored with an 8-in. Bierce anchor set in crushed stone.

The trolley wire is to be No. 0000 American standard grooved section, two wires for the present being suspended from independent hangers over the one track. These are so arranged that upon the construction of another track later one of the hangers can be centered on the span wire over the second track without disturbing the overhead construction. These two No. 0000 trolley wires will supply sufficient copper so



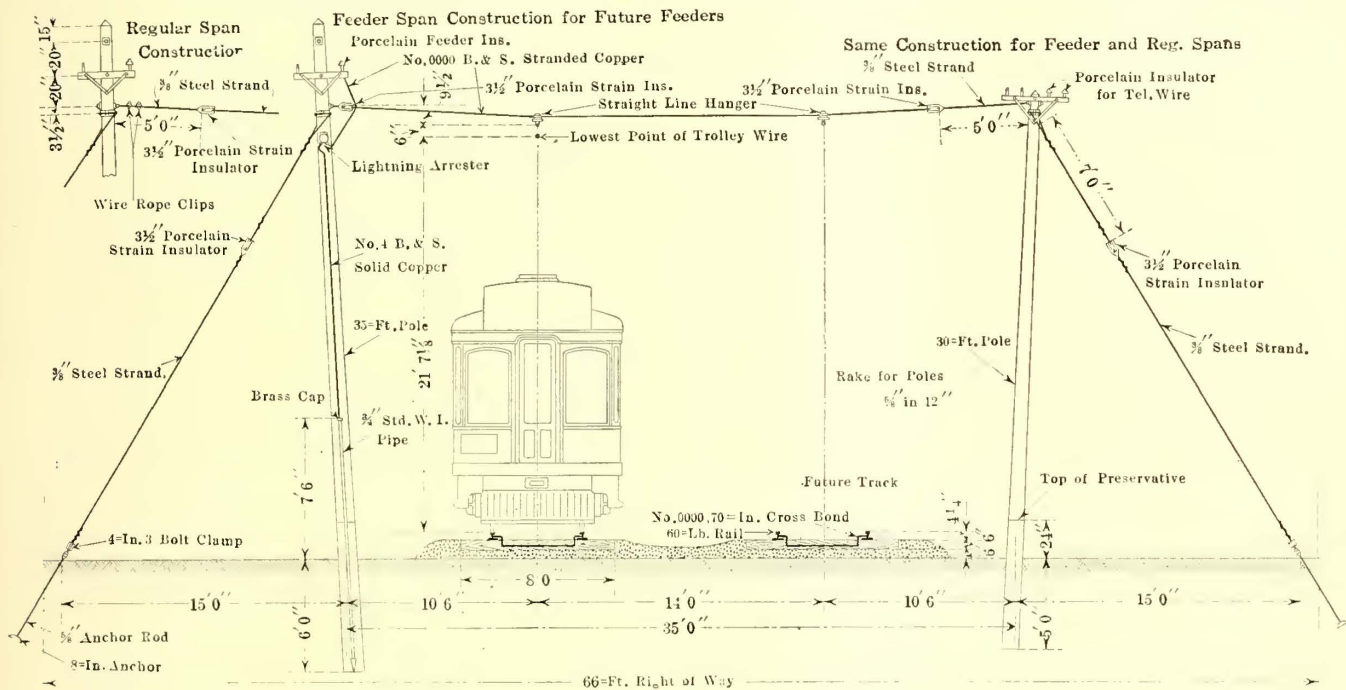
that on the basis of a maximum drop of 10 per cent in any part of the line, and under conditions of heavy traffic, no additional feeder copper will be required. The traffic conditions considered in deciding upon this copper section include the hauling of 300,000 passengers during the ninety-day summer resort season. The trolley wire will be furnished by the Standard Underground Cable Company and the span and telephone wire by the American Steel & Wire Company.

POWER SUPPLY AND SUBSTATION EQUIPMENT

Energy will be purchased from the Utah Power & Light Company, which has a 44,000-volt, three-phase transmission line paralleling the railway. It will therefore be necessary for the railway company simply to tap into this high-tension line at its two substations,

cars will be equipped with a combination straight and automatic air-brake system, built with a double commutator compressor for operation on both the 1500-volt and the 525-volt trolleys. This compressor will deliver 35 cu. ft. of free air per minute against 90 lb. pressure. The trucks specified are of the McGuire-Cummings No. 70-A, M.C.B. special interurban type, arranged for inside motor and brake hanging.

The car equipment is designed with a capacity for hauling three trailers, as the cars will be operated in four-car trains. The car bodies will have vestibuled platforms so that passengers can go from one car to the other. Delivery on the six motor cars is promised for May 1, 1918. Ten trail cars of similar design will be purchased next season. It is also intended to purchase two electric locomotives next year, but the use of



UTAH ELECTRIFICATION—VIEW ACROSS RIGHT-OF-WAY, SHOWING OVERHEAD CONSTRUCTION

which are automatic. One of these is located 5 miles from Salt Lake City and the other 15 miles from the city, which places each substation in the center of a 10-mile section of line. Each substation will contain a motor-generator set made up of a 900-hp., three-phase, 60-cycle induction motor direct-connected to a 600-kw., 1500-volt, compound-wound, direct-current generator. These units will be controlled entirely with the General Electric automatic substation equipment. The buildings will be constructed with concrete foundations carried up to the water table and will have brick walls and steel roof trusses and reinforced-concrete floor and roof.

SPECIAL FEATURES OF MOTOR CARS

A contract has been let to the McGuire-Cummings Manufacturing Company for six all-steel, double-end passenger cars, which will be 56 ft. long and 9 ft. wide and will seat sixty passengers. These will be equipped with four 110-hp., GE-240, 1500-volt motors and electro-pneumatic control for automatic acceleration, also furnished by the General Electric Company. This includes a change-over arrangement for operation on the 525-volt system of the Utah Light & Traction Company in Salt Lake City where the cars will operate. The

steam locomotives for hauling freight will be continued until electric locomotive prices are more favorable.

One of the principal features of the equipment of the cars is a motor-generator set hung from the car body for supplying direct current at 32 volts for the control and complete car-lighting systems. This is a new development of the General Electric Company and is the first installation. The generators are designed to deliver current at constant voltage regardless of the variation in trolley voltage. This includes the variation from 1500 volts to 525 volts when the car passes onto the city streets. The set is connected directly to the trolley without the interposition of any controlling device other than a hand cutout switch and fuse. The advantages of this machine are that an incandescent headlight can be used satisfactorily, that all lamps inside the car can be connected in multiple, so that the failure of one lamp does not put out others, and that no magnetic blow-outs are required in the control system.

The electrification work and the extension of the Salt Lake, Garfield & Western were engineered by H. A. Strauss, consulting engineer, Chicago, who is also acting as contractor and doing the construction work. The president of the railway is Joseph Nelson, Salt Lake City.

# Voltage Rises in Third-Rail Circuits

A Study of the Causes of High-Voltage Rises in Third-Rail Systems Is Presented in This Article Together with Oscillograms of Such Surges—Rises in Voltage of Two or Three Times the Normal Found Possible

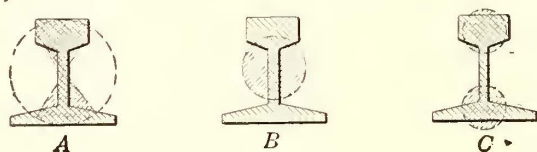
By D. D. EWING

Associate Professor of Electric Railway Engineering, Purdue University, Lafayette, Ind.

**I**N third-rail practice both voltages in interurban service and power currents in rapid transit service have been increasing at a rather rapid rate during the last few years. Inductive effects, always present, have been magnified by these increases. It is not an uncommon occurrence for a motor flashover on the interruption of a heavy current on one car to cause trouble on other cars operating in the same vicinity. In order to get some idea of the scope of the problem some work has been done upon it at Purdue University during the last year. While this work has been only of a preliminary character and the results are not conclusive it has been thought that, such as they are, they might be of some interest to railway operators not only from the third-rail standpoint but also in connection with the proposed use of iron or steel cables as feeders.

### CALCULATION OF THE RAIL FLUXES

Upon breaking any inductive circuit which is carrying a current, a voltage, caused by the change in number of magnetic lines inclosed, is set up therein. As



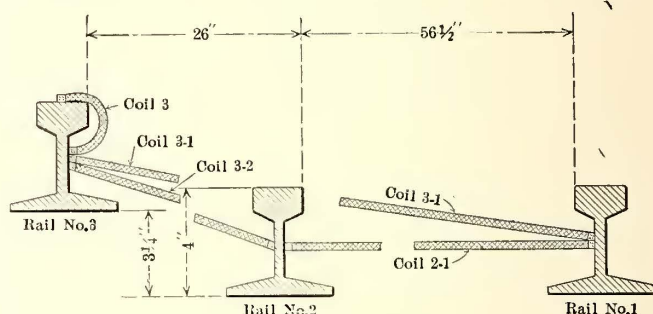
INDUCED VOLTAGE IN THIRD RAIL—FIG. 1—EQUIVALENT RAIL SECTIONS USED IN RAIL FLUX CALCULATIONS

this voltage is a measure of the time rate of change of the magnetic lines linked with the circuit the first thing to be determined is the number of these lines, then the rate of decay of the current which causes them.

Since the rails are irregular in cross-section some assumptions must be made in order to apply the laws of magnetism to the calculation of the rail fluxes. The flux of each rail can be divided into two parts, that inside the rail and that outside. Of these only that outside or at least that leaving the head or flange of the rail can be definitely measured. The assumptions made as to rails in order to calculate fluxes are as follows:

1. As the general shape of the rail section is that of two sectors of a circle, diametrically opposite, the cross-section can be assumed to be as in A, Fig. 1. As the iron portion of the circular flux path is relatively small, in calculating the flux within the cylinder the permeability may be considered unity.
2. The cross-section was assumed that of a cylinder as in B, Fig. 1.
3. The cross-section was assumed equal to that of two cylinders located as in C, Fig. 1.

It was also assumed that the surfaces of equal magnetic potential were cylinders whose axes were coinci-

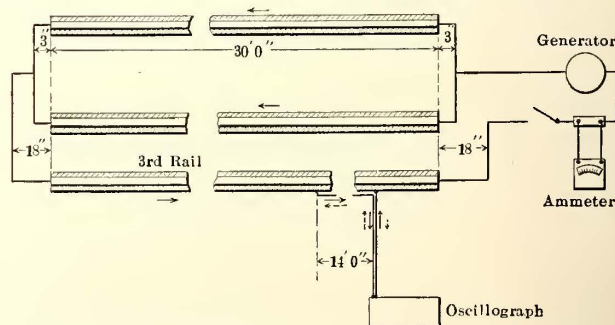


INDUCED VOLTAGE IN THIRD RAIL—FIG. 2—DIAGRAM OF RAIL AND TEST COIL ARRANGEMENT

dent with the axes of the rails. The fluxes calculated on the basis of the foregoing assumptions and with the rail arrangement indicated in Fig. 2 are tabulated in Table I. The rails weighed 55 lb. per yard, were 4 in. high and had a cross-section of 5.4 sq. in.

### MEASUREMENT OF ACTUAL FLUXES

The actual fluxes were measured by means of test coils, arranged as in Fig. 2, and a ballistic galvanometer. The rail circuit is shown in Fig. 3. For the purpose of

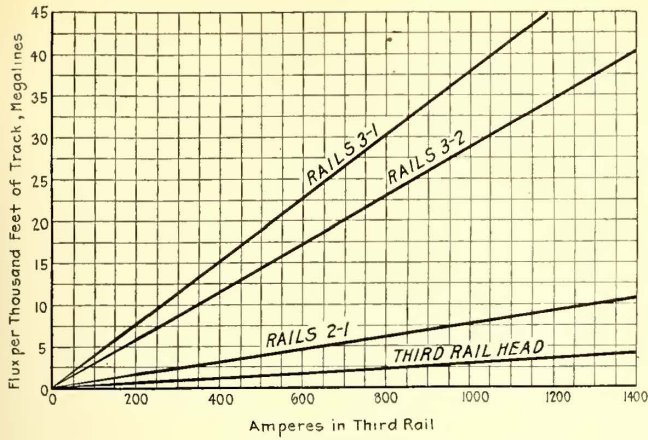


INDUCED VOLTAGE IN THIRD RAIL—FIG. 3—RAIL CIRCUITS AND OSCILLOGRAPH CIRCUIT FOR MEASURING VOLTAGE

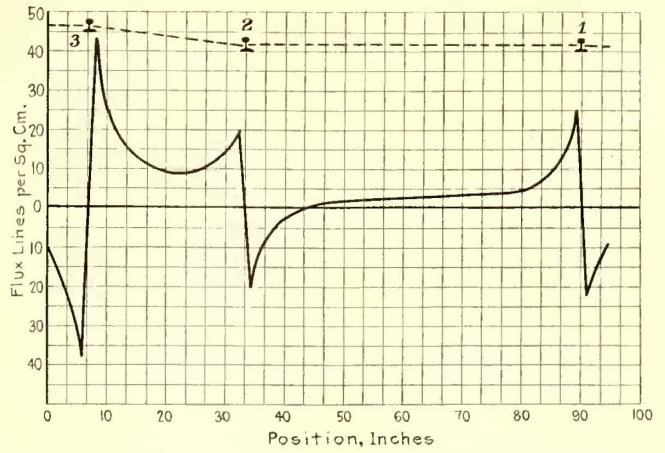
TABLE I—COMPARISON OF CALCULATED AND MEASURED FLUXES IN MEGALINES PER 1000 FT. OF TRACK PER 1000 AMP. IN THIRD-RAIL

Location of Flux	Flux Measured in Test	FLUX CALCULATED FROM ASSUMPTION			DISCREPANCIES, IN PER CENT.		
		1	2	3	1	2	3
Third rail head	3.05	3.05			0.0		
Rails 3-2	29.15	29.15	28.45	31.6	0.0	-2.4	+8.4
Rails 3-1	37.90	36.40	35.60	38.80	-3.9	-6.0	+2.4
Rails 2-1	7.47	7.18	7.18	7.18	-4.2	-4.2	-4.2

comparison, the measured fluxes are also recorded in Table I. It will be noted that the first assumption as to rail cross-section gives results which compare very



INDUCED VOLTAGE IN THIRD RAIL—FIG. 4—RELATION BETWEEN RAIL FLUXES AND THIRD-RAIL CURRENT



INDUCED VOLTAGE IN THIRD RAIL—FIG. 5—FLUX DISTRIBUTION BETWEEN RAILS, THIRD-RAIL CURRENT 1000 AMP.

favorably with those obtained by test. The larger discrepancies in the last two fluxes are probably due to inequality of currents in the first and second rails. The relation between the fluxes and the third-rail current, as determined experimentally, is shown in Fig. 4. The small amount of iron in a portion of the magnetic path has little influence on the shape of these graphs.

The flux distribution between rails is shown graphically in Fig. 5. Data for this graph were obtained by the use of a small exploring coil and a ballistic galvanometer and were used to check the total flux measurements made with the larger coils.

CALCULATION OF VOLTAGES

For the purpose of determining voltages the fluxes, in air only, calculated under assumption 1, may be separated into the components listed in Table II. The flux between head and flange is not included in these figures as a portion of its path is through iron. With it included the totals would be the same as those listed for assumption 1 in Table I. These fluxes through the air surrounding the rails if caused to collapse in 0.002 second—a figure which the accompanying oscillograms show to be about the average for the oscillographic tests—will set up in the several rail loops the average voltages listed also in Table II, the voltage in each case being equal to the flux in lines divided by 10<sup>7</sup> times the time, 0.002 second. As the third-rail current is the sum of the currents in the other rails it might be expected that the voltage induced in it would be greater than in the track rails. A careful consideration of the voltages induced in the rail loops by the fluxes due to

the different rails enables an allocation of the rail voltages. These are as follows: Third rail, 102 volts; second rail, 21 volts; first rail, 57 volts.

As in the case of the fluxes, these voltages are per 1000 amp. per 1000 ft. of track.

MEASUREMENT OF ACTUAL VOLTAGES

In measuring actual voltages and in determining the rate of decay of the current an oscillograph was used. For measuring voltages in the rails themselves the circuit connections were as shown in Fig. 3, the distance between contact points on the rail being 14 ft. The generator was of the low-voltage type, rated at 5 volts, 1000 amp. The circuit was opened by a quick-break knife-blade switch. Care was taken to minimize the voltages induced in the oscillograph leads. A 60-cycle alternating-current wave was photographed to indicate

TABLE II—FLUXES IN AIR CAUSED BY THE VARIOUS RAILS IN MEGALINES PER 1000 FT. OF TRACK PER 1000 AMP. (CALCULATED)

Rail loop	FLUX IN RAIL LOOP CAUSED BY EACH RAIL			Total
	Rail 3	Rail 2	Rail 1	
3-1	22.85	- 2.45	11.45	31.82
3-2	15.65	7.83	1.11	24.58
2-1	7.18	-10.30	10.30	7.18

VOLTAGES INDUCED IN RAIL LOOPS BY ABOVE FLUXES (CALCULATED)

3-1	114	-12	57	159
3-2	75	39	6	123
2-1	35	-51	51	36

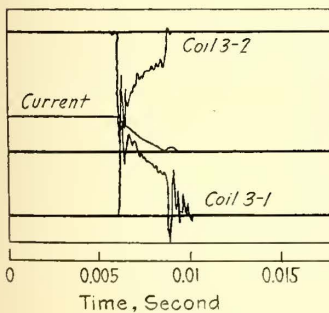


Fig. 6—Voltages induced in test coils between third and first and third and second rails. Third-rail current, 1000 amp. Time of break, 0.0027 second.

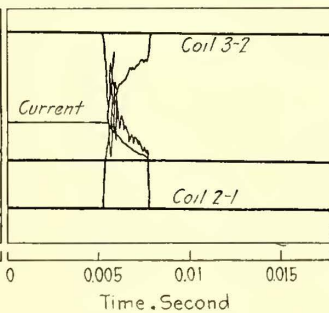


Fig. 7—Voltages induced in test coils between third and second and second and first rails. Third-rail current, 1000 amp. Time of break, 0.0026 second.

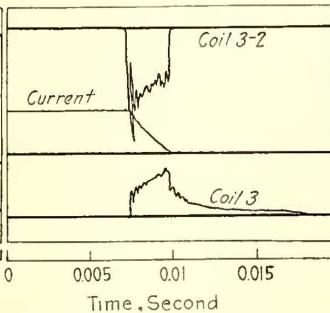


Fig. 8—Voltages induced in test coils between third and second rails and in third-rail head coil. Third-rail current, 1000 amp. Time of break, 0.0026 second.

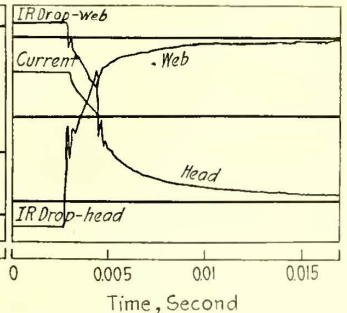


Fig. 9—Voltages measured in head and web of third-rail. Current, 1000 amp. Resistance drops, 0.24 volt each. Time of break, 0.0017 second.

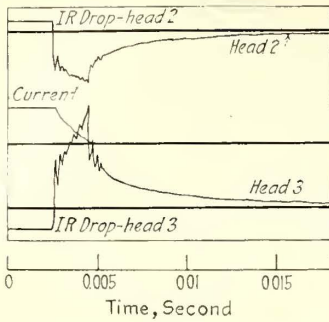


Fig. 10—Voltages measured in heads of second and third rails. Third-rail current, 1000 amp. Resistance drop in second rail, 0.12 volt; third rail, 0.24 volt. Time of break, 0.0021 second.

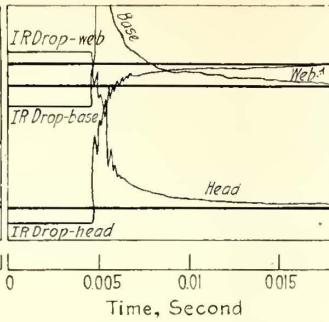


Fig. 11—Voltages measured in different parts of the third-rail. Current, 500 amp. Resistance drops, 0.12 volt each. Time of break, 0.0008 second.

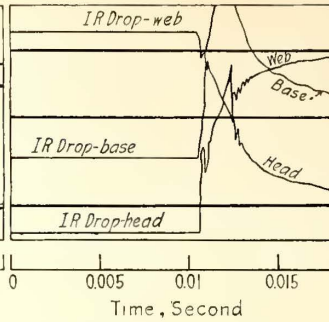


Fig. 12—Voltages measured in different parts of the third-rail. Current, 1000 amp. Resistance drops, 0.24 volt each. Time of break, 0.0017 second.

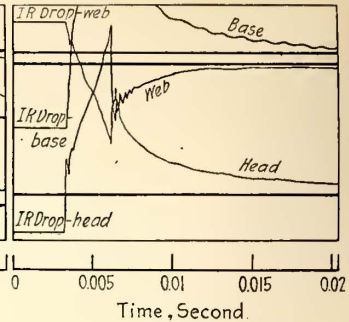


Fig. 13—Voltages measured in different parts of the third-rail. Current, 1500 amp. Resistance drops, 0.36 volt each. Time of break, 0.003 second.

INDUCED VOLTAGE IN THIRD RAIL—OSCILLOGRAMS OF VOLTAGES MEASURED IN HEADS OF SECOND AND THIRD RAILS AND IN DIFFERENT PARTS OF THIRD RAIL

time. This was replaced in the accompanying figures by scales to simplify the diagrams.

In Figs. 6, 7 and 8 are shown oscillograms of the voltages induced in the test coils indicated in Fig. 2. These voltages were caused by the sudden interruption of a current of 1000 amp. in the rail circuits. As the coils contained different numbers of turns a comparison of the ordinates is of no significance. The oscillograms are presented because they show approximately the form of voltage disturbance set up by the collapse of the air flux. The term "approximately" is used because the test coils inclosed the head-to-flange flux. However, this flux is small as compared with all of the main loop fluxes except that between the first and second rails. The effect of the iron in the head-to-flange flux path is plainly seen in the coil 3 oscillogram, Fig. 8. In all of the coils except coil 3 the peak occurs at the instant the current starts to decay and the induced voltage decreases as the rate of change of the current decreases. With other methods of breaking the circuit a radically different current-time curve might obtain, in which case the form of the induced voltage disturbance would also be different. As might be expected, the several voltage graphs for the same coil are not quite alike, it being impossible to interrupt the circuit exactly the same way every time.

The remaining oscillograms show the actual voltages in the rails resulting from the rupture of the rail current. The resistance drop with steady current flowing is also shown on each oscillogram and affords a ready means of calibration. The reason for the reversal of the voltage graph becomes apparent when one considers the direction of current flow through the oscillograph element just before and just after the circuit is broken. These directions are shown by the full and dotted arrows respectively in Fig. 3.

It will be noted that the maximum voltage caused by the action of the fluxes within the rail is induced just before the current dies out. The total voltage disturbance will be the resultant of the disturbances set up by the flux in the air surrounding the rails and by the action of the fluxes within the rails themselves. Obviously the quicker the air flux is caused to collapse the greater will be that portion of the voltage peak which is due to the air flux. Upon the remaining portion of the voltage peak the quality of the iron evidently has much influence. Of course, both portions are influenced by the magnitude of the current interrupted.

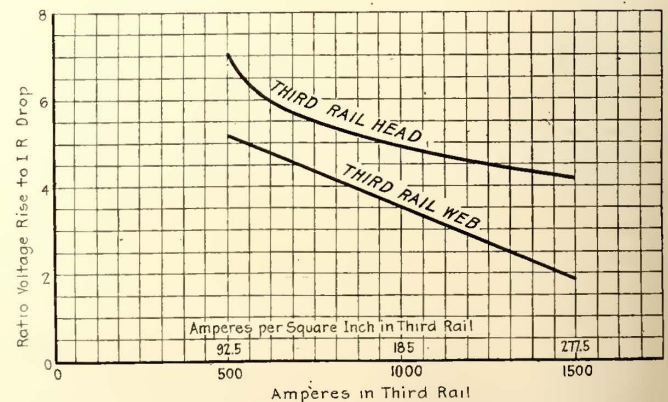
From our knowledge of skin effect it might be inferred that the voltage measured in the different parts of the rail would be unlike. The initial rise, peak and the drop just following the peak for the last five oscillograms are listed in Table III. The figures are for 1000 ft. of track.

The ratios of peak voltage to the steady current resistance drop for the oscillograms tabulated in Table III have been plotted in Fig. 14. While there were not enough observations to define the graph with any degree of accuracy, the general tendency is that the ratio decreases with increased current density in the rail and therefore increased magnetic saturation in the rail. Under short-circuit conditions, when practically the whole station voltage is absorbed in resistance drop, one might expect the voltage rise incident to the interruption of the current to be two or three times the normal station voltage.

As noted in the first paragraph the tests here de-

TABLE III—MEASURED VOLTS PER 1000 FT. OF TRACK

Fig. No.	Current, Amp.	Time, Sec.	HEAD VOLTAGES			WEB VOLTAGES		
			Initial	Max.	Drop at Break	Initial	Max.	Drop at Break
11	500	0.0008	48	61	42	27	45	26
9	1000	0.0017	64	87	43	30	63	10
10	1000	0.0022	52	79	43			
12	1000	0.0017	54	90	48	25	59	25
13	1500	0.0029	49	110	61	15	47	31



INDUCED VOLTAGE IN THIRD RAIL—FIG. 14—RELATION BETWEEN THE RATIO OF VOLTAGE RISE TO RESISTANCE DROP AND THE CURRENT IN THE THIRD RAIL

scribed were of a preliminary character and the results obtained, therefore, are indicative of work to be done rather than of work already done. The author desires to acknowledge his indebtedness to D. E. Branson and L. B. Gaskill, who performed the experimental work in connection with their senior theses.

## Women Conductors on Surface Cars

New York Railways Has Seventy-five in Service on P. A. Y. E. Cars and Anticipates No Difficulty in Their Further Introduction for This Work

ON ACCOUNT of the large number of its men removed by war necessities, the New York (N. Y.) Railways has just placed in service about seventy-five women as conductors on surface cars. This number will be gradually augmented as the women are trained to qualify for the work. As stated in a brief note in last week's issue of this paper, it is the company's intention to introduce women only to the extent of filling existing vacancies. As there is no intention of using motorwomen, some of the men conductors now employed may be taught the duties of motormen and put on the front platform. The women conductors will work the same number of hours as the men in the same position, will begin at the same rate of pay and perhaps ultimately will work late runs also, although that is still indefinite.

In securing applications the company made its first offer to women relatives in the families of its employees in military service. An appeal was next made to the members of all other employees' families, and lastly to the general public. Applicants receive preference in this order. The company found no difficulty in securing requests for employment, the age limits being twenty-one and forty-five years. Those accepted are placed in school for about two days, after which they receive a mental test covering familiarity with company rules, making change, etc. A physical standard is also required. Trial runs on the cars for a few days under the direction of an instructor complete the period of training.

The first women conductors are being assigned to the low-level cars operating on the Broadway-Columbus Avenue and Broadway-Amsterdam Avenue lines, which have the heaviest surface traffic in the city. These cars have only center doors, the conductor being seated back of the fare box, which is in the center well opposite the doors. The doors are air operated and controlled with a foot trip by the conductor. The women will be assigned as necessary to other cars, on some of which the fares are collected, after acquiring experience with those of the more improved type.

An idea of the uniform selected can be obtained from the photographs reproduced herewith. It is made of khaki cloth similar to the army drab. The coat is quite long, has four pockets and also a lower inside pocket for carrying transfers. The collar can be buttoned in three different positions. The lower part of the uniform fits closely around the ankles, in effect very similar to the military leggings. This uniform is also quite suitable during bad weather conditions at times when the conductress is required to leave the car.

The employment of women in the transportation department, of course, has necessitated the introduction of accommodations for their convenience at carhouses and terminals.

## B. R. T. to Sell Potatoes to Employees

The Brooklyn (N. Y.) Rapid Transit Company has purchased 4000 bushels of potatoes which will be sold to the employees at cost during the winter. Sixteen hundred bushels are already en route. The entire consignment will be stored in the DeKalb Avenue carhouse. About the middle of October President T. S. Williams requested G. W. Edwards, welfare administrator, to look into the potato market with a view to getting in a large supply and authorized the sending of M. L. Ackerley of Fresh Pond Depot to one of the potato-raising centers in Pennsylvania, where the potatoes were purchased. The potatoes will be sold in 20-lb. bags. The price, according to Mr. Edwards, will not exceed 4 cents a pound.



Photo by Social Press Association

WOMEN CONDUCTORS ON NEW YORK RAILWAYS

# Six-Cent Fare Needed in Connecticut

For Immediate Relief Connecticut Company Deems Increase in Unit Fare Best, but Will Be Glad Later to Make Exhaustive Study of Whole Fare Problem—City's Contention that All Lines Should Be Self-Supporting Is Attacked

**H**EARINGS in regard to the recent institution of 6-cent fares on the lines of the Connecticut Company were continued on Dec. 10, 11 and 12 before the Public Utilities Commission in Hartford. The testimony and cross-examination dealt in general with two points: the desire of the company for a 6-cent fare, and the leaning of the city of Hartford toward a zone system.

The first hearing in this case, which was held on Dec. 3, was reported in the *ELECTRIC RAILWAY JOURNAL* of Dec. 8, page 1054. The hearings will be continued on Dec. 19.

## CITY FAVORS ZONE SYSTEM

The forenoon of Dec. 10 was occupied in the cross examination of Dr. Thomas Conway, Jr., professor of finance in the University of Pennsylvania, by Corporation Counsel Cole for the city of Hartford. It was evident that the idea of the city was that the company should have adopted a zone system of increasing its revenues, in case an increase could be justified. The consensus of opinion of those present was that the city's contention would probably be that the company should have reduced the area of the first fare zone and put a copper zone system in force in the balance of the present first fare zone, extending this copper zone throughout the suburban and interurban portions of the territory. This would have preserved a 5-cent fare as the unit for riders in the central part of the city of Hartford, but it would have reduced the ride for such fare.

It was evident that the city was prepared to oppose strongly any attempt to saddle the burden of unprofitable suburban and interurban lines in whole or in part on the city rider. Mr. Cole's questions indicated that the city's position was that the rate of fare should be fixed at a point which would yield no more than operating expenses and a fair return upon the actual investment within the corporate limits of Hartford.

## SYSTEM SHOULD BE CONSIDERED AS A WHOLE

Dr. Conway testified that the company, in raising the fares from 5 to 6 cents, had taken the only course which good judgment would endorse. He stated that the only equitable method of immediately instituting a higher fare was a horizontal advance in rates. The investigation necessary to the intelligent application of a zone system to the conditions under which the Connecticut Company operates would require from six to nine months and the company could not afford to wait so long to offset the rising costs of operation.

Dr. Conway further contended that the attempt to regard the city of Hartford as separate and apart from its suburban lines in fixing a rate of fare was neither fair to the company nor to the best interests of the community. There are portions of the company's system situated in sparsely settled rural districts which are not in themselves profitable, nor could they be made profit-

able under any rate of fare which the traffic would be willing to pay. The deficit on these outlying lines must be made up in some fashion and the only recourse is to distribute it in some equitable manner over the profitable portions located in more populous territory. As a general proposition, the unavoidable deficits in outlying districts must be borne by cities. These outlying lines contribute to the prosperity of the cities by furnishing a method of transportation from the rural districts and a means of distributing express matter, representing sales by city merchants to suburban and rural customers.

Dr. Conway further stated that the company should give careful study to traffic conditions in order accurately to determine the possibilities of the zone system or other methods of securing the necessary revenue. The results of this study should be given wide publicity in order that the riding public might be fully acquainted with the details of the alternative methods of securing the required revenues. When this had been done the majority of the public should decide what system of fares it preferred. The company's purpose should be to adopt the system of fares which was most satisfactory to its patrons.

The afternoon session on Dec. 10 was occupied in hearing the testimony of Carl W. Stocks, general passenger agent Bay State Street Railway, and A. M. Collens, manager of the investment-analysis bureau maintained by three of the large fire and casualty insurance companies of Hartford. Mr. Stocks described the efforts of the Bay State company to secure higher revenues, particularly in the suburban and interurban zone case now pending. His testimony covered practically the same ground as that of Vice-President Stearns before the Massachusetts Public Service Commission on Nov. 19, an abstract which appeared in the issue of Dec. 8, page 1051. Rates of fare within the proposed zone system in suburban and interurban territory are to be fixed on a mileage basis, the rate varying roughly according to the profitableness of each mile of line. In so far as possible each portion of the line is to be made self-sustaining, but where this cannot be done at a practicable rate of fare the deficit which then occurs must be provided in some other fashion. While Mr. Stocks disclaimed any knowledge as to how these deficiencies in earnings were to be made up, he admitted that it was obviously necessary to recoup them in some fashion in the cities.

Mr. Collens testified that the earnings of the Connecticut Company have not inspired confidence on the part of the investing public, and that just as long as investors see that the rate of fare fixed years ago cannot be changed, just so long will they be wary of buying the stocks or bonds of the company. The Connecticut Company under a 5-cent fare could not give such protection that investors would be attracted. Any new stock that the company might issue, even with the 6-cent fare

an established fact, would not sell at par. The 6-cent fare, Mr. Collens believed, would have to show definitely that it could increase the earning-power of the company before the corporation would be in a position to attract new capital. Yet a concern like the Connecticut Company must have a constant supply of new capital to keep on giving good service.

#### WHY THE 6-CENT FARE WAS CHOSEN

The feature of the session on Dec. 11 was the testimony of President L. S. Storrs giving the reasons which had prompted the company to advance its fares to 6 cents. Mr. Storrs stated that the company had carefully considered all of the possible methods of increasing its revenue. The plan of charging for transfers was discarded because of the small amount of increased revenue to be obtained and the unequal distribution of the increase, for a large portion of patrons do not use transfers. A readjustment of the length of haul for a single fare, it was thought, would involve the company in an endless number of controversies for it would be most displeasing to so large a portion of the public. The zone system would so completely upset the entire basis upon which the life and activities of the various communities had been founded as to preclude its adoption. A careful study of the company's operations, Mr. Storrs said, indicated that no portion of the system was earning a fair return. The company's decision to adopt a 6-cent fare had met with popular approval, because no real opposition had developed in the seventy-six cities, towns and villages served.

#### COMPANY WILL BE GLAD TO STUDY LOCAL FARE PROBLEM FURTHER

Continuing, Mr. Storrs said: "It is quite possible that there is necessity for a certain change in the theory of electric railway rates that will more nearly recognize the relative density of riding, but such change cannot be made without a great amount of study of the riding characteristics of each individual community. Moreover, it is clearly evident that a more logical fabric of rates can much more easily be effected from a basis of rates that fairly represents the needs of the corporation for revenue than would be possible from an admittedly inadequate rate.

"We are willing, if the commission so desires, to undertake a very exhaustive study of the conditions throughout our territory in an attempt to devise a more flexible and, if possible, more logical system of fares and one more pleasing to the public served. We will be pleased to provide the commission with the full record of such investigation, together with the conclusions of the experts engaged in such undertaking. These conclusions will not, of course, be available in the decision of the case now pending.

"All the Connecticut Company wishes to obtain is a reasonable rate of return upon the value of its property, this to be obtained from a system of fares that will be most pleasing to the great majority of the patrons. We believe that the present method meets with more nearly uniform approval than any of the other methods that have been proposed."

In cross examination by Mr. Cole, Mr. Storrs stated that he was convinced that the American public was too impatient of delay to permit the successful installation of the zone system in congested central districts. An

attempt to contract the central zone would have created intense confusion and serious political agitation which would have precluded the prompt settlement which the company's financial necessities demanded.

Mr. Storrs stated that the 6-cent fare would increase the revenue \$700,000 in the current fiscal year. Mr. Cole pointed out that the data furnished him by the company showed that the operating expenses had increased in the first nine months over the same period in 1916 by more than \$600,000. He asked whether, in view of this fact, the 6-cent fare would completely solve the financial problem of the company. Mr. Storrs replied that it would not enable the company to earn a fair return; it would simply put the company back in the financial position which it occupied in 1916.

The testimony of representatives of electric railway manufacturers, introduced before the Public Service Commission for the Second District of New York in the 6-cent fare cases of last August, was read into the record with the consent of Mr. Cole and the commission.

### Annual Meeting of A. S. M. E.

The keynote of the annual meeting of the American Society of Mechanical Engineers, held in New York from Dec. 4 to 7, was the service of the engineer to the public in times of crisis. Some of the important subjects covered were "Universal Public Service in Peace and War," "Engineering Societies in National Defense," "The Fuel Problem" and "Army Transportation."

On the evening of Dec. 4 ex-President William H. Taft addressed the meeting on "The War's Call to Professional Men," and an honorary membership was conferred upon Major-General George W. Goethals. A reception to the new president, Charles T. Main, followed.

Other interesting features of the meeting were a stereopticon lecture by Past President John R. Freeman, on his recent trip to the Orient, and a lecture by Past President John A. Brashear on the "Science of the Beautiful in Commonplace Things." Two very important subjects, the employment of women in industrial plants and shops, and the preparatory work for training the large number of crippled men who may be expected to return from the war and who should be encouraged to become self-supporting, were covered on Friday.

Abstracts of the papers of most interest to the electric railway profession, including the paper on "Preventable Waste of Coal in the United States," by David Moffett Meyers, referred to in an editorial last week, will appear in a later issue of this paper.

The officers elected for the coming year are as follows: President, Charles T. Main, Boston, Mass.; vice-presidents, Spencer Miller, New York, N. Y.; Max Toltz, St. Paul, Minn.; John Hunter, St. Louis, Mo.; A. M. Greene, Jr., Troy, N. Y.; Charles H. Benjamin, Lafayette, Ind., and Charles T. Plunkett, Adams, Mass.; managers, Frederick Geier, Cincinnati, Ohio; D. R. Yarnall, Philadelphia, Pa.; F. N. Bushnell, Boston, Mass.; Robert H. Fernald, Philadelphia, Pa.; William B. Gregory, New Orleans, La.; C. R. Weymouth, Berkeley, Cal.; John H. Barr, New York, N. Y.; J. A. Stevens, Lowell, Mass., and H. DeB. Parsons, New York, N. Y.; treasurer, William H. Wiley, New York, N. Y.; secretary, Calvin W. Rice, New York, N. Y.

# Spread Rush-Hour Travel—Think About Handling Freight

Thus New Jersey Commission Speaks to Electric Railways of the State—Co-operation of All Interests Is Needed to Meet Demands of Abnormal Traffic Situation

**T**HAT the present time is one for all to co-operate in relieving rush-hour travel on electric railways, and that such carriers should consider how to aid the movement of freight, is the opinion of the Board of Public Utility Commissioners of New Jersey. This is the gist of a statement issued on Dec. 11 after a painstaking investigation for the last few months by inspectors of the board.

The commissioners appreciate the suggestion of the United States Fuel Administration that the greatest economy of operation be effected without undue and unnecessary inconvenience to the riding public. They hope that no curtailment of travel will be necessary by reason of shortage of fuel or lack of equipment, and they feel that to avoid such a situation should be the aim of all. They recommend, however, that the railways immediately consider how economies in fuel and facilities may be secured without inconvenience to patrons, and that they report whether power can be more economically secured from other power stations than their own.

## UNUSUAL CONDITION OF TRAFFIC EXISTS

As a matter of fact, the board says, present facilities are inadequate to meet the demands of the public. The reports of its inspectors show that the abnormal development of industrial plants in New Jersey has created a condition which calls for unusual methods of treatment in the local transportation field. Government contracts alone are bringing into the State plants for the building of ships and the manufacture of munitions and other materials which will add tens of thousands of men to the working forces that have to be transported at least twice daily. Without transportation facilities the plants cannot be kept going, as their character makes it necessary that they be situated, in many instances, in localities which do not permit employees to live within convenient walking distances of their work.

Several of the larger industrial centers in the State are especially affected, as, for instance, Newark, Jersey City and Camden. The Newark and Hackensack Meadows have developed a most perplexing transportation problem, owing to the building of shipyards and warehouses for the engineering and quartermaster departments of the army. Several thousand men of the building trades are now engaged in the construction of these plants, and the present number is only a regiment or so compared to the industrial army that will be employed when the establishments are in full swing. One of these plants alone reports that it will have at least 15,000 men working on ship contracts.

In the central part of the State munition plants require their quota of help. The national government has acquired an option on a large tract of land located on Raritan Bay. Camden, already a center of industrial activity, is seeing preparations for the enlargement of present, and the establishment of new, shipyards which will require thousands of additional workers. In all probability, twenty-four-hour operation will be necessary.

## RUSH-HOUR TRAFFIC SHOULD BE SPREAD OUT

While transportation in these cities, owing to the proximity of the great plants referred to, is directly and materially affected during the rush hours, in other important cities the high pressure under which their industries are working has made more difficult the problem of providing adequate transportation facilities during these hours.

After a careful study of present and prospective conditions, the commissioners have reached the conclusion that the time is at hand for closer co-operation between employers, employees and the railways. As the industrial plants must have more men than ever and as it will be impossible for the railways to carry them all practically at one time, it would seem that the problem would have to be solved by a readjustment of the working periods in the shops and shipyards so that all employees would not start and stop at virtually the same time. For instance, it is said, it would appear to be practicable for certain establishments to agree to advance or set back the beginning of their working periods, say one hour or more, with a corresponding change for the closing time. This would benefit thousands of workmen, who would save time and have better accommodations getting to and from work. It would also benefit the employers, who would have less difficulty in keeping their working forces to maximum capacity when some of the discomforts of transportation were eliminated. This applies particularly to large plants operating throughout the twenty-four hours. Such an arrangement, the commissioners believe, is worth a trial.

The women of the State and all others whose duties do not require them to travel during the rush hours could also help materially in relieving congestion. This might well be applied in all the cities and larger towns in the State, whether or not they be centers of unusual industrial activity. If the women would endeavor to do their shopping earlier in the day so as not to have their homebound trips coincide with the riding of those whose hours of labor and business require them to ride during certain fixed periods, the result would be tan-



tamount to an increase in transportation facilities. Moreover, there are hours during the day when the mercantile establishments are not at all busy, and other hours when they have a rush of business. If their trade could be more uniformly distributed, it would result in economies that would redound to the benefit of buyers and merchants alike.

#### ENLISTING THE CO-OPERATION OF ALL

In order to secure a more even distribution of traffic and consequent improved service, definite steps should be taken by the various industries, electric railways, commercial houses and all others concerned. The Board of Public Utility Commissioners, therefore, recommends:

1. That the electric railways throughout New Jersey adopt such means as may be considered most efficient to induce such of their patrons as can do so to ride on the cars during other periods than the rush hours.

2. That the electric railways of the State which are not provided with sufficient equipment and other facilities to handle properly the present and prospective traffic make every effort to secure such equipment and facilities, as far as may be practicable, at the earliest possible date.

3. That the attention of the officials of industrial and government plants be directed to the necessity of full co-operation, in order that the electric railways may be aided in the work of transporting the employees of such plants.

4. That the attention of the managers of department stores and other commercial establishments be directed to this matter, in the hope that they will adopt such means as may be considered most efficient to induce their patrons to co-operate in the movement.

5. That the newspapers of the State join in the movement in order that the widest publicity may be obtained.

6. That the hearty co-operation of the authorities of the various municipalities in the State be given to the movement.

7. That the Boards of Trade or Chambers of Commerce assist to accomplish the result sought.

#### CONSIDER THE HANDLING OF FREIGHT

Another matter which it may shortly be necessary to consider is the provision of relief by the electric railways for the congestion in the transportation of freight. The steam roads are overburdened. Some measure of relief, the commissioners believe, might be afforded if the street and interurban railways could make deliveries of local freight. These companies should give thought to this question and should ascertain what expenditures would be necessary for facilities, and whether the carriage of freight by them is practicable. Enabling legislation might be necessary, but it is assumed that this could be secured. The board makes no specific recommendations at this time, but it states that it will be glad to counsel with the companies on this matter.

The annual sale of umbrellas from the lost article department of the Puget Sound Traction, Light & Power Company, Seattle, Wash., took place recently at the new Westlake Public Market. The proceeds from this sale are devoted to the general fund of the benefit association for employees.

## Closer Co-operation Between Government and Industries

Mobilization of Industries the Aim of the Chamber of Commerce of the United States

A CONVENTION of the Chamber of Commerce of the United States was held at Washington this week. The convention was addressed by representatives of a number of government departments on Wednesday morning, and at the Wednesday evening session a central war industries committee of the National Chamber was created. The new central committee was empowered by the convention in its resolutions either to increase its number or to organize any advisory council from the chairmen of the various war service committees, or both.

The convention voted that where there are at present war service committees they be requested to ask recognition of the war committee of the National Chamber, and it was provided that if they are organized in conformity with this report that they be so recognized. All existing national trade organizations or associations which have not already appointed war service committees are requested to do so immediately. Where there is no national trade association or organization it was recommended that such organization be formed immediately. It was the sense of the convention that war service committees, as far as possible, shall be representative of the entire industry they represent. All war service committees now existing or selected, as provided in the resolutions, are to be vested with authority to represent the industries in their relations with the government during the war.

#### HIGH POINTS IN WEDNESDAY MORNING DISCUSSION

The speakers at the Wednesday morning session were W. S. Gifford, director of the Council of National Defense; Daniel Willard, chairman of the War Industries Board; Harry A. Garfield, Fuel Administrator; Edwin B. Parker of the Priority Board; Clarence M. Woolley, representing the War Trade Board; George N. Peek, industrial representative of the War Industries Board, and others.

An important point made by Mr. Gifford was that it is advisable to have the industries themselves name committees which shall do some of the work formerly done by the co-operative committees of the Council of National Defense. He intimated that it would not be an easy task to organize industry in this country completely. In discussing the industrial end of the war, Mr. Willard said that one mistake made was in concentrating orders too much in certain localities. This brought with it housing problems, transportation problems, and in certain instances too great a demand for electric power.

Dr. Garfield startled his hearers by proposing that there might be combined action by agreement in each industry with the purpose of reducing the consumption of coal, and said he would be glad to make such an arrangement if the business men present wished to do so. He gave figures to show that coal is being produced and supplied to all industries in larger quantities than in normal times, but that the United States is still 50,000,000 tons short of the unusual demand. These figures led him to suggest willing, co-operative conserva-

tion as the only method by which American business can get out of the hole it is in for want of coal.

The objects of the War Industries Board were analyzed by Mr. Parker, as the representative of Judge Lovett, director of priority in transportation. One of these is to increase production, if necessary, and another is to curtail demand if necessary to meet supply. He explained some of the problems of the priority agency in supplying the government as well as private industry, and its successful work through a system of classification, under which certificates allowing shipments are issued in twelve classes. The first, under "A," of which there are six, comprehend the demands of the United States and the allied governments, in the way of munitions; and those under "B," of which there are also six, cover materials for manufacturers, power for manufacturers, and transportation requirements for manufacturers.

## AMERICAN ASSOCIATION NEWS

### Electric Railway War Board Notes

#### New Director Is Finding Many Definite and Timely Things to Do at Washington Headquarters

The American Electric Railway War Board met at Washington on Dec. 7 and will meet again on Dec. 21.

Col. J. Stanley Moore, formerly connected with the Empire United Railways, Inc., Syracuse, N. Y., and later military secretary to Governor Whitman of New York, is to have charge under C. Loomis Allen of the Washington office of the War Board. Colonel Moore will also represent the electric railways of the country with the United States Fuel Administration.

At the request of the War Board, Presidents F. R. Phillips of the Engineering Association and L. C. Bradley of the Transportation & Traffic Association have appointed a committee to recommend means of saving fuel in power houses, in the operation of electric and coal heaters in cars, in carhouses, etc. The committee comprises J. P. Barnes, Schenectady, N. Y.; G. H. Kelsey, Anderson, Ind.; L. H. Palmer, Baltimore, Md.; J. F. Layng, Schenectady, N. Y., and M. B. Lambert, East Pittsburgh, Pa.

The board expects, with the co-operation of the Washington Railway & Electric Company and the Capital Traction Company, to apply tentatively the suggestions of the committee locally.

The War Board, through Mr. Allen, has requested of the Treasury Department an interpretation of the war revenue act as it applies to the taxes to be paid on freight and express shipments over electric railway lines. The Accountants' Association has appointed a committee to suggest to the Commissioner of Internal Revenue ways for carrying out the provisions of the act with the least expense. The committee comprises M. R. Boylan, Newark, N. J.; Howard Abel, Brooklyn, N. Y., and F. H. Sillick, New York City.

#### TRAFFIC COMMITTEE

Britton I. Budd, president Elevated Railroads of Chicago, has been appointed chairman of a committee in charge of matters relating to traffic. He will supply

information as required by government bureaus and others as to the facilities at the disposal of electric railways.

So far the names of seventeen men have been passed upon by the War Board, and these men requested to accept the appointment. In all there will probably be about forty appointments made. Representatives for the remaining states are at present under consideration and definite appointments will be approved by the War Board at its next meeting in Washington. The appointments to date pending acceptance are as follows:

*Northeastern Military District:* New Hampshire, D. A. Belden, Haverhill, Mass; Massachusetts, H. B. Potter, Boston, Mass; Rhode Island, A. E. Paddock, Providence, R. I.; Connecticut, V. S. Curtis, New Haven, Conn.

*Eastern Military District:* New York, James P. Barnes, Schenectady, N. Y.; Pennsylvania, C. L. Tingley, Philadelphia, Pa.; New Jersey, H. C. Donecker, Newark, N. J.; Maryland, J. J. Doyle, Baltimore, Md.; Virginia, J. W. Hancock, Lynchburg, Va.

*Southeastern Military District:* Georgia, J. L. Murphy, Atlanta, Ga.; Florida, Hardy Croom, Jacksonville, Fla.

*Central Military District:* West Virginia, H. S. Newton, Huntington, W. Va.; Illinois, F. E. Fisher, Joliet, Ill.; Wisconsin, George Kuemmerlein, Jr., Milwaukee, Wis.

*Southwestern Military District:* Texas, G. H. Clifford, Fort Worth, Tex.; Oklahoma, A. E. Morris, Oklahoma City, Okla.

*Western Military District:* California, W. V. Hill, Oakland, Cal.

### Business Editors Hold Conference

#### Representatives of Technical and Trade Papers Hear Government Policies Described by Federal Officials

**A**N EDITORIAL conference of the business papers was held at Washington on Dec. 13, the speakers being the heads of various government departments. The purpose of the meeting was to learn first hand the progress and thought of different branches of government work. Among the speakers were the following:

F. W. Taussig, chairman United States Tariff Board; Eliot Wadsworth, vice-chairman American Red Cross; Harry A. Garfield, fuel administrator; Frederic A. Delano, member Federal Reserve Board; Senator Francis G. Newlands, chairman joint Congressional committee on interstate commerce; E. N. Hurley, chairman of Shipping Board; Senator Atlee Pomerene, member of committees on banking and currency, foreign relations, and manufactures; Dan C. Roper, commissioner of internal revenue; A. W. Shaw, chairman commercial economy committee, Council of National Defense; Dr. Anna Howard Shaw, chairman woman's committee, Council of National Defense; C. A. Richards, chief Bureau of Exports, and J. D. A. Morrow, secretary Coal Operators' Association.

A longer account of this meeting will be published in a later issue.

On account of his continued generosity toward the Toledo Zoo, the directors of the Toledo Zoological Society recently presented a polar bear rug to F. R. Coates, president Toledo Railways & Light Company.

# EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?

—Pass It Along

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

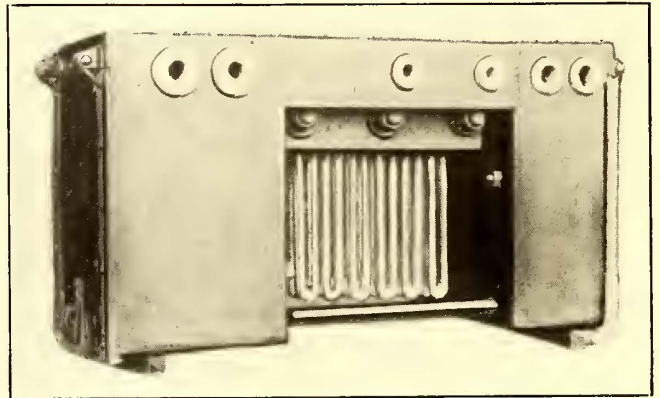
## Field Control for Existing Equipments One-Third of 1 Per Cent Additional Weight Permits Use of Field Control on Cars of a California Railway

BY W. P. JACKSON

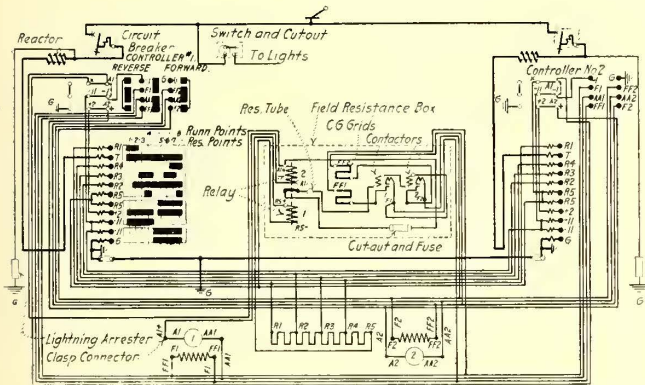
Master Mechanic San Francisco-Oakland Terminal Railways, Oakland, Cal.

The editorial in the issue of the ELECTRIC RAILWAY JOURNAL for July 28, under the heading, "Large Pinions on City Cars Not Only Useless But Costly," appealed to me as being particularly timely. The suggestion that some of the well-known principles governing gear ratios for cars in city service are somewhat neglected was also a point well taken.

While it is true that high maximum speed does not necessarily produce high schedule speed it must be



SIDE VIEW OF SHUNT RESISTOR GRIDS AND RUBBER-BUSHED HOLES FOR CONNECTING WIRES



In controller No. 2 connect R5 finger base to X on cutout switch. Connect A1 binding post in controller No. 2 to X binding post in controller No. 1.  
Connect A1 motor lead to No. 1 controller only.  
For single-end operation connect R5 finger controller No. 1 to X on cutout switch.

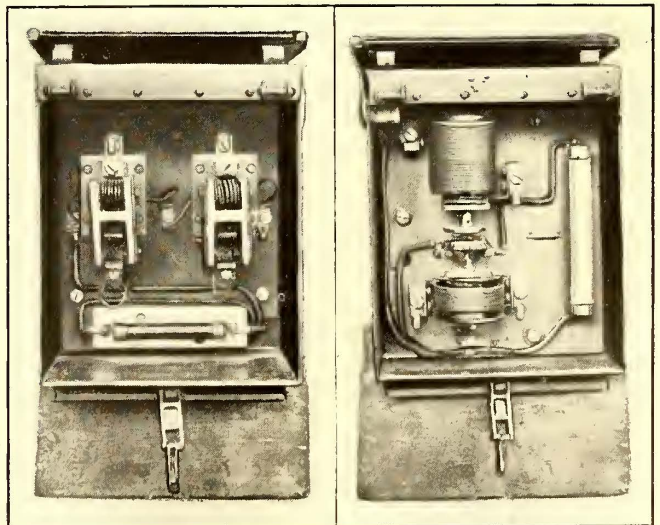
DIAGRAM OF CONNECTIONS FOR SHUNT-FIELD CONTROL

admitted that there are many classes of strictly city service in which the characteristics are such that ability to operate at free running speeds of from 25 to 30 m.p.h. over certain portions of the route is a factor which cannot be disregarded in selecting the most suitable gear ratio for a given schedule speed. It is the class of service in which an occasional opportunity is afforded for runs of several minutes' duration at maximum speed that prompts the retention of gear ratios which are manifestly unsuitable on the major portion of the route.

The reason is generally advanced by the transportation department that a high maximum speed enables the motorman to make up lost time. No consideration is given to the fact that, had the gear ratio been properly selected to fit the schedule speed and number of

stops per mile in the congested districts, the time might not have been lost. Unavoidable delays will occur, of course, and it would appear that field control is one solution of the problem of making up for them. By the use of field control all of the benefits obtained by the use of a maximum gear ratio can be secured with the frequent stops in congested districts, and at the same time advantage can be taken of all opportunities for free running at comparatively high maximum speeds.

A system of field control which can be applied to existing equipment without entailing any changes or additions to motors or controllers has many manifest advantages. Such a system has been in use on the



At Left, Contactors and Fuse in Contactor Operating Circuit. At Right, Relay and Resistance Tube in Contactor Operating Circuit

END VIEWS OF FIELD CONTROL APPARATUS

traction division of the San Francisco-Oakland Terminal Railways for the past year or more where we have had thirteen cars equipped with automatic field control. These cars are of the pay-as-you-enter type. They weigh 37,800 lb. each and are equipped with two GE-210 motors (16:71 gear ratio) and K-36 controllers. The General Electric Company also furnished the auxiliary field-control apparatus.

The installation of automatic field control raised the maximum speed of these cars from 22½ to 28 m.p.h., and helped considerably in maintaining the schedule on a line subject to many annoying but unavoidable delays.

The field control equipment weighs 104 lb. per car complete, and is installed by hanging it to the underframe with four bolts and making eight electrical connections to the existing control circuit wires. Reference to the wiring diagram and photographs will give a very good idea of the operating principles and appearance of this equipment.

Contactors Nos. 1 and 2 are operated by the voltage between No. 1 motor armature terminals and are adjusted so that they will not operate on 300 volts or less. This feature prevents the fields from being shunted on the series running position.

The operation of these contactors shunts the motor fields through an ordinary grid resistance which may be varied at will to obtain the most economical maximum speed for a given schedule. The operating coils of these contactors are controlled by a current relay, which may be readily adjusted to close at any desired current value in No. 1 motor from 60 to 120 amp.

The No. 1 coil in this relay will hold the relay open until all the motor resistance has been cut out. Thus the motor field circuits cannot be shunted until the controller has been advanced to the last notch, and they will not be shunted then unless the motor current has dropped to a predetermined value.

It would appear that field control equipments of the above type are particularly advantageous in that they may be applied to existing equipment without regard to type of control or motors used, and further they are readily adjustable to suit a given schedule, both as to maximum speed and as to the current at which the shunts will be cut in.

In operating these equipments on the lines above referred to they are adjusted to shunt the fields in about seven seconds from the first notch on level track, the controller being ordinarily advanced from the first to the last notch in from five to six seconds.

## High Ash Content Offsets Increase in Coal Production

According to a statement issued this week by the director of the Bureau of Mines, Department of the Interior, the increase in coal production this year, amounting to possibly 50,000,000 tons, is more than offset by the decrease in the heat producing value of this fuel.

Analyses which would show from 6 to 8 per cent ash in normal times in certain cases now show 12 to 18 per cent of ash. It is not improbable that 5 per cent more ash on the average is included in this year's coal than in that produced in previous years. As experiments carried on by the government at the St. Louis

Exposition showed that, with the coals used, there was a decrease of about 1½ per cent in efficiency for each 1 per cent addition to the ash content of the coal, the inclusion of 5 per cent more ash in the fuel means a reduction in efficiency of the remaining good coal of about 7½ per cent, which added to the 5 per cent useless ash makes the total reduction in effectiveness 12½ per cent. Hence, not only is the effective coal supply not being increased this year, but more than 600,000 carloads of ash are being added to the present burden of transportation.

The actual decrease in effective coal is about 30,000,000 tons which, added to the estimated increased needs of 100,000,000 tons, makes a deficiency equivalent to 130,000,000 tons. It is necessary that this be made up by good engineering and true fuel conservation in the boiler room.

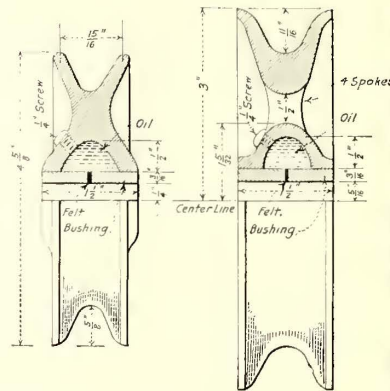
## Hard Bronze Trolley Wheels with Two-Piece Bushings

BY R. A. WILLSON

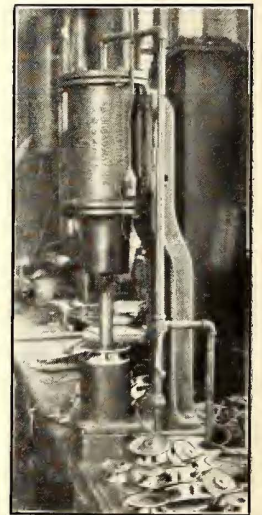
General Superintendent Washington Water Power Company, Spokane, Wash.

Hard bronze trolley wheels are used by this company, and they are cast and finished in the shop. The city wheel weighs about 3 lb., and costs us 80 cents, the interurban wheel weighs 4¼ lb., and costs us \$1.25, these figures being based on before-the-war prices.

The composition of the bronze is 79 per cent copper, 8 per cent tin, 8 per cent lead, and 5 per cent zinc.



DETAILS OF HOME-MADE TROLLEY WHEELS, AND AIR-BRAKE CYLINDER CONVERTED INTO TROLLEY WHEEL PRESS



At present each melt consists of 130 lb. of scrap brass, 20 lb. of copper, 2 lb. of tin, 2 lb. of lead and 1 lb. of zinc. After being cast the wheels are taken to the machine shop and turned in a turret lathe. The wheel is held in a special chuck which supports the outside of the casting while the cut is being made with a tool of high-grade steel.

After being turned the wheels are placed on a home-made press, illustrated above, and the bushings are pressed in. The bushings for the city wheels are 7/8 in. in diameter and 3/4 in. long. As shown in the drawings two bushings are used for each wheel and between them in the oil reservoir is placed a felt filler which feeds the oil from the reservoir to the pins. This method of lubrication has eliminated any trouble

with the pins as shown by the fact that when the wheel is worn out the bushings still have a perfect fit. The city wheels make about 5000 miles before being returned to the shops to be trued up, and about 15,000 miles are made before the wheel is scrapped. The interurban wheels are made in the same way except that the dimensions are larger. They are not quite so long-lived, however, but they make a total of about 4200 miles each.

### Tax Returns Simplified

Cash Fare Receipts Printed with Tax Amounts Included Opposite Fares Give a Check on the Turn-ins and Show Passenger the Amount of Tax Paid

The two cash fare receipts reproduced herewith show how two railways have met the new conditions requiring the collection of an 8 per cent tax on passenger fares over 35 cents. These printed receipts are used in conjunction with Macdonald ticket holders. The amount of the war tax corresponding with the

### Training Apprentices for Railway Trades

New Plan of Steam Railroad to Develop Skilled Mechanics Offers Suggestions to Electric Railway Shop Managers

BY F. G. LISTER

Mechanical Engineer El Paso & Southwestern System, Formerly Mechanical Engineer Spokane, Portland & Seattle Railway

[While Mr. Lister is now with a steam road, he has written this article because he appreciates, from his electric railway experience, that some systematic plan for training apprentices is needed in this field also.—Eds.]

War conditions have taken away so many of our mechanics, both young men and men of middle age, that we have been handicapped, possibly more than railways in the other sections of the country where labor is more plentiful. At one time we had a great many Mexicans, but as a rule they do not make good mechanics, and when a state of war was declared between this country and Germany many of them flocked back to the other side of the line. To overcome the labor difficulty we finally decided to secure a large number of bright, healthy boys between the ages of sixteen and twenty years and educate them for our mechanical trades.

On Oct. 1, 1917, the new plan went into effect. Under this plan four-year apprenticeship is required and those entering the service will be considered on probation during the first year. During this period the boys will be studied closely by the shop instructors and foremen, and if during that time it is found that they do not obey the shop rules or appear not to be fitted for the trade which they have started in to learn, they will be dropped. If found worthy and capable they will be paid as follows:

First and second periods of six months . . . . .	20	cents per hour
Third period of six months . . . . .	22½	cents per hour
Fourth period of six months . . . . .	25	cents per hour
Fifth period of six months . . . . .	27½	cents per hour
Sixth period of six months . . . . .	30	cents per hour
Seventh period of six months . . . . .	32½	cents per hour
Eighth period of six months . . . . .	35	cents per hour

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TWO FORMS OF CASH FARE AND TAX RECEIPTS

fare paid is printed on the receipt, which is torn off in the holder and given to the passenger. This informs the passenger of the amount of fare and the amount of war tax he has paid and also gives him a receipt for both.

The same information is contained on the stub, which is retained in the holder, and which thus simplifies the work of the auditing department in checking up the war tax returns made by the conductors. The auditor has simply to go through the stubs turned in and sum up the tax amounts indicated on each slip to arrive at the total amount due the government.

These rates, which are exceptionally high for apprentices, will render the young man self-sustaining from the start.

After completing the eighth six-month period, if he has properly availed himself of his opportunities and has become a competent mechanic, the apprentice will be allowed the full rate of pay of the craft.

It is our purpose to start a school of instruction after the first of the year, with an adequate and attractive building, to be presided over by a competent instructor who will be more or less in charge of the apprentices while in the shop as well as the instruction room.

The course in the school will comprise mechanical drawing and mathematics, and such other studies as will be found to be useful in the trade the apprentice may be learning. School instruction will be given during working hours under pay.

Before employment each applicant must pass a medical examination and possess certain educational qualifications. The medical examination must show the applicant to be free from organic heart or lung trouble, have good hearing in each ear and have normal vision. The urine must be normal and applicant must not be afflicted with hernia.

## Significant Saving from Car Energy Metering

Power Consumption Decreasing Despite Increasing Schedule Speed and Passenger Haul

Since the publication of an article on the cost of maintaining Economy meters, by F. V. Skelley, assistant superintendent Tri-City Railway, Davenport, Iowa, in the Nov. 3, 1917, issue of the *ELECTRIC RAILWAY JOURNAL*, an analysis of the total company operating figures has been made to determine what the metering of the energy consumption at the cars has meant to the company in savings realized. The findings of this study are set forth in the following paragraphs:

The records covering the entire Illinois and Iowa electric railway properties of the Tri-City Railway for the last four years and averaged over all lines for each year, show an increase in schedule speed of 15 per cent, an increase in passengers per car-mile of 0.9 per cent and per car-hour of 15.9 per cent and, despite these increases, a decrease in energy consumption per car-mile of 13 per cent. The similar unit figures for the nine months of 1917 as compared with those for 1916, show increases in passengers per car-mile of 2.6 per cent, in passengers per car-hour of 15 per cent and in schedule speed of 12 per cent, while the decrease in kilowatt-hours per car-mile has been 7.2 per cent.

In view of the emphasis which is being laid nowadays on more economical operation, and especially on lowering the energy consumption, the record of the Davenport company is of special interest. How this company has been able to load its cars more heavily, which means more stops, and run them faster and yet show a less energy consumption per car-mile, is a matter which cannot be said definitely to depend on any certain thing, but it is significant that 100 Sangamo Economy watt-hour meters were installed in as many cars in May and June, 1915. These 100 cars constitute the regular run equipment. In addition there are seventy-five cars used to fill in the regular service, and for the tripper and short-run service. These latter cars are not equipped with meters, but their energy consumption and mileage are included in the over-all property unit figures. Also, it is undoubtedly true that the installation of any of the economy devices on part of the cars of a company has its influence on the operation of all cars, because of the educational work which goes with their use and the natural influence of part of the men over their fellow employees through the power of example and discussion.

Other than the installation of the meters, there has been no change in particular on the system which would tend to better the energy consumption. There has been no important change in the mechanical or electrical

equipment of the cars during the four years considered, nor has there been any change in type of car or operating practice. The number of new cars with more efficient equipment which have been added are not sufficient to have any particular effect on the average energy consumption. So it would seem logical to assume that at least a good part of the flatness of the energy curve, despite the rising trend of the schedule speed and passenger per car-mile curves, must be due to the presence of the meters.

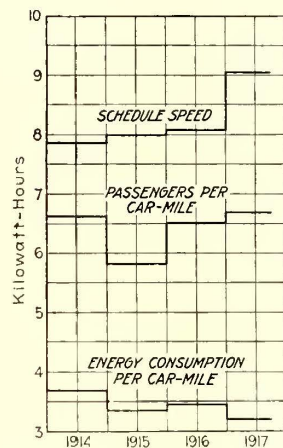
### HOW THE UNITS WERE DERIVED

Graphs which show the trend of the kilowatt-hours per car-mile, the passengers per car-mile, and the schedule speed, as factors in the operation of the company, are reproduced herewith. The total figures used in arriving at the unit quantities determining these were in each case taken from the company's official summary sheets. The total sums of each item used in deriving the units were used, so that the units represent grand averages. For instance, the schedule-speed unit for each year was arrived at by dividing the total car-miles of the entire system by the total car-hours. Thus in both items are included regular cars, tripper cars, extra cars, etc., and also layover time at the ends of lines if there was any, although there is none under ordinary practice. The item of passengers per car-mile unit was obtained by dividing the total cash, ticket, transfer and complimentary fare passengers by the total car-miles. The unit energy consumption was figured by dividing the total kilowatt-hour consumption as summed up from the kilowatt-hour readings on all the railway feeders at all the substations, thus including the line and collector losses, energy used by electric welders, grinders and miscellaneous track machines and tools and the car-lighting and heating energy, by the total car-miles for the year. The energy consumed by the Clinton and Muscatine interurbans is also included in the substation meter readings, but their mileage is not reckoned in the total mileage, so that the unit energy figures computed on the basis of these two totals are somewhat higher than the actual figures. For 1917 the records cover only nine months. When the remaining three months are included, they will have the effect of slightly increasing the kilowatt-hour per car-mile consumption, and slightly raising the passenger per car-mile units for the year, on account of the increasing riding as the holidays are approached, and on account of the bad weather and rail conditions and the fact that the electric car heaters will be on a good deal of the time.

### THE PSYCHOLOGY OF CHECKING CAR OPERATION

One of the important accomplishments noted by the Davenport company as the result of the meter installation on the cars, is the psychological effect of the metering of each man's consumption. This places the men in competition with one another and if the desire to hold first place in the comparison of men is not the principal impelling motive, then at least the desire not to be in last place or near the bottom is controlling. The men are frequently found in groups discussing how they had improved previous records or why some motorman's poor work naturally placed him at the bottom of the comparative list.

This audible evidence of the psychological influence



OPERATING DATA FOR CARS OF TRI-CITY RAILWAYS—METERS INSTALLED JUNE, 1915

(System—Year Averages)

of the meters is extremely important in its bearing upon the results to be obtained with economy devices, for once the men come to a thinking consciousness of the use of energy, and with this thoughtfulness maintained prominently in their minds through the comparative checking of their operating skill, then is a long advance made in the saving of power.

Other evidence has been furnished the Tri-City Railway of the value of the economy meter as a saving influence, through the check it gives on the condition of brakes and motors. The motormen soon learned that dragging brakes materially affected their energy consumption records. Accordingly, cars were promptly turned in in considerable numbers at the end of the first run each morning, during the first few months the meters were installed. This gave a direct check on the night men responsible for the brake adjustment. In order to reduce the number of turn-ins from this cause, John Sutherland, master mechanic, has made use of a shim which is placed between the wheel and the brakeshoe during adjustment. This shim is  $\frac{1}{4}$  in. thick and the shoe is tightened up against it so that a practically uniform adjustment is maintained. Anderson slack adjusters are now being installed to reduce the amount of this inspection labor.

The meter also affords a very valuable check on the motors. For instance, if a car shows a sudden increase in energy consumption of 10 kw.-hr. for a day's run, when weather conditions and traffic are normal, this gives very dependable evidence of a defect in the motors, and these are tested that night for a short-circuited field coil. Such a short between two or three adjacent turns of a field coil might exist in a motor continued in service for years without detection of the fault, were it not for the presence of the meter. Other inherent motor failures which do not noticeably affect the running characteristics of a car are likewise promptly made known by a close following of the car energy consumption records, and the motors are thus maintained in their most efficient state.

## Strength of Gas-Welded Joints in Steel Plates

A series of tests of the strength of joints welded by means of the oxy-acetylene process in mild steel plates has been completed by the Engineering Experiment Station of the University of Illinois on specimens supplied by the Oxweld Acetylene Company of Chicago. Tests were made under three conditions of loading: (a) static load in tension (in a testing machine), (b) repeated load (bending), and (c) impact in tension (in a drop testing machine). The station, located at Urbana, Ill., will furnish free on request copies of Bulletin No. 98 containing the results of the tests in full.

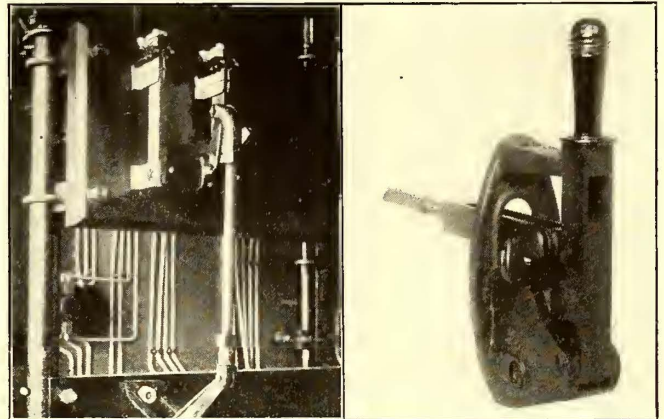
By way of summary it may be said that, for joints made with no subsequent treatment after welding, the joint efficiency for static tension was found to be about 100 per cent for plates  $\frac{1}{2}$  in. in thickness or less, and to decrease for thicker plates. For static tension tests, the efficiency of the material in the joints welded with no subsequent treatment was found to be not greater than 75 per cent. The joints were strengthened by working the metal after welding and were weakened

by annealing at 800 deg. C. For static tests and for repeated stress tests, the joint efficiency sometimes reaches 100 per cent; the efficiency of the material in the joint is always less. This indicates the necessity of building up the weld to a thickness greater than that of the plate. The impact tests show that oxy-acetylene welded joints are decidedly weaker under shock than is the original material; for joints welded with no subsequent treatment, the strength under impact seems to be about half that of the material.

In general, the test results tend to increase confidence in the static strength and in the strength under repeated stress of carefully made oxy-acetylene welded joints in mild steel plates.

## Back-of-Board Type Field Switches

In the starting of a synchronous motor from an alternating-current source with the field open-circuited, which is the practice of the General Electric Company on all alternating-current motors using 125-volt excitation, there is considerable induced voltage across the field terminals until the motor reaches synchronous speed. Under these conditions an exposed field switch on

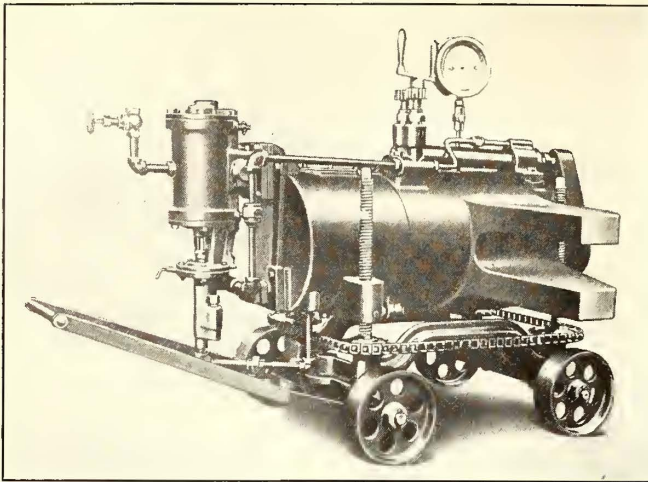


FIELD DISCHARGE SWITCH ON BACK OF SWITCHBOARD, AND OPERATING LEVER USED ON FACE OF BOARD

the front of a switchboard is more or less of a source of danger to the operator.

The company recommends as a method of reducing this danger in connection with hand-operated field switches the back-of-board switch shown. This switch embodies all the essential features from a safety-first viewpoint. It consists of an operating handle similar to an oil circuit breaker lever mounted on the front of the board and the switch proper mounted on a slate base, which is supported on a framework back of the switchboard. The switch is connected mechanically to the operating handle by means of connecting rods and bell hangers. This locates all live parts on the back of the board. This type of switch can be used also in connection with alternating-current generators, and with high-voltage direct-current generators for 1200 volts or more. In the latter case the field switch is single pole instead of double pole.

On synchronous motors utilizing 250-volt excitation it is the practice to start with the field short-circuited through the discharge resistance. In such cases a double-pole switch is provided to short-circuit the field through the discharge resistance during the period of starting.



PORTABLE PNEUMATIC PRESS

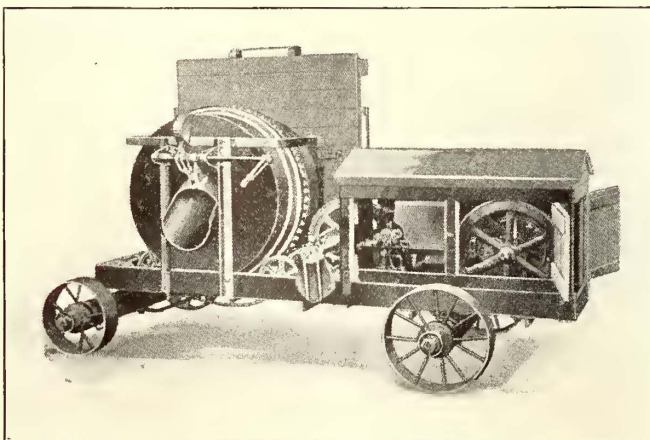
### Pneumatic Press for Shop Use

For electric railway shop use the portable press shown in the illustration has been developed by the Watson-Stillman Company of New York. The main portion of the press is an open-hearth steel cylinder on the sides of which are heavy cast-iron forks. These forks are used to support the rods which hold the work against the operating ram. The ram operates from the front of the cylinder casting. The whole unit is mounted on four vertical threaded supports, so that the center line of the ram can be raised or lowered to suit the work to be done. An air engine, pump, and reservoir are mounted on the rear of the press, and it is necessary only to connect the press with the air supply as with other pneumatic tools. The press is equipped with a gage which accurately indicates the pressure being applied.

### Mixer with Underslung Chain Drive

The T. L. Smith Company, Milwaukee, Wis., is putting on the market a new type of Smith-Chicago concrete mixer, a special feature of which is an underslung chain drive. The chain, instead of passing around the mixer drum, goes under the truck frame, around an idler pulley on the roller shaft, and back under the drum. This not only permits the use of a shorter chain and decreases the friction, but the chain, being in contact with fewer teeth, is less likely to ride off.

Another new feature is a self-locking discharge chute



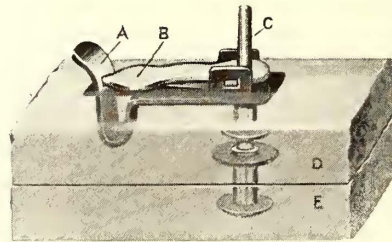
VIEW OF CONCRETE MIXER WITH UNDER-SLUNG CHAIN

designed to eliminate the tendency of the concrete to flip the chute when falling upon that portion of it inside the drum. The chute is simply inserted in the drum, and the toggles automatically lock. It can be operated from either the feed or discharge side.

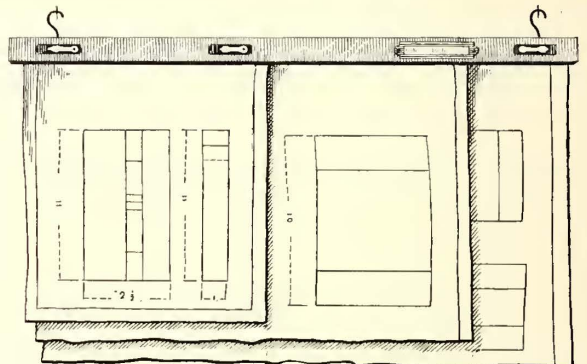
The machines are furnished with a power charger or a charging platform 18 in. high, which can be removed or hooked up in a vertical position. They are equipped for either steam or gasoline power.

### Simple Holder for Filing Drawings

The National Company, Boston, Mass., is putting out a new device called the "Presto Holder," for filing blue-prints, drawings, etc. The holder consists of two wood strips, designated as *D* and *E* in one of the illustrations, between which the prints are clamped. It carries three locking devices, the middle one being located off center for convenience in clamping narrow prints. The locking mechanism has two parts, *A* and *B*, which are pressed



convenience in clamping narrow prints. The locking mechanism has two parts, *A* and *B*, which are pressed



HOLDER CLAMPING DEVICE AND DRAWINGS IN POSITION

as desired either to lock or to release, *B*, from the stud *C*, which is securely fastened in the lower strip.

The holders are made in 30-in., 36-in. and 42-in. lengths, each holder having a capacity of sixty prints. An index card holder is attached for filing purposes, and hooks are provided for hanging on the wall or in rows on a suitable rack.

### New Insulating Material

An insulating material, to be known as "Dorrite," said to be fire, water and acid proof, has been developed by Harry A. Dorr, and will be made by the Dorrite Insulating Company, Inc., Newark, N. J. It is composed chiefly of chemically treated pulverized waste material which can be molded, stamped or pressed into many shapes and sizes, and can be sold at a reasonable price.

A piece of this material, 3 in. in diameter and 1/8 in. thick, withstood successfully a test pressure of 40,000 volts after it had been immersed in water for seventy hours, and again after it had been boiled for one hour in cutting oil at 650 deg. Fahr. A piece 6 in. square and 1/8 in. thick was tested at 88,000 volts in oil without showing evidences of breakdown, and another piece the same size was unchanged after immersion in a 10 per cent solution of sulphuric acid for nineteen days.



# News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

## Decision Against Labor

### Right of Employers to Prevent Solicitation of Non-Union Employees for Union Membership Upheld by the U. S. Supreme Court

The right of employers to prevent labor unions from soliciting non-union employees to join the labor organizations was upheld on Dec. 10 by the United States Supreme Court by a divided vote of six to three, in test cases against the United Mine Workers of America and the American Flint Glass Workers' Union.

Methods of the labor organizations in attempting to unionize the "open shop" workmen and bring about strikes were declared "unlawful" and "malicious." Injunctions granted previously by Federal Judge Dayton, in West Virginia, to prevent the union activities, were sustained.

The court admitted the right of workmen to organize into unions for lawful methods, but held that the employers were entitled to operate their plants "open shop," and to protection.

The court holds that what the defendants were endeavoring to do at the Hitchman mine and neighboring mines was not a bona-fide effort to enlarge the membership of the unions, since the new members were not desired or sought except as a means to the end of compelling the owners of the mines to change their methods of operation.

#### WHAT THE COURT SAID

The majority opinion says in part:

"The Supreme Court holds that the plaintiff was acting within its lawful rights in employing its men upon the terms that they should not be members of the United Mine Workers; that, having established this working agreement between it and its employees with the free assent of the latter, the plaintiff is entitled to be protected in the enjoyment of the resulting status as in any other legal right.

"By way of justification or excuse, defendants set up the right of workingmen to form unions and enlarge their membership by inviting other workingmen to join. The opinion of the court freely conceded this right, provided the objects of the union be proper and legitimate, which is assumed to be true in a general sense, with respect to the United Mine Workers of America.

#### MUST NOT INJURE OTHERS

"But the court holds that it is erroneous to assume that this right is so absolute that it may be exercised under any circumstances and without any qualification; that in truth it must always be exercised with reasonable regard for the conflicting rights of others.

"Hence, assuming that the defendants were exercising the right to invite men to join their union, nevertheless, since they had notice that plaintiff's mine was run non-union, that none of the men had a right to remain at work there after joining the union, and that the observance of this agreement was of much importance and value both to plaintiff and to its men who had voluntarily made the agreement and desired to continue working under it, the defendants were under a duty to exercise care to refrain from unnecessarily injuring plaintiff. Yet they deliberately and advisedly selected that method of enlarging the union membership which would inflict injury upon plaintiff and its loyal employees, by persuading man after man to join the union, and, having done so, to remain at work, keeping the employer in ignorance of their number and identity, until so many should have joined that by stopping work in a body they could coerce the employer and the remaining miners to organize the mines. The conduct of defendants in so doing was unlawful and malicious."

## Amended Lease Presented

### Representatives of Philadelphia City Administration Present Modifications of Proposed New Agreement with Philadelphia Rapid Transit Company

Dr. William Draper Lewis and Director of City Transit Twining, on behalf of the city administration of Philadelphia, Pa., on Dec. 7 submitted to the joint committee on street railways and finance of City Councils a proposed lease between the city and the Philadelphia Rapid Transit Company which provides for the abolition of exchange tickets, the installation of a 5-cent fare with universal free transfers, an assured 5 per cent return to the company, automatic raising or lowering of the 5-cent base rate according to the amount of the net revenue, a board of supervising engineers to consist of two members, and equal division of net revenue by city and company. The option is reserved to the city, however, of deciding whether deficits shall be met by taxation or increased fares.

#### THE REASON FOR THE CHANGES IN THE ORDINANCE

The proposed contract and lease of the city's high-speed lines to the company was submitted to Councils on Aug. 17. The ordinance embodying the proposed contract was referred to the committee. During the latter part of September and the early part of October a series of public meetings was held which afforded opportunity for a full and free discussion of every phase of the proposed lease and the intricate problems involved in providing for the operation as a unified system of all transit facilities. At the conclusion of the series of hearings Messrs. Lewis and Twining, although certain that the contract proposed was fair alike to the city and the company, were convinced that the discussion showed that further consideration should be given to:

1. The abolition of the exchange tickets, at least inside of the delivery district.
2. The insertion of a definite provision reducing fares when an existing fare exceeded the fare requirements of the contract, and in general more definite provisions regarding the method of presenting to the commission changes in fares.

Messrs. Lewis and Twining were also satisfied that the discussion also showed the desirability of:

1. The insertion of a definite provision to enable the city from time to time at its option to reduce the fare requirements of the contract by relinquishing to such an extent as it may desire, and for such periods as it may determine, the rental paid for the use of the city's high-speed lines.
2. The insertion of a definite provision making it clear that the board of supervising engineers created by the contract, while having power to require the company to furnish adequate equipment and good service, will have no power to alter, postpone or delay the building or operation of any line which Councils has heretofore or may hereafter determine to build.
3. The insertion of a definite provision making it clear that the board shall not usurp any power vested by law in the director of the department of city transit or the Public Service Commission, and that nothing in the contract shall prevent any person bringing before the commission, without being first required to go to the board, any matter within the jurisdiction of the commission.

4. The modification of the organization of the board so as to meet the objection that as originally planned it may be subject to political or other influences interfering with its full efficiency.

In addition to the above matters the representatives of the

city administration were convinced that while there was no general objection to the assurance to the company of a fare which would give to the company's stockholders a reasonable dividend, if practicable it was desirable to provide that the maximum dividend which the stockholders could receive should be less than a 6 per cent cumulative dividend from the date upon which the contract becomes effective.

#### WHAT THE AMENDMENTS AIM TO ATTAIN

Messrs. Lewis and Twining say that the amended lease as it now stands aims to attain the following objects:

1. To make sure that the city for the next forty years will be provided with proper service and efficient transit facilities.
2. To relieve congestion on the surface of the streets in the business districts.
3. To provide an efficient operator for the unified system, whose interest will not be centered on one branch of the service to the detriment of other branches.
4. To provide proper compensation for the operator of the unified system.
5. To provide that the interest and sinking fund payments on the city's investment in transit lines should be provided surely and certainly.
6. To release the city's borrowing power as soon as possible.

In this connection the city's representatives say that they believe that the principles underlying the draft of last August were correct, and that those principles are applicable, whether it be that war exists or not. Those principles are:

1. That such unified service as the people desire should be furnished at a minimum cost.
2. That the cost of that service should be supplied by the users of that service.
3. That the authority of the Public Service Commission to regulate service and fares should be fully recognized.

The main differences between the articles on the distribution of gross revenue and on fares in the contract as first submitted and as now amended are summarized as follows by Messrs. Lewis and Twining:

1. The return on the city's investment was placed before the return on the company's investment. Under the amended contract the return on each is placed side by side.
2. The company's stockholders would have had an assurance of a 4 per cent dividend, a probable 5 per cent dividend and a possible 6 per cent dividend. As amended the stockholders have an assurance of a 5 per cent dividend and are limited to a 5 per cent dividend throughout the term of the contract.
3. Fares were to be revised upward by the company filing the new schedule. As amended the board will file the schedule, and the city will have a voice in determining how the schedule will be arranged.
4. There was no express provision for the revision of fares downward. Such revision could have been effected by the commission acting on a petition of citizens or on recommendation of the board. Now fares are reduced by the board filing a reduced schedule with the commission whenever the surplus earned under the contract has reached \$2,000,000.

#### THE FINANCIAL RISK DIVIDED

In regard to the matter of the financial risk the report now presented says:

"For two years the city negotiated with the company on the basis of a division of this financial risk. Last January the company submitted a proposal in which the company agreed to limit its share in the profits of the business to a guarantee of 5 per cent on its capital stock, and the city would have assumed all future risks of the business. This proposition was rejected by the city, and under a counter-proposition introduced last August the company was to assume the risks of the business, in return for which the city assured the company that it should not receive less than 4 per cent and might receive as much as 6 per cent upon its capital stock. The present amended draft is based on a plan under which the business risk is assumed equally by the city and the company and the company's profits from the business are limited to 5 per cent on its outstanding capital stock."

With respect to the exchange tickets the report says:

"Everyone has realized the expediency of abolishing the exchange ticket and has also realized that the unified system needed for its proper operation not only all its present revenue, but much additional revenue, and therefore the revenue represented by these tickets must in some way be replaced. The lease of last August and the amended form of that lease which is now before you each proposed that the loss of revenue due to the abolishing of the ticket should be restored by a revision of the fare when necessary, which provision should be so made that it would not be held discriminatory, unjust or unreasonable by the commission."

Aside from the changes introduced to clarify moot points of interpretation, the fundamental difference between the present lease and that to which it is an amendment has been summarized as follows: Whereas the lease of August last made the city's interest and sinking-fund charges a preferred payment out of net revenue over the company's dividends, put all the risks of the business on the company, but gave it an assurance of 4 per cent with a probability of 5 and a possibility of 6 per cent dividend, the new lease puts the city and the company on a level as to risks, the distribution of net revenue being made in proportion to the respective investments of the city and the company in transit facilities. A surplus is provided for to meet fluctuations in revenue, and the company is given an assurance of 5 per cent and no more.

#### A. MERRITT TAYLOR OBJECTS

A. Merritt Taylor, former director of city transit, in a long statement issued on Dec. 9, announced his opposition to the revised lease and suggested that further negotiations between the city and the company, so far as the whole system is concerned, be deferred until after the war. Meanwhile, he suggested that a temporary agreement be negotiated between the company and the city for the operation of the Frankford line as an extension of the Market Street subway. And furthermore, that the exchange-ticket problem, together with the company's fare requirements, be placed before the Public Service Commission for investigation and decision.

Dr. Lewis replied on Dec. 10 to Mr. Taylor's criticism of the revised lease, making the point the former transit director had, in the past, opposed the making of separate leases. Further, Dr. Lewis answered the suggestion for a deferring of negotiations until after the war with the declaration that the very fact that times were abnormal made it possible for the administration to present the best possible lease.

## Sympathetic Strike Called Off

A general strike of allied trades labor unions was ordered for the Twin Cities as an outcome of the recent strike and lockout of the men in the employ of the Twin City Rapid Transit Company for refusing to obey the order of the Minnesota Safety Commission for the removal of union insignia when on duty as trainmen. The general strike was being voted on Dec. 11 and 12 by different unions. This action followed the refusal of Governor J. A. A. Burnquist to submit the question to arbitration to Washington at the request of Samuel Gompers. John Lind of the commission is in Washington. He was urged by Mr. Gompers to represent the commission on the arbitration board. It was estimated that a general strike would involve 40,000 men. It was believed that the strike agreement would obviate the need for the general convention planned for Minneapolis on Dec. 11 and postponed until Dec. 12 to learn from the Twin City labor delegation sent to Washington whether there would be federal interference.

Telegraphic advices from Minneapolis to this paper on Dec. 14 reported the sympathetic strike a fizzle. Only a few men reported out and some unions did not even take a strike vote. The strike was called off in three hours by President E. G. Hall of the Minnesota State Federation of Labor after information had been received from Washington that the Secretary of War had requested the president of the mediation commission in Seattle to stop in the Twin Cities on Dec. 17 on the way east and investigate the situation informally. Electric railway service was about normal on Dec. 13, considering the cold.

## Supreme Court Upholds Commission

Authority of New York Body to Order Private Companies to Increase Service Confirmed by the Court

The authority of the Public Service Commission of the First District of New York to order public utility corporations to increase service was confirmed by the United States Supreme Court in a decision handed down on Dec. 10 in the case of the commission against the Queens Gas Company. On an application by citizens living in Douglaston and Little Neck, the commission directed the company to extend its mains from the terminal at Flushing to these localities. Testimony offered by the company was to the effect that the return on the investment of \$60,000 required to be made by the commission would not be more than 3 per cent, and that therefore the order was unreasonable. The commission insisted that its order be obeyed, and denied that it was unreasonable, because the growth of the communities interested was so rapid as to speedily insure a fair net return on the expenditure. The Appellate Division set the order aside on the ground that when the commission law referred to the reasonableness of an order it meant reasonable in the opinion of the court and not in that of the commission. The Court of Appeals reversed this opinion. It held that the commission was entitled to determine questions of fact and of policy involved as to what was reasonable, and that the courts could not substitute their judgment for the "fact findings" of the commission. The gas company thereupon carried the case to the United States Supreme Court on a writ of error.

## Waterloo Franchise Passed

The new franchise for the Waterloo, Cedar Falls & Northern Railway in Waterloo, Iowa, the terms of which were outlined in the *ELECTRIC RAILWAY JOURNAL* for Nov. 24, page 961, was passed at the Dec. 5 special election by a substantial majority. The franchise provides that the city shall share in the profits when the gross income for the entire property has exceeded 5 cents per car-mile over and above the cost of operation, to the extent of 10 per cent. A number of improvements in the property are specified and must be made within a certain time limit. Among other things these include the purchase of twenty new fully-equipped one-man cars which it is said the company will order in the very near future.

## M. O. Bill for New York City

A draft of a bill providing for municipal ownership of surface railroads in the city of New York, which it is proposed to ask the Legislature to enact into law, was submitted to the Public Service Commission on Dec. 12 by Commissioner Travis H. Whitney. Copies of the measure will be sent to various civic organizations, to the railroad corporations, and to other persons especially interested in municipal ownership. All will be invited to participate in a public hearing in the rooms of the commission on Dec. 20.

Under the provisions of the present rapid transit act the commission may, with the approval of the Board of Estimate, acquire for the city any railway which might be used for rapid transit. It is also provided that the money necessary for the purchase shall be paid by city bonds. These powers, under the proposed bill, would be extended to permit the acquiring of "any line or lines of street surface railroad already constructed or in process of construction which, in the opinion of the commission, it is for the interest of the public and the city to acquire in order that the same shall be operated for a single fare in conjunction or in connection with any existing rapid transit railroad owned by the city or of which the receipts are combined with the receipts of any road of the city under any contract made pursuant to this chapter."

Some few weeks ago Commissioner Whitney made a speech in Flushing in which he suggested that the companies, in view of the losses which they have said they suffered recently, might view with complacency the purchase of the roads by the city. A long extract from this speech was published in the *ELECTRIC RAILWAY JOURNAL* for Dec. 1, page 1003.

## Skip Stops and Rerouting Withdrawn

Detroit United Railway Complies with Reprisal Measures Adopted by the Council Following the Recent Fare Increase

In compliance with reprisal measures adopted by the Common Council of Detroit, Mich., following the action of the Detroit United Railway in raising fares to 5 cents straight, the company on Dec. 7 discontinued skip-stop operation and put cars back on routes which were used prior to the adoption of the general rerouting plan in the downtown district. The Council in an effort to punish the company for the fare increase abolished the skip-stop and rerouting plans. The latter plan had cost the company \$500,000 in the way of special track work, curves, etc., and the plan followed was one which was recommended by engineers employed by the city.

### SERVICE SLOWED UP

Since the abolition of skip stops and rerouting the congestion of cars in the downtown district has been so bad that car riders find that it now takes them from twenty minutes to a half hour longer to get home than it did before the Common Council took its drastic action. Public indignation led Mayor Marx on Dec. 11 to send a communication to the Council asking that skip stops and rerouting be re-established. The ruling faction in the Council, however, is at war with the Mayor and the recommendation of the chief executive of the city was promptly voted down at the Council session by a vote of twenty-four to sixteen. The Council then adopted a resolution providing for the appointment of a committee of five of its own members to draft an ordinance providing for a stiff rental for the use of the streets on which franchises have expired and also to consider action toward ousting interurban and freight cars from city streets.

The situation regarding fares and investigation of the company's books to determine whether the increase was justified has been complicated by a measure adopted by the Council. A week ago the Council voted a fund of \$35,000 for an investigation to be made by engineers to be employed by the Municipal Railway Commission. The members of the commission were all appointed by Mayor Marx, and the Aldermen therefore consider it as the Mayor's commission. So that the Mayor may not get any glory out of the investigation the Aldermen have practically decided to stage an inquiry of their own in addition to the Mayor's. A resolution for the purpose of engaging engineers to probe the company's affairs has been referred to the ways and means committee, the chairman of which is the political boss of the Council and the probable opponent of Mayor Marx in the mayoralty campaign next year.

### PEOPLE'S REPRESENTATIVES ALONE RESPONSIBLE

Meanwhile the company is collecting 5-cent fares and is putting the responsibility for the present inadequate service squarely up to the Aldermen. In *Electric Railway Service* for Dec. 14, the company states to the public:

"Your representatives in the Common Council are alone responsible for what has happened. If the manner in which the cars do not get through the center of the city and do not get you to your destination in the same time as before Dec. 7 pleases you, they must have the glory. It is not our intention to take it from them. Our repudiated solons are so accustomed to 'pass the buck' that they are trying to do it again and under cover from the effect of their angry action. They cannot 'pass the buck' to us. We decline to accept it. We are keeping our word as the people well know. If the Council will not let us put these cars through on time; if the Council insists on wasting the people's time, it cannot be charged to us, and we do not propose to let any newspaper or Alderman get away with any such charge. If any Alderman endeavors to shift responsibility by suggesting that we are holding back cars, tell him he says what is not so."

In regard to the \$10,000 a day rental resolution adopted by the Council, Harry J. Dingeman, Corporation Counsel, declares that it cannot be enforced by the city. The company states positively that it will not even consider the payment of a rental, declaring that this would only add to the company's expense and consequently make an even higher rate of fare necessary. Mr. Dingeman says that while the city cannot collect a rental it can order the company off the streets where franchises have expired.

## Mail Delay Explained

War is no respecter of persons. Uncle Sam himself is not exempt from its inconveniences. This, in a word, accounts for the slow and irregular deliveries of their papers, concerning which some of the readers of the *ELECTRIC RAILWAY JOURNAL* have written us. A careful investigation has been made into the causes for the complaints. The irregularities that have occurred are traceable to the unprecedented congestion of the mails. This in turn is due, in part, to the war program of curtailing train schedules, but mostly to the going into military service of many thousands of postal clerks. The post office authorities promise that no stone will be left unturned to get back to normal service at as early a date as possible. Meanwhile, until the necessary readjustments in service are made and new clerks are trained to take the places of the enlisted men, readers are requested to be tolerant and patient.

## George Ade at His Best

### Advises Americans More Than Thirty How to Help to Win the War

This is no time to waste precious hours and vocal energy in trying to prove that two and two make four, and water is wet, and the sun sets in the West, and the mad dog of Prussianism must be muzzled.

#### THE BILIOUS FEW

Do not try to convince the miniature La Follettes, because they do not wish to be convinced. They derive a bilious comfort from being different. They have learned that no cloud has a silver lining; it is festooned on the interior with crêpe.

#### THE TWO-LEGGED CRAB

If all the optimists along your street should arise some morning into a world bedecked with dew sparkles and exclaim in unison, "What a beautiful, sunshiny day!" then some two-legged crab would emerge from behind a lilac bush and say, "Yes; but I think it'll rain before night."

#### BEWARE THE BANANA SKIN

If you find a banana skin on the threshold of patriotic opportunity, kick it aside and do not permit yourself to become fussed.

The stalwart men and women of middle age are to keep the home fires burning during the supreme ordeal now at hand.

They are to raise the crops, speed the factories, collect the taxes, organize the home guards, conserve the wheat and meat and sugar, pack up the Red Cross, peddle the Liberty Bonds, write the letters, pack the comfort kits and stand by for orders at all times.

If a busy worker feels some one tugging at his coat tail, the thing to do is to kick straight back and kick hard, but do not waste time in looking around.

#### AN IMPORTANT TIP—DON'T BRAG

By the way, here is an important tip for every man past thirty. Do not tell around that you would be keen to enlist if you were just a little younger. Some of the men just under thirty will have their doubts, and even those who believe you will not find entertainment in your conversation.  
—George Ade.

## Strike on Ohio Interurban

Motormen and conductors of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, struck on the morning of Dec. 10, after the company had offered to increase the wage scale 4 cents an hour from Dec. 1 of this year to April 1, 1919. The men demanded an increase of 8 cents an hour. The increase offered by the company would have made the wages of the men 32 cents for the first year, 34 cents for the second year and 36 cents for the third year and thereafter. They are under contract with the company at the present scale until April 1, 1918. About \$40,000 additional expense would have been incurred by the company in paying the advance of 4 cents an hour. The management felt that with interurban conditions as they are, this is all

that could possibly be offered. About 300 men are involved in the trouble. Substation men are on duty and the light service has not been affected.

**War Bonus in Davenport.**—The Tri-City Railway & Light Company, Davenport, Iowa, has announced that it will pay a 7 per cent bonus on the wages to all employees during the period of the war. The bonus will be distributed every three months.

**Novel Use for Thrift Stamps.**—At a luncheon of the Institute of Electrical Contractors held in New York City on Dec. 10 a speaker suggested the use of thrift stamps in giving tips for service. His practice was to give a waiter no cash tips but, when the service warranted, to give a thrift card with a stamp attached or a loose stamp.

**Cleveland May Have Public Utility Counsel.**—W. S. Fitzgerald, director of law of Cleveland, Ohio, is preparing legislation for the creation of the office of city public utility counsel, whose duty it would be to gather data in regard to utilities and conduct preliminary negotiations for all franchises that may be asked of the City Council.

**Valuation of Omaha Lines by Commission.**—The City Council of Omaha, Neb., has adopted a resolution requesting the State Railway Commission of Nebraska to make a physical valuation of the property of the Omaha & Council Bluffs Street Railway. This information is desired in connection with suits relating to franchise rights and to rates of fare.

**Increase in Wages in York.**—The York (Pa.) Railway has announced an increase of 10 per cent to all wages below \$100 a month, effective from Dec. 1, to help the employees to meet the present living costs. Gordon Campbell, president of the company, stated that the company will probably ask for a slight increase in rates in order to meet the increased wages and federal taxes, maintain the railway in first-class condition and provide for the growth and improvement of the property.

**Short Strike on Utah Line.**—Traffic was suspended on the lines of the Salt Lake & Utah Railroad, Salt Lake City, Utah, for about twenty-four hours when a majority of the trainmen and other employees struck recently to enforce their demand for the reinstatement of one of their number. Formal letters were mailed to all of the men notifying them that they had been discharged and calling upon them to turn over all the property of the company in their possession. They were also told to call immediately for pay checks. The places of the strikers were filled with experienced men and none of the employees who was responsible for the strike will be allowed to return.

**Conciliation Board Reports.**—The board of conciliation and investigation appointed by the Labor Minister recently in connection with differences between the Ottawa (Ont.) Electric Railway and its employees, has filed its report. The matters in dispute were in relation to certain alleged violations by the company of provisions of the agreement entered into with the men on July 10. The board found that there was no real difference between the company and the men. Misunderstandings had arisen, as a result of a failure to come together for complete discussion such as the board was able to bring about, and as a result the misunderstandings disappeared and mutual assurances were given which are practically certain to result in harmonious operation in the future.

**Delay in Operation of Steel Cars.**—The Public Service Commission for the First District of New York has been informed by officials of the New York Municipal Railway Corporation that several weeks must elapse before the necessary work can be done to station and structure, so as to permit of the operation of all-steel cars through the Center Street Loop in Manhattan and over the Broadway-Myrtle Avenue elevated line in Brooklyn. Changes must yet be made to the elevated railroad structure at the Wyckoff Avenue station on the Myrtle Avenue line, and some minor changes in the station in the Center Street loop subway must also be completed before the all-steel car operation is possible. It is believed that this operation when begun will result in a very greatly increased service, owing to the fact that the capacity of each steel car is estimated as approximately 20 per cent more than the wooden car.

# Financial and Corporate

## Annual Report

### Kansas City Railways

The comparative income statement of the Kansas City (Mo.) Railways for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation...	\$6,909,603	93.26	\$6,576,233	93.19
Revenue from other railway operations .....	498,416	6.74	480,271	6.81
Railway operating revenue .....	\$7,408,018	100.00	\$7,056,504	100.00
Maintenance of way and structures .....	\$802,060	10.83	\$755,606	10.71
Maintenance of equipment .....	374,899	5.06	459,649	6.51
Maintenance of power buildings and equipment .....	65,154	.88	66,557	.94
Power—operating .....	734,957	9.92	594,528	8.43
Conducting transportation .....	1,866,038	25.18	1,755,598	24.88
Traffic .....	2,041	.03	3,069	.04
Board of Control .....	31,308	.42	23,441	.33
Injuries and damages after July 8, 1914 .....	321,755	4.34	304,010	4.31
General and miscellaneous .....	323,722	4.37	281,110	3.98
Railway operating expenses .....	\$4,521,935	61.03	\$4,243,268	60.13
Net operating revenue .....	\$2,886,084	38.95	\$2,813,236	39.87
Taxes .....	473,150	6.38	434,486	6.16
Operating income .....	\$2,412,934	32.57	\$2,378,750	33.71
Miscellaneous income, company .....	\$30,453	.41	\$3,850	.06
Miscellaneous income, joint .....	6,031	.08	11,398	.16
Non-operating income .....	\$36,484	.49	\$15,248	.22
Gross income .....	\$2,449,418	33.06	\$2,393,998	33.93
Interest on Missouri injury and damage certificates .....	34,342	.46	.....	.....
Surplus above 6 per cent on capital value to be applied as provided in franchise .....	\$2,415,076	32.60	\$2,393,998	33.93
Company's share .....	411,302	5.55	506,315	7.17
Company's share .....	\$2,003,774	27.05	\$1,887,683	26.76
Company's income:				
Net income from Missouri properties .....	\$1,652,722	22.31	\$1,626,450	23.06
Net income from Kansas properties .....	320,599	4.33	257,382	3.65
Income from unfunded securities and accounts .....	21,386	.29	3,851	.05
Bond exchange fees .....	14	.....	.....	.....
Discount on bonds purchased for sinking fund .....	9,053	.12	.....	.....
Gross income, company .....	\$2,003,774	27.05	\$1,887,683	26.76
Deductions from company's income:				
Bond interest .....	\$1,442,569	19.47	\$1,269,724	17.99
Bond discount and expenses .....	1,524	.02	503	.01
Services of registrars and trustees .....	4,033	.05	1,016	.01
Interest on Kansas injury and damage certificates .....	6,937	.09	.....	.....
Kansas injuries and damages, prior to July 8, 1914, paid with cash .....	16,864	.24	19,996	.29
Taxes .....	1,106	.01	677	.01
Total deductions from income .....	\$1,473,033	19.88	\$1,291,913	18.31
Net income .....	\$530,741	7.17	\$595,770	8.45

The transportation revenue of the company for the fiscal year ended June 30, 1917, showed a gain of \$333,369 or 5.07 per cent, the passenger revenue increasing \$324,239 or 4.98 per cent. Mail revenue rose \$5,278 or 14.20 per cent, and freight revenue \$2,705 or 11.85 per cent. The gross revenue increased \$351,514 or 4.98 per cent.

Two maintenance items, for equipment and for power buildings and equipment, showed decreases of \$84,749 or 18.44 per cent, and \$1,403 or 2.11 per cent, respectively. The expenses for maintenance of way and structures, however, increased \$46,454 or 6.15 per cent, the net maintenance effect being a decrease of \$39,698 or 3.10 per cent. Power expenses rose \$140,429 or 23.62 per cent; conducting transportation, \$110,440 or 6.29 per cent, and general and miscellaneous, \$42,612 or 15.15 per cent. Traffic expenses fell

off \$1,028 or 33.51 per cent. Injury and damage payments on account of claims arising prior to July 8, 1914, are not charged to operations, and are, therefore, not included in the foregoing statement. For the purpose of comparing expenditures, the injury and damage account should read: For 1917, \$390,163 or 5.27 per cent of gross; for 1916, \$571,775 or 8.10 per cent of gross.

The total operating expenses showed an increase of \$278,667 or 6.57 per cent, and this was extended by an increase of \$38,663 or 8.90 per cent in taxes. The operating income, therefore, gained only \$34,184 or 1.44 per cent, and the gross income \$55,419 or 2.31 per cent. After paying \$400,000 in dividends and making appropriations of \$112,944 to sinking funds, the balance in the company's profit and loss account as of June 30, 1917, was \$194,844.

The company in 1917 carried 137,394,143 revenue passengers and 69,516,515 transfer passengers as compared to 131,075,084 and 67,342,528 in 1916, and operated 26,527,687 car-miles and 2,802,931 car-hours as compared to 25,892,693 and 2,734,480 respectively. The railway operating revenue per car-mile in 1917 increased to 27.92 cents from 27.25 cents in 1916, while the maintenance per car-mile fell off from 4.95 cents in 1916 to 4.68 cents in 1917. The total operating expenses per car-mile rose from 16.39 cents in 1916 to 17.04 cents in 1917, and the total operating expenses and taxes from 18.07 cents in 1916 to 18.82 cents in 1917. The operating income per car-mile decreased from 9.18 cents in 1916 to 9.10 cents in 1917, but the gross income per car-mile rose 0.01 cent to 9.24 cents. The total single-track mileage is 302,477, and the transportation revenue per mile of single track operated \$22,843.

The company has been called upon to make large expenditures in rehabilitating and improving its properties during the last three years. During this time 22.86 miles of single track have been constructed and, in addition thereto, 53.4 miles of single track have been completely rebuilt in the most modern way. There is now under contract and in the process of construction 3.69 miles of single track of extensions. Seventy-five new cars have been purchased and placed in operation and 238 cars have been rebuilt, of which number 174 were equipped with folding doors and steps. Considerable improvements are now being made to the power house at Second and Grand Avenues, and the construction of four new substations has been authorized, two of which have been completed. The expenditures for additions and renewals in the last three fiscal years totaled \$3,955,129, of which \$1,333,165 was for the last year. This was about half way between the totals shown for the years 1915 and 1916.

## Conferences in Paving Case

Hope is entertained that an amicable adjustment may be reached for the problems confronting the Chambersburg & Gettysburg Electric Railway. These all revolve around the paving question as a center. Some time ago the company asked for relief from paving charges sought to be imposed upon it by the Borough Council of Chambersburg, Pa. At a meeting of the Council in September the company filed a letter setting forth its side of the case. It is said that since 1905 the gross earnings had averaged only \$40,132 a year, the expenses \$37,748 a year, and the net income after the payment of taxes only \$1,739 a year. All of the net had been put back into the property for improvements and extensions. The company said that it would cost about \$16,800 to pave the six blocks called for in the ordinance. The carrying charges on this sum would amount to about \$1,680, or almost as much as the average annual net income of all the lines of the company for the last twelve years.

Subsequently the Borough Council presented a petition asking for a receiver for the company on the ground that the refusal to meet the paving charges forfeited the franchise rights in town and perhaps in the county. Twenty days' time was given to answer the petition.

The Chamber of Commerce appointed a committee to confer with a similar committee of the Borough Council to take up the railway situation. The joint committee met and as a result of its deliberations the committee of the Council decided to request the court not to act at this time upon the petition for a receiver. It is expected that meanwhile negotiations will be conducted toward a settlement.

## Receiver for Bay State

### Friendly Receivership Proceeding for Company Much in the Public Eye on Account of Its Fare Increases and Public Methods

Wallace B. Donham, Boston, was appointed receiver for the Bay State Street Railway on Dec. 12 by Judge Frederick Dodge, in the United States Court at Boston as the result of a bill in equity filed in the United States District Court in that city on Dec. 7 by A. McNeil & Sons Company, Bridgeport, Conn., a creditor to the amount of \$19,674 for coal.

The complainant in the case asked for a temporary receiver pending the appointment of a permanent receiver, setting forth that a receivership was necessary because of the present financial condition of the road, in order that it may continue to be operated in the interests of the public and also because it transports employees of munition factories and other concerns engaged in the manufacture of important supplies for the government in connection with the war with Germany. The complainant further set forth that a receiver was necessary to prevent a multiplicity of suits that might arise. The greater part of the complainant's bill was devoted to a recital of the road's finances and geographical conditions. As to finances, the bill alleged that the total outstanding funded debt as of Oct. 31, including bonds issued and assumed, amounted to \$24,345,500.

As to the income of the road the complainant set forth that the net income, without deducting non-betterment and depreciation charges, for the year ended June 30, 1914, was \$1,334,296; for the year ended June 30, 1915, it was \$1,005,401, a decrease of 25.82 per cent from 1914; for the year ended June 30, 1916, it was \$844,733, a decrease of 37.68 per cent from 1914; and for the year ended June 30, 1917, it was \$527,941, a decrease of 61.05 per cent from 1914. The net income after June 30, 1917, the bill stated, was subject to a further reduction of \$120,000.

It was alleged that the road from time to time had been authorized by the Public Service Commission to increase its rates of fare and to effect economies in its service with the result that its gross income had been increased since June 30, 1917, and was likely to be in the future substantially greater than during the fiscal years of 1916 and 1917. This increase had been more than offset, however, the bill set forth, by increases in wages, and by a very material advance in the prices of coal and all other materials used by the company. The bill alleged that since June, 1916, the company had paid no dividends on its common stock, while the 6 per cent cumulative first preferred stock, authorized to be issued to the par value of \$530,000, could only be disposed of to the Massachusetts Electric Companies. This stock, it was alleged, was used to reduce the debt of the defendant to the Massachusetts Electric Companies.

#### PRESIDENT SULLIVAN EXPLAINS

A statement by P. F. Sullivan, president of the Bay State Street Railway, follows:

"The receivership of the Bay State Street Railway is made necessary by the coincidence of unusual cash requirements and a lack of borrowing capacity. The large cash requirements proceed from the high cost of operation. The lack of borrowing capacity is due to the poor credit of electric railways. Their earning power is regarded as poor security. They can neither borrow money nor sell stock and bonds.

"These conditions are not permanent. It seems to me that the public is showing a better understanding of the transportation situation and that the earning power of electric railways is likely to be established in some way so that the investor will regard it as having stability.

"When this has been done the Bay State will be a valuable property. Its reproduction cost is much in excess of its outstanding capital. Its lines in general serve a prosperous and well-settled section. Some lines, it is true, are a burden and must be lopped off unless the communities served show a greater willingness than heretofore to pay the cost of service. Some additional money must be spent in equipment and other improvements. But as a whole the property is in good shape and under normal operating condi-

tions and with reasonable and proportionate rates of fare I expect to see the Bay State hold its own and make real progress.

"In fact, I think we are on the way up hill, and the receivership may be regarded as a breathing spell."

## Abandonment of Road Approved

The Illinois Public Utilities Commission has entered an order allowing the Alton & Jacksonville Railway to dismantle its road between Alton and Jerseyville. The order becomes effective on Feb. 1, 1918. This company found the operation of its road between Alton and Jerseyville a losing venture and asked the commission for permission to cease operation and to dismantle the road. The people of various towns affected, as well as farmers living along the road, protested to the commission, but the order was entered as described.

**Arkansas Northwestern Railroad, Bentonville, Ark.**—The Arkansas Northwestern Railroad has been abandoned and the track taken up. The company operated 8 miles of line, 5.87 of which were leased from the St. Louis & San Francisco Railroad. Service was furnished with a gasoline motor car.

**Beech Grove (Ind.) Traction Company.**—Increased operating cost, without corresponding increase in net earnings, is given as the reason for the appointment by the Indianapolis Circuit Court of a receiver for the Beech Grove Traction Company. Two suits were filed against the company. One was the suit of the Marion Trust Company, Indianapolis, representing the holders of an issue of \$100,000 of bonds upon which interest payments are in default since Oct. 1, 1916. The second suit was that of Christian F. Schmidt, president of the railway, who sought judgment on an overdue note of \$1,000. Mr. Schmidt said that the assets of the road were about equal to the bonds outstanding and the current obligations. He states that dividends have never been paid on the \$100,000 of common stock and the \$50,000 of preferred stock. The road was built in 1911. The property includes about 4 miles of track operated from the railroad station in Beech Grove to the corner of Shelby Street and LeGrand Avenue, Indianapolis.

**Electric Bond & Share Company, New York, N. Y.**—Lawrence H. Parkhurst, formerly manager of the bond department of the Old Colony Trust Company, Boston, Mass., has been elected a vice-president of the Electric Bond & Share Company.

**Fort Smith Light & Traction Company, Fort Smith, Ark.**—The Fort Smith Light & Traction Company will discontinue electric railway service to Arkoma. The line was constructed under a contract with the owners of the property when the townsite of Arkoma was originally laid out. The receipts have not been sufficient to pay the cost of the car rental and the labor engaged in the operation of the cars.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—The Central Trust Company, New York, N. Y., as trustee, on Dec. 5 brought a foreclosure suit against the Fort Wayne & Northern Indiana Traction Company, due to the default on Sept. 1 in the payment of interest on the \$1,059,000 of first and refunding mortgage 5 per cent bonds and the \$1,164,000 of collateral trust 6 per cent notes.

**Illinois Traction Company, Peoria, Ill.**—The Urbana & Champaign Railway, Gas & Electric Company on Nov. 26 was authorized by the Illinois Public Utilities Commission to issue \$136,000 of capital stock. Application was originally made to issue \$53,000 of consolidated and refunding bonds, \$51,000 of capital stock, and a second application was for \$32,000 of common stock. The application to the commission for bond issues was changed on motion at the hearing to permit an issue of a like amount of stock in place of bonds. The Danville Street Railway & Light Company on the same date was authorized to issue \$58,000 of consolidated and refunding bonds and \$23,000 of debenture bonds. A \$60,000 bond issue was authorized for the Decatur Railway & Light Company on Nov. 26. An application for authorization of \$49,000 of common stock by the Danville Street Railway & Light Company remained undisposed of on Dec. 5. The Danville, Urbana & Champaign Railway

has been authorized to issue \$180,000 of common stock and \$550,000 of preferred stock.

**Louisville (Ky.) Traction Company.**—A certificate of dissolution was filed in New Jersey on Nov. 28 for the Louisville Traction Company. This was in accordance with the plan referred to previously in the *ELECTRIC RAILWAY JOURNAL*. The company was chartered in New Jersey on July 3, 1903, with a capital stock of \$14,500,000, divided into 145,000 shares of which 25,000 were preferred stock and 120,000 common stock. On Nov. 27 the stockholders voted to carry out the plan of dissolution and authorized the directors to distribute to the preferred stock holders the preferred stock of the Louisville Railway owned by the company, share for share, and to distribute to the common stock holders the common stock of the railway company, pro rata, with scrip.

**Massachusetts Electric Companies, Boston, Mass.**—Brief mention was made in the *ELECTRIC RAILWAY JOURNAL* for Dec. 1, page 1008, of the appointment of a committee to protect the interests of the holders of the preferred shares of the Massachusetts Electric Companies. A committee consisting of Gale L. Stone, F. L. Higginson, Jr., and John C. Kiley has since been appointed to act in the interests of the holders of the common stock. Deposit is now asked of the 5 per cent three-year gold notes due April 1, 1918, under an agreement dated Nov. 30.

**Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.**—The exchange of the outstanding \$1,000,000 of 6 per cent preferred stock of the Newport News & Hampton Railway, Gas & Electric Company for \$850,000 of 7 per cent cumulative preferred stock and \$150,000 of common stock has gone into effect, and arrangements have been made with the present holders of the preferred stock whereby they agree to take an additional \$250,000 of the 7 per cent preferred stock at par, the stock to be issued to provide funds to meet the construction requirements of the company. Of this \$250,000 of new preferred stock \$6,900 has already been issued, making \$856,900 of 7 per cent preferred stock and \$1,275,000 of common stock outstanding.

**Ottawa (Ont.) Traction Company.**—The Ottawa Traction Company, Ltd., has declared an extra dividend of 1 per cent in addition to the usual quarterly dividend of 1 per cent.

**San Francisco-Oakland Terminal Railways.**—The San Francisco-Oakland Terminal Railways has filed with the California Railroad Commission an application for authority to issue a total of \$218,459 in promissory notes to banks in San Francisco and Oakland, at 6 per cent, on demand, and to pledge as collateral security its general lien mortgage bonds. These notes are in renewal of one-day notes issued on Dec. 16, 1915.

**Southern Traction Company, Inc., Bowling Green, Ky.**—A joint amended petition by the city and county has been filed against the Southern Traction Company asking that a receiver be appointed. The petition avers that it is the purpose and intention of defendant permanently to discontinue the service of its cars and system and to ignore the rights of the plaintiffs to have the cars run and operated. Several weeks ago the company's plant was sold to a St. Louis concern for junk. The city and county filed an injunction against the company to prevent the sale. Judge Moss in the Circuit Court granted the injunction and the case was appealed.

**Springfield Railway & Light Company, Springfield, Mo.**—An initial quarterly dividend of 1¼ per cent has been declared on the \$750,000 of 7 per cent cumulative preferred stock of the Springfield Railway & Light Company, payable on Jan. 2 to holders of record of Dec. 14.

**Topeka (Kan.) Railway.**—The Kansas State Public Utilities Commission has approved the application of the Topeka Railway to issue \$81,000 of first and refunding mortgage bonds. The proceeds will be used to pay off outstanding obligations and to make betterments and extensions.

**United Railways, St. Louis, Mo.**—John C. Roberts has resigned as a director of the United Railways.

**United Traction Company, Albany, N. Y.**—The report of the United Traction Company to the Public Service Commission for the Second District of New York for the quarter ended Sept. 30, 1917, shows a marked reduction in the net

corporate deficit as compared to the similar period in 1916. The loss in 1916 was \$39,747, but in 1917 only \$14,020, a gain of \$25,727. The operating revenue decreased from \$616,786 in 1916 to \$609,356 in 1917, but the operating expenses decreased from \$531,773 to \$499,972 so that the net operating revenue rose from \$95,012 to \$109,384. Taxes decreased slightly and non-operating income gained, with the result that the gross income in 1917 totaled \$103,364 as compared to \$72,244 in 1916 for the quarter mentioned.

## Electric Railway Monthly Earnings

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.						
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., Oct., '17	\$84,048	\$91,265	\$7,217	\$28,395	†\$32,310	
1 " " '16	84,964	*72,994	11,970	27,675	†15,526	
10 " " '17	918,957	*806,073	112,884	276,184	†158,901	
10 " " '16	832,272	*685,433	146,839	261,567	†112,821	
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO						
1m., Oct., '17	\$354,895	*\$274,019	\$80,876	\$49,220	\$31,656	
1 " " '16	307,437	*187,470	119,967	42,863	77,104	
12 " " '17	3,932,348	*2,751,229	1,181,119	549,561	631,558	
12 " " '16	3,461,301	*2,039,510	1,421,791	512,332	909,459	
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.						
1m., Oct., '17	\$1,763,894	*\$1,111,252	\$652,642	\$455,892	\$196,750	
1 " " '16	1,458,380	*807,437	650,943	419,085	231,858	
12 " " '17	19,149,110	*11,593,883	7,555,227	5,215,012	2,340,215	
12 " " '16	16,518,224	*8,878,592	7,639,632	4,998,342	2,641,290	
CONNECTICUT COMPANY, NEW HAVEN, CONN.						
1m., Oct., '17	\$816,041	*\$727,327	\$88,714	\$108,402	†\$3,013	
1 " " '16	812,160	*682,222	129,938	96,174	†58,896	
10 " " '17	8,396,687	*6,595,862	1,800,825	988,995	†879,838	
10 " " '16	7,998,519	*5,658,309	2,340,210	982,848	†1,583,668	
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
1m., Oct., '17	\$254,713	*\$184,107	\$70,606	\$50,509	\$20,097	
1 " " '16	201,809	*121,866	79,943	48,708	31,235	
10 " " '17	2,290,802	*1,611,674	679,128	493,218	185,910	
10 " " '16	2,062,032	*1,373,167	688,865	487,233	201,632	
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.						
1m., Oct., '17	\$27,485	*\$26,160	\$1,325	\$7,982	†\$8,593	
1 " " '16	24,460	*23,641	819	7,987	†7,108	
10 " " '17	344,993	*290,633	54,360	79,836	†24,929	
10 " " '16	309,869	*248,538	61,331	78,849	†18,056	
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.						
1m., Oct., '17	\$47,315	*\$46,542	\$773	\$85,742	†4,242	
1 " " '16	60,133	*48,738	11,395	\$5,943	†6,710	
10 " " '17	465,224	*461,901	3,323	\$73,782	†61,218	
10 " " '16	463,083	*488,680	†25,597	\$79,419	†159,937	
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO						
1m., Oct., '17	\$545,046	\$360,552	\$184,494	\$77,454	\$107,040	
1 " " '16	450,264	262,506	187,758	74,820	112,938	
10 " " '17	5,281,567	3,273,285	2,008,282	778,822	1,229,460	
10 " " '16	4,231,007	2,151,079	2,079,928	932,340	1,147,588	
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
1m., Oct., '17	\$522,294	*\$323,328	\$198,966	\$176,864	\$22,102	
1 " " '16	459,720	*248,407	211,313	181,280	30,033	
12 " " '17	5,895,640	*3,272,373	2,623,267	2,160,703	462,564	
12 " " '16	5,429,252	*3,043,952	2,385,300	2,178,247	207,053	
RHODE ISLAND COMPANY, PROVIDENCE, R. I.						
1m., Oct., '17	\$486,464	*\$484,251	\$2,213	\$124,043	†\$94,816	
1 " " '16	478,522	*363,881	114,641	120,714	†21,388	
10 " " '17	5,035,745	*4,154,210	881,535	1,209,923	†214,560	
10 " " '16	4,879,705	*3,490,276	1,389,429	1,162,614	†343,925	
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
1m., Oct., '17	\$805,687	\$592,071	\$213,616	\$170,118	\$43,498	
1 " " '16	846,915	512,896	334,019	141,883	192,136	
10 " " '17	8,537,793	5,696,931	2,840,862	1,526,832	1,314,030	
10 " " '16	8,441,904	5,205,673	3,236,231	1,434,878	1,801,353	
UNITED LIGHT & RAILWAYS, GRAND RAPIDS, MICH.						
12m., Oct., '17	\$2,044,300	*\$165,904	\$1,878,396	\$677,177	\$1,201,219	
12 " " '16	1,860,816	*140,425	1,720,391	573,644	1,146,747	
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.						
1m., Oct., '17	\$20,618	*\$23,276	†\$2,658	\$2,553	†\$1,180	
1 " " '16	15,799	*17,433	†1,634	1,893	†3,554	
10 " " '17	209,790	*232,301	†22,511	21,997	†44,221	
10 " " '16	196,908	*208,932	†12,024	17,995	†29,759	

\*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

### Skip Stop Saves Fuel

Toledo Railways & Light Company Points Out That It Takes More Power to Start a Car Than to Run It One-Quarter of a Mile

The Toledo Railways & Light Company, Toledo, Ohio, has answered criticism of the skip stop by a large advertisement printed in the Toledo newspapers of Dec. 2. The advertisement brings out many new phases of the skip-stop system. It is reprinted below.

"Drastic steps are being taken by our government to save every ounce of coal.

"The company has curtailed the burning hours of electric signs by order of the Federal Fuel Board.

*"This is done to save coal.*

"In Pittsburgh one out of every five electric cars has been ordered off to save coal and thus insure electrical power for munition factories.

"In several cities—some near us in Michigan—there is no longer any heat in city cars, showing how complete have been the efforts of public utility companies to aid in fuel conservation.

"Toledo has been better off than some cities on account of her excellent railroad facilities.

"This company also wrestled with the coal situation early and has thus been enabled to meet the normal electrical demands at all times.

*"But we must make every possible coal saving that efficient operation can suggest.*

"We are not alarmists.

"We are simply looking the situation squarely in the face and taking steps to do our best to keep business even 'Better than Usual.'

#### HOW THE SKIP STOP SAVES FUEL

"An important step we have taken in the country's conservation program is to inaugurate the skip-stop system.

"The greatest amount of electrical power is used in starting cars, especially during winter months when rails are slippery and when cars are unusually loaded at rush hours.

*"It takes more electric power to start a car than it does to run it a quarter of a mile.*

"The skip-stop system eliminates a lot of useless stops, thus saving a great deal of electrical energy, which represents coal.

"During the rush hour it enables a car to handle many more people on account of a swifter schedule, thus conserving coal at the 'peaks.'

"We expect by making these savings on all our lines to reduce our use of coal and at the same time greatly enhance the comfort and convenience of our patrons.

"Under the skip stop, the rider saves considerable time on every trip and is saved the annoyance of the continual starting and stopping.

*"In other words, it represents to a certain degree the difference between express and local service.*

"If you go to Detroit, do you take a local or a limited car?"

"While it means a few more steps, it is on the whole for the comfort and convenience of all.

"The system of 'Staggered Stops' which we have inaugurated means a stop, one way or the other, at practically every street corner.

"Wherever the skip-stop system has been tried it has proved a big forward stride in the interests of good service.

"Cleveland patrons, after a trial for several years, are so satisfied that nothing could tempt them to revert to old methods.

"At the start, until schedules can be rearranged and until patrons readjust old habits, the system cannot be expected to work with the smoothness that comes after a short time.

"A great many of our patrons on lines where it has only been introduced for a short time are loud in their praise.

"We feel certain that with the co-operation and patience

of our patrons we can work out a similar situation as to all our lines.

*"In doing this, we know that eventually we will not only greatly improve car service in Toledo, but will be doing our part in our country's program of coal conservation.*

"This is a serious problem now brought squarely to us and to every person in Toledo.

"We must save every possible pound of coal and we must have the cordial co-operation of all our patrons in order to do it."

The advertisement was in the form of an open letter to patrons of the company from Frank R. Coates, president.

### Report of Springfield Traffic

John P. Fox Suggests One-Man Cars, One-Man Trailers and the Skip Stop

John P. Fox, retained in the interest of cities and towns in which the Springfield (Mass.) Street Railway operates, has filed with the Public Service Commission an exhaustive report on the conditions attending the transportation service furnished by the company and his conclusions as to the unfairness of the proposed increase in fares asked by the company. Mr. Fox thinks that the plan proposed by the company, to which reference has been made previously in the ELECTRIC RAILWAY JOURNAL, would prove discriminatory. On the question of methods of securing needed increase of revenue for the company the report says:

"If it has been proved that the proposed fare system is unjust, unwise and undesirable, the next thing is to consider other ways in which the company can get an increase of revenue sufficient to meet any real needs. There are a number of other ways possible for increasing revenue.

"1. A charge might be made for all free transfers, 1 cent as in Cleveland, or 2 cents as asked in New York.

"2. Fare zones might be shortened in length.

"3. A real zone system might be introduced, not one with a 5-cent fare for each zone, but with increases of 1 or 2 cents for each zone.

"4. The unit of fare might be raised, and 6 cents charged for each zone as existing at present.

"5. Economies of operation might be introduced, some of them having been suggested by Prof. Richey in his printed report, such as the operation of trailers, cutting out a certain amount of unprofitable car mileage and speeding up the cars by making fewer stops, and stopping and starting more rapidly.

"6. Increasing the traffic by inducing more people to ride without increasing the operating expenses."

Mr. Fox finds that while a well-equipped and well-managed electric railway should have at least \$4 of investment for \$1 of revenue, the Springfield company has been operating on a total paid-in capitalization of \$7,250,000 and a total permanent investment of \$8,000,000. Thus the investment instead of being \$4 for \$1 of revenue has been about \$3 on the basis of paid-in capitalization and only \$3.50 on the basis of total permanent investment.

Mr. Fox says that for a long time the smallness of the capital stock enabled the company to pay 8 per cent dividends, but that "if conditions were normal and the company knew how to operate as economically as many other companies in the country, it might not have had any trouble in continuing to pay a good return on the investment with a 5-cent fare."

Among the economies suggested by Mr. Fox are the following:

One-man car operation on several of the lines, especially the local Westfield and Palmer lines. The annual saving under this plan on these lines is set at more than \$25,500.

One-man operation and a different running schedule on the Huntington line. It is found that these would result in an annual saving of from \$3,120 to \$3,750.

Change in handling the Westinghouse traffic. The use of vacant land near the works for a prepayment area is suggested. If this were done there is a possibility that the Westinghouse extras might all be handled on one-man cars, at least inbound at night.

The use of single-truck trailer cars. These, it is estimated, would save \$20,000 a year.



## Decision in Indianapolis Fare Case

Indiana Commission, After Considering Arguments Presented and the Fact That the Company Had Not Surrendered Its Franchise, Decides It Is Without Jurisdiction

The Public Service Commission of Indiana, after hearing arguments on Dec. 12 and 13, handed down a decision on the afternoon of Dec. 13 that it had no jurisdiction in the petition of the Indianapolis Traction & Terminal Company for a uniform 5-cent fare and the elimination of reduced rate tickets.

The hearing on the application of the company commenced on the morning of Dec. 12 and was assigned to Charles A. Edwards, member of the commission. Because of the importance of the case E. I. Lewis, chairman, and Edwin I. Corrsat with Commissioner Edwards. The City Council of Indianapolis was represented at the hearing by Woodbury Masson, attorney; the Indianapolis Real Estate Board by Mark H. Miller; the Indianapolis Chamber of Commerce by James H. Noel, and the Indianapolis Traction & Terminal Company by Ferdinand Winter and Will H. Latta.

The forenoon was taken up with arguments by Messrs. Miller, Masson and Noel. They all contended that the Public Service Commission should dismiss the petition for increased fares on the ground that it had no jurisdiction, inasmuch as the Indiana Legislature in 1899 had delegated power to the city of Indianapolis to make a franchise contract specifying the maximum rates of fare. They contended that the commission and even the State Legislature itself would have no power to change such a contract.

### HISTORY OF RAILWAY LEGISLATION REVIEWED

Messrs. Miller and Masson reviewed in detail the history of the local street railway legislation from 1861 and contended that the act of 1899 granting authority to the city to make a contract was so drawn as to make repeal impossible because of the vested rights that would be affected. They said the railway understood the law and accepted any hazard attending the business venture. Having done so the company should not now be trying for a release from the provisions of the grant. They asserted that the commission had no jurisdiction because the company had not surrendered the franchise for an indeterminate permit and cited Sec. 7 of the public utility law, which provides that a utility which has a contract fixing maximum rates shall not increase its rates beyond the maximum fixed by contract.

### CHAMBER OF COMMERCE HAS WATCHFUL INTEREST

James H. Noel, purporting to represent the Chamber of Commerce, which body, however, has taken no official action in the matter, stated that the Chamber of Commerce proposed to keep a watchful interest in the case because of its relations to the commerce and industry of Indianapolis and to maintain the reputation of the city as one which keeps its contracts. He disagreed with Mr. Masson and said that the power to regulate rates rested in the State. If the State delegated power and a city exercises that power then it amounted to a contract with the State. He reviewed the action of the Legislature in 1899 and said that the street railway situation at the time of the franchise grant was a desperate one because of the recent fare law and the uncertain court decisions. These made it impossible at that time to induce the investment of capital.

### COMPANY NOT SEEKING TO ESCAPE CONTRACTUAL RELATIONS

Ferdinand Winter for the company answered the arguments during the afternoon session. He stated that the Traction & Terminal Company was only seeking to have the contract modified because of the unusual conditions due to the war and was not trying to escape its contractual obligations. The contract was really entered into between the State of Indiana and the utility through the city of Indianapolis as agent for the State. He contended that the act creating the Public Service Commission gave it power to grant relief to any utility in the event of an emergency such as now existed. If the Legislature had intended to exempt the Indianapolis situation it would have made such provision in the various articles of the act giving the commission power over all utilities and any and all rates.

Mr. Winter pointed out that if the State of Indiana by the enabling act had abrogated its jurisdiction during the period of the contract the functions of the Public Service Commission ceased to exist. It was not an impairment of a contract when the parties to it got together to change the contract. In this case the city of Indianapolis in this contract was merely the agent for the State and the courts had held that fact many times. Mr. Winter asserted that the franchise of the company or any other public utility belonged to the State; that the question of rates was primarily an affair of the State, but that it might authorize a city to fix such rates or might appoint a commission to determine rates.

### WHAT THE COMMISSION RULED

On the morning of Dec. 13 the commissioners ordered an adjournment while they conferred on the question of jurisdiction. That afternoon Commissioner Edwards announced that after considering the arguments that had been presented and the fact that the company had not surrendered its franchise, the commission was of the opinion that it did not possess jurisdiction to act in the matter.

## Increase in Fares Asked by Illinois Line

The Galesburg & Kewanee Electric Railway, Kewanee, Ill., has filed a petition with the Public Utilities Commission of Illinois asking permission to increase its city cash fare from 5 cents to 6 cents in the cities of Kewanee and Galva, Ill., and also to make an increase in the city ticket fare from the previous rate of twenty-five tickets for \$1 to eighteen tickets for \$1. The company further asks an increase in the interurban zone fare from the previous rate of 5 cents to 7 cents and also an increase in the rate for round-trip tickets. These tariffs, as filed by the company, were suspended by the commission until Dec. 29. Hearings on the matter were held before the commission on Nov. 14 and Nov. 26, at which time the company showed that the rates for labor and materials have increased 50 per cent over those that prevailed at the time the road was opened for business more than fourteen years ago. It was also shown that the rate of return earned by the company all of these years was inadequate, that the company not only had not paid any dividends to its stockholders, but that after paying bond interest it did not have enough left out of earnings to provide a reasonable fund for depreciation.

## Cleveland Fare Definitely Announced

John J. Stanley, president of the Cleveland (Ohio) Railway, on Dec. 11, notified the street railway committee of the City Council that the company would put into effect the next higher rate of fare on the morning of Dec. 15. This is known in the Tayler franchise as Rate D and provides for a cash fare of 4 cents and three tickets for 10 cents, with a charge of 1 cent for transfer to be rebated.

### COMPANY THINKS NEW RATE INSUFFICIENT

This followed deferred action by the committee on the company's request to be allowed to put into effect Rate C which is the same as D, except that the transfer charge is not rebated. Mr. Stanley said that the first increase will not yield a sufficient amount to keep the interest fund above \$300,000, as required.

In connection with this notice Mr. Stanley stated that the company was considering an increase of the Collinwood fare to straight 5 cents, instead of the rate that is used in other portions of the city. Fielder Sanders, street railway commissioner, is of the opinion that the company has no authority to make a change in the Collinwood fare.

### THREE FARE CHANGES SINCE 1910

There have been three changes in the rate on the Cleveland Railway since the Tayler franchise went into effect on March 1, 1910. The interest fund, which serves as the fare barometer, was started with an appropriation of \$500,000 and a rule was adopted that when this fund reached \$700,000, the fare should be reduced, and when it fell below \$300,000, it should be increased.

## Aurora, Elgin & Chicago Seeks Fare Raise

Chicago Suburban Line Applies to the Illinois Commission for Permission to Increase Fares

The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has filed a new local passenger tariff with the Public Utilities Commission of Illinois asking for increased fares. In brief, providing the sanction of the State board is obtained, the fare between Aurora and Chicago will be increased 5 cents; the fare between Aurora and Batavia increased 5 cents, and the city fares in Aurora and Elgin will be 5 cents straight, with all six-for-a-quarter tickets eliminated. The changes are as follows:

### DETAILS OF CHANGES

On the Chicago division the fares are figured at 2 cents per mile between all points from Laramie Avenue, Chicago, west.

From points west of Laramie Avenue, Chicago, to Marshfield or Fifth Avenue, Chicago, the fare has been increased to 2 cents per mile to Laramie Avenue plus 5 cents.

The regular one-way fare from Aurora and Elgin to Chicago under the old tariff is 65 cents and under the new tariff will be 70 cents.

The round-trip fare between these points under the old tariff is \$1.20, and under the new tariff it will be \$1.40.

Fares from and to other stations on the Chicago division are figured on the above basis and at some points increases are made.

On the Fox River division, between Aurora and Yorkville, the regular fare under the old tariff was 20 cents. Under the new tariff it will be 25 cents.

The fare between Aurora and Oswego under the old tariff was 10 cents and under the new tariff it will be 12 cents.

On the line between Aurora and Elgin the fares have been figured at 2 cents per mile. On this basis the fare from Aurora to North Aurora, Batavia, Geneva, St. Charles and Elgin will be increased 5 cents.

The regular one-way fare between Elgin and Dundee or Carpentersville under the present tariff is 10 cents and under the new tariff it will be 12 cents.

The fifty-ride sixty-day tickets on the Fox River division under the new tariff will be withdrawn from sale between all points where the fare is 5 cents and will be withdrawn from sale between all other points except to children attending school.

The reduction in regular fare on fifty-four-ride monthly commutation tickets on the Fox River division will be 30 per cent instead of 40 per cent.

In Elgin no transfers will be issued between city and interurban cars.

On the city lines the new tariff provides for a straight 5-cent fare. The six for 25-cent tickets in Aurora and the seven for 25-cent tickets in Elgin will be withdrawn from sale.

### VICE-PRESIDENT FABER EXPLAINS

E. C. Faber, vice-president and general manager of the company, made a statement in which he said:

"It is a well-known fact that, while practically every commodity used in every-day life has greatly increased in price—and this includes everything that this company uses—the public utility companies' rates are always last to be increased.

"The electric railways throughout the country have been increasing their rates and we have held off doing so as long as we reasonably could, but the time has come when we cannot stand the pressure any longer.

### "SICK MAN" OF BUSINESS

"The electric railway industry is the 'sick man' of business. There is no alternative. We must have increased revenue to meet the increased cost of operation and maintenance or 'go broke,' and the inevitable result of such a situation would be that the public would suffer, as poorer and poorer service is a natural consequence.

"We have given a great deal of thought and study to the revision of our rates, and the new tariff as filed we believe

is as fair and equitable to the traveling public as it is possible to make it.

"We know that the patrons of this company prefer satisfactory service at a reasonable increase in fare to an inevitable curtailment of the present service at the present rates of fare.

"We do not expect that the relief sought will be sufficient to pay an adequate return on the investment in this company represented by tracks, cars, power house, etc., but the relief is asked for with the expectation that, with the utmost economy, the company will be able to provide satisfactory schedules and keep the property in such a state of repair as to enable it to maintain fairly efficient service.

"Briefly stated, the situation may be summed up in this way: First, the nickel has been buying more and better car service every year since the electric railways were first operated, and, second, the nickel buys for the company less than it ever did before for its operation and maintenance."

## Service Complaint in St. Louis

United Railways Said Not to Have Lived Up to Commission's Car-Capacity Order

Stephen H. Butler, chairman of the special committee of the Central Trades & Labor Union, and three other complainants have filed charges with the Public Service Commission of Missouri to the effect that the United Railways is violating orders of the commission prohibiting the overcrowding of cars during the rush hours, and requesting that penalties aggregating several thousand dollars be collected from the company.

The commission's order which, it is charged, was violated requires the United Railways to furnish seventy-one seats for every 100 passengers carried in each fifteen-minute period during the rush hours, when the headway between cars is one minute; seventy-two seats for each 100 passengers carried in any fifteen-minute period in the rush hours when the interval between cars is two minutes; seventy-three seats for each 100 passengers in these periods when the headway is three minutes, and a corresponding addition to the number of seats as the space between cars increases, up to six minutes.

This order was made by the commission on May 4, 1915, in disposing of a complaint of the West End Business Men's Association and other organizations, that the United Railways was not providing a sufficient number of cars to accommodate traffic. The order applies to week days, excluding Saturdays, and to the time between 5 and 7 p. m.

## Commission's Fare Powers Questioned

The question of whether the Public Utilities Commission of Ohio has the power to increase rates of fare or otherwise change the terms of a franchise granted before the law was enacted under which the commission operates was brought up on Nov. 26 by the opponents of an increase in the rates of fare between Youngstown and Warren asked by the Mahoning & Shenango Railway & Light Company.

The company says that it is receiving from 1 cent to 1½ cents a mile on this line and that it is operating at a loss. Representatives of the towns through which the road passes argue that if the application is granted the rates will be increased from 50 to 75 per cent over the present charges.

At a hearing on the application John T. Harrington, attorney representing the company, said that the local authorities who granted the franchise were subordinate to the State and really acted as agents of the State in their action and that the commission, therefore, has the power to repudiate the grant, notwithstanding the fact that it was made before the State law was passed creating the commission.

W. F. MacQueen, city solicitor, of Niles, M. B. Leslie of Hubbard and W. W. Pierson of Girard, and Commissioner F. E. Rose of Trumbull County appeared at the hearing to oppose the application. They received ten days in which to file briefs, after which the company will have the same length of time to prepare an answer.

## Loading Station in Industrial District

International Railway, Called Upon to Handle 20,000 Men in One Small District, Will Build a Loading Platform

Construction work has been started by the International Railway, Buffalo, N. Y., on a new passenger loading station in Elmwood Avenue, on property adjoining the plant of the Pierce-Arrow Motor Car Company for the convenience of the employees of that company and of those of other large industries in the North Elmwood Avenue section. More than 20,000 men are employed in large war industries in the Elmwood-Hertel-Military Road section of the city. Special cars will be used for these employees every night, and they will be routed over lines where the traffic is not so heavy. The double-track extension of the Elmwood Avenue line between Hertel Avenue and the north city line has been practically completed, so that the thousands of employees in large industries north of Hertel Avenue can be better accommodated. Among the new industries in this section is the \$5,000,000 plant of the Curtiss Aeroplane & Motor Corporation, by which company almost 7000 men and women are employed.

## War Investigation

California Railroad Commission Inquiring Into Facilities and Problems of California Steam and Electric Lines

To make the railroads and shipping of California as useful as possible to the government during the war, their heads, as well as federal and state officials, were asked to lay the details of their war problems before Railroad Commissioners Edwin O. Edgerton and Harvey D. Loveland on Dec. 14. The investigation will extend into the service and present condition of the steam railroads, electric interurban lines and water carriers. Commissioners Edgerton and Loveland sent to the managers of the roads a questionnaire on the condition of roadbed and track, equipment, freight and passenger service, the labor situation, the matter of embargoes, and capital and operating expenditures. The steam roads were asked thirty-two questions. The electric interurban lines were asked if they were equipped to handle additional local freight business between points reached on their lines. The water carriers were asked by the railroad commission to what extent they are equipped to relieve the steam railroad lines from hauling competitive freight.

## Texas Interurbans Under Commission

Companies Required to File All Passenger, Express and Freight Tariffs

The Railroad Commission of Texas has issued an order placing all interurban railways operating in Texas under its jurisdiction. The order requires the companies to file with the commission within ten days all passenger, freight and express tariffs covering a period from Oct. 1, 1917, to the present time. The commission proposes to regulate in the future all freight and express rates in operation on the interurbans. It will inquire into recent advances in rates by the companies. The order issued by the commission is as follows:

"It is hereby ordered by the Railroad Commission of Texas that all corporations, companies or persons operating interurban railways, as well as all express companies or other corporations, associations, partnerships or persons, engaged in the transportation of freight or express over lines of interurban railway in this State, be and they are hereby ordered and required to file with this commission, on or before ten days from this date, Nov. 19, at its office in the Capitol at Austin, copies of all tariffs, schedules, classifications, rates, rules and regulations in force on Nov. 20, and affecting the transportation by them of passengers, freight and express between points in Texas.

"It is further ordered by the commission that, from and after this date, copies of all such tariffs, schedules, classifica-

tions, rates, rules and regulations as may be hereafter issued to govern in the transportation of passengers, freight and express over interurban lines in this State, be filed with this commission prior to the taking effect of same.

"It is further ordered that all such tariffs, classifications, rates, rules and regulations now in force and governing the transportation of passengers, freight and express over interurban lines in this State, remain in force and effect until changed or canceled by order or under the authority of this commission.

"This order shall take effect on Nov. 20."

The Railroad Commission, following up the order which it issued assuming jurisdiction over all interurban and city railways in Texas, has issued an order requiring all the interurban lines and the express companies engaged in the transportation of freight or express over interurban lines to file with the commission within ten days from Nov. 30 true copies of contracts in writing now existing and in force between the railways and the express companies.

## Bus Line Quits Without Notice

Ferry-Bus Service at Seattle Proves Unprofitable for the Bus

Financial difficulties resulted in the abrupt discontinuance on Nov. 21 of the West Seattle ferry bus service. On that date the three buses which connect with the West Seattle ferry and serve the Alki Point and California Avenue district were seized by F. W. Keene on a conditional bill of sale issued by the company in the city of Seattle which deals in automobiles.

A contract was entered into between the Ferry Line Auto Bus Company, which operated the buses, and the Port Commission of Seattle in October, 1915, which provided that reciprocal transfers from the ferry to the bus line would be issued, and that 3 cents of every 5-cent fare would be paid to the bus company. The bus line has been operating under this contract by buying a number of commutation tickets from the Port Commission for 2 cents, which they sold to the patrons of the line for 5 cents. No provision was made in the contract to protect either party through failure in case one of the parties did not furnish service. The Ferry Line Company states that the failure of the Port Commission to observe its schedule has discouraged West Seattle patrons from patronizing the buses and the ferry with which the line connected.

**Owl Cars Discontinued in Portland.**—The Portland Railway, Light & Power Company, Portland, Ore., has discontinued its owl cars on the Richmond line, owing to lack of patronage.

**One-Man Cars in Oakland.**—Announcement has been made by officials of the San Francisco-Oakland Terminal Railways, Oakland, Cal., that one-man cars will be installed on some of the lines of the company in Oakland.

**Notice of Fare Increase in Pennsylvania.**—The Allentown & Reading Traction Company, Allentown, Pa., has filed with the Public Service Commission notice of an increase of fare from 5 to 6 cents except between Reading and Rosedale, to be effective Jan. 1.

**Early Evening Service May Be Reduced.**—Mayor George Karb, of Columbus, Ohio, has asked the City Council, as a means of conserving fuel, to order the Columbus Railway, Power & Light Company to reduce by 50 per cent the number of cars operated after 7 p. m.

**Increase in Fare Between Ocean City and Atlantic City.**—The Board of Public Utility Commissioners of New Jersey has granted permission to the Atlantic City & Shore Railroad to raise the round-trip fare between Ocean City and Atlantic City from 50 to 60 cents, this being double the present one-way fare.

**School Tickets in Sherman.**—The Texas Electric Railway has announced that it will grant one-half fare for school children over its local lines in Sherman, Tex., on condition that such school children present proper certificate from their teacher and purchase a book of tickets for

such use. The same practice is employed in Dallas and other cities.

**Action in Utah Fare Case Postponed.**—The Public Utilities Commission of Utah has postponed until Dec. 30 action on the petition of the Utah Light & Traction Company, Salt Lake City, Utah, for permission to increase its fares in suburban districts, to discontinue the sale of books of fifty fares for \$2 and to charge 1 cent for transfers. The company desired to put the proposed schedule into effect on Nov. 30.

**Skip-Stop Plan Suggested for Washington.**—It is expected that careful investigation will be made of the proposal to have cars stop at alternate corners in Washington, D. C., and for the rerouting of cars to meet service demands better. The Public Utilities Commission already is investigating the advisability of allowing cars, when closely spaced during rush hours, to discharge and take on passengers simultaneously and proceed over the crossings in tandem formation.

**New York Fare Hearings Again Postponed.**—The applications of various electric railways in New York City for advances in rates of fare were scheduled to come before the Public Service Commission of the First District for hearings on Dec. 10. The hearings, however, were postponed until Jan. 7. Although these cases were previously held up for some time at the request of the companies to permit full preparation, the current postponements have been a matter of commission initiative. It is understood that the commission is waiting for two members to be appointed to fill the places of Commissioners Hayward and Hodge, who are absent on war duty.

**Mr. Beeler to Make Washington Investigation.**—The Public Utilities Commission of the District of Columbia has arranged with John A. Beeler, New York, N. Y., to investigate the electric railway situation in the city of Washington with the view of making recommendations for lessening the congestion which has assumed alarming proportions recently on account of the tremendous influx of people called there by the war operations. Mr. Beeler has just completed his report for the Public Service Commission of Massachusetts on the Boston Elevated Railway situation, and will use in his Washington investigation the same force which assisted him in the Boston investigation.

**Women Conductors on Brooklyn Lines.**—In addition to the women subway guards which the Brooklyn (N. Y.) Rapid Transit Company has had in service during the last few weeks, the company now contemplates the employment of women as conductors on its surface lines. These will be assigned first to the center-entrance, pay-as-you-enter cars operating on the Flatbush Avenue line. After proving their fitness for such work on these cars their services may be extended to the cars of the less improved type. The women will first receive training in a school for a few days, followed by trial runs on the cars. A uniform is being decided upon and the company anticipates having about twenty conductresses who have passed their preliminary instruction and will be ready for service early in the week of Dec. 17.

**Jitney Controversy in Atlantic City.**—Property holders on Pacific Avenue have sent two petitions to the City Commission of Atlantic City, N. J., for the removal of jitney buses from Pacific Avenue at once. They assert that the traffic is a menace to their comfort and an ever-increasing danger to public safety and that it has depreciated property values materially and affected rentals. At the same time Mayor Bacharach has introduced a bill prepared by counsel for the Jitney Association providing for the licensing of 200 jitneymen, 100 to run on alternating weeks on Atlantic Avenue, the city's chief business thoroughfare, from which they were excluded last May. It is expected that the Atlantic City & Shore Railroad, which operates on Atlantic Avenue, will oppose this bill. The jitney bus drivers, who are now required to keep to Pacific Avenue, say they will have to go out of business unless Atlantic Avenue is again opened up to them. Atlantic Avenue and Pacific Avenue parallel each other. The ordinance to restore the jitneys to Atlantic Avenue has been passed on first reading by the City Commission. One of the provisions is for alternate operation on Atlantic Avenue and Pacific Avenue.

## Personal Mention

**J. J. Molyneux** has been appointed treasurer and general auditor of the properties of the Northern States Power Company, Chicago, Ill.

**L. E. Denney**, who has been freight agent for the Petaluma & Santa Rosa Railway, Petaluma, Cal., for the last ten years, has resigned.

**W. S. Hart**, formerly secretary, treasurer and general manager of the Three Rivers (Que.) Traction Company, has been appointed managing director of the company.

**Erwin W. Gardner**, formerly chief electrician in the shops of the Fort Wayne & Northern Indiana Traction Company at Fort Wayne, Ind., has been appointed assistant foreman of the shops.

**James Wilson**, formerly assistant secretary and treasurer of the Three Rivers (Que.) Traction Company, has been appointed secretary and treasurer of the company to succeed W. S. Hart.

**H. R. Frost**, formerly treasurer and general auditor of the Northern States Power Company, Chicago, Ill., has been appointed assistant general auditor of H. M. Byllesby & Company, with headquarters at Oklahoma City.

**F. M. Black** resigned as a member of the Public Utilities Commission of Alberta, Can., on his appointment to a position under the Food Controller. It is reported that no successor will be appointed to Mr. Black at present.

**G. T. Twyford**, who has been electrical engineer of the Pittsburgh, Harmony, Butler & New Castle Railway, Pittsburgh, Pa., for the last four years, has been appointed electrical engineer of the Hagerstown & Frederick Railway, Hagerstown, Md.

**Charles P. Murphy**, who has been with the Kankakee & Urbana Traction Company as agent at Urbana, Ill., and as freight auditor and accountant since May 1, 1913, has been appointed chief clerk of the company to succeed C. C. Burford, who has resigned from the company to devote himself to his own personal interests.

**Carl Rigdon**, who has been superintendent of light and power and more recently superintendent of construction work of the Chattanooga Railway & Light Company and the Tennessee Power Company, Chattanooga, Tenn., has resigned to enter other work. It is understood that the office of superintendent of light and power will be abolished and the work will be divided among other officials of the two companies.

**D. W. Pontius**, traffic manager of the Pacific Electric Railway, Los Angeles, Cal., has been appointed general manager of the San Diego & Arizona Railway, with headquarters in San Diego, Cal. Mr. Pontius began railroad work twenty-five years ago in Ohio as a supervisor of track for the Pennsylvania System. He has since been employed successively as telegraph operator, train dispatcher, agent, train master, district freight and passenger agent and traffic manager, by the Chicago Great Western Railway, Northern Pacific Railroad, Oregon Railway & Navigation Company, Southern Pacific Railway and the Pacific Electric Railway.

**C. C. Burford** has resigned as chief clerk of the Kankakee & Urbana Traction Company, Urbana, Ill., with which he had been connected in a clerical and accounting capacity since Oct. 1, 1913. After leaving the University of Illinois and before entering electric railway work Mr. Burford was associated with Busey's Bank, Urbana, Ill., now Busey's State Bank, for five years, serving in the commercial and savings departments. The Busey family was then and is now interested in the interurban railway. Mr. Burford retires from railway work to give his entire attention to personal matters and to conduct an independent news bureau at Urbana. Mr. Burford has done work for newspapers and magazines, including the *ELECTRIC RAILWAY JOURNAL*, for a number of years.

M. F. M. Werth has been appointed superintendent of power of the Detroit (Mich.) United Railway. Mr. Werth, who was made assistant superintendent of power in June, 1916, has been acting superintendent since the promotion of E. J. Burdick to be assistant general manager in July, 1916. Mr. Werth is a native of Richmond, Va., and has had wide experience in the electric railway field. He was graduated from Virginia Military Institute, electrical engineering course, and began his railway career with the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. Later he was associated with the British Columbia Electric Railway, operating a network of 350 miles of city and interurban railway in British Columbia. The Detroit United Railway operates more than 450 miles of city, suburban and interurban railway at Detroit.

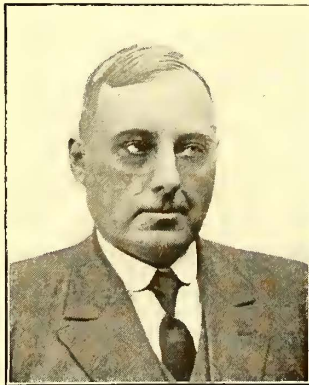


M. F. M. WERTH

W. Douse, formerly connected with the purchasing office of the Hydro-Electric Power Commission of Ontario, has been appointed acting purchasing agent of the Toronto & York Radial Railway, Toronto, Ont., and will undertake the duties of G. K. Hyde, purchasing agent, who has been granted six months leave of absence on account of ill health.

Fred Bade has been appointed general foreman of the Fort Wayne shops of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind. Mr. Bade has been with this company for the last fifteen years. A year ago he was made assistant foreman. His present appointment came as a result of the resignation of Otis R. Hill, general foreman of the shops, who was admitted to the second officers' training camp at Fort Benjamin Harrison, Ind., last August.

A. F. Kane has resigned as supervisor of way and structure for the Hudson & Manhattan Railroad, New York, N. Y., operating the tunnels under the Hudson River, to accept a position with the Denver & Rio Grande Railroad, Alamosa, Col., as roadmaster. Mr. Kane began his railroad career at thirteen years of age as an apprentice in the blacksmith and toolmaking shops of the New York, Chicago & St. Louis Railroad. He later became bridge carpenter, then master carpenter, and finally roadmaster of the company. Mr. Kane next held similar positions with another steam road in the West. He then took charge of a gravel washer for the Lake Shore & Michigan Southern Railroad at Rupel, Ind., getting out material for ballasting track. Subsequently he became master carpenter of the West Side Elevated Railroad, Chicago, Ill., and went from that company to the Hudson & Manhattan Railroad, where he served more than seven years in charge of buildings and later was in charge of way and structures.



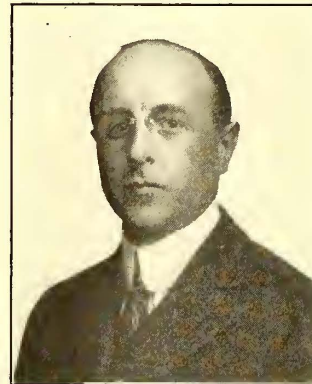
A. F. KANE

J. J. Heim of the board of directors of the Kansas City (Mo.) Interurban Freight Terminal Company, is president of the Joplin & Pittsburgh Railway, which he built, and is the principal owner of the Kansas City, Kaw Valley & Western Railway, which he also built, and of which Karl D. Klemm is president. More than twenty years ago Mr. Heim built the East Side Railway in Kansas City at his

own expense. The road extended from the north side business district of Kansas City to the East Bottoms district. An amusement park, served by the electric railway, was erected shortly afterward, near the Heim brewery. The power plant erected for the East Side electric line was dismantled after the property was sold to the Metropolitan Street Railway. Mr. Heim retained an interest in the consolidated company.

E. T. Eckland has been appointed superintendent of transportation of the Lincoln (Neb.) Traction Company, succeeding B. W. Hilliard, who resigned to engage in private business. Mr. Eckland entered electric railway work with the Denver (Col.) Trainway in August, 1895, as a repairman in the mechanical department. He remained in that position until January, 1901, when he entered the train service of the central division. He was appointed inspector in 1910. In April, 1916, he was appointed supervisor of the South Division, and on Jan. 1, 1917, was promoted to division superintendent of the same division. Mr. Eckland is thirty-five years old, a man of pleasing personality and was exceptionally popular with the trainmen in Denver.

B. J. Denman, vice-president and general manager of the Tri-City Railway & Light Company, Davenport, Iowa, has been elected president of the company to succeed J. F.



B. J. DENMAN

Porter, who several months ago became president of the Kansas City Light & Power Company. Mr. Denman has been connected with the company at Davenport since 1913. Previous to that he was chief engineer of the power plants of the Detroit (Mich.) Edison Company. He was graduated from the University of Michigan and from 1892 to 1895 he was connected with the Toledo (Ohio) Consolidated Street Railway in various capacities. He was next appointed electrician for the Toledo & Maumee Valley Railway in charge of the repair shops. During 1890 and 1900 he was instructor in Toledo University and in 1900 and 1901 was associated with W. C. Clark under the firm name of Clark & Denman, consulting engineers. From 1902 to 1905 Mr. Denman was electrical engineer of the Toledo, Bowling Green & Southern Traction Company. Before his appointment as chief engineer of power plants of the Detroit Edison Company in 1912 Mr. Denman was with the company in commercial engineering work, power house construction and operation and special engineering and appraisal work. During 1906 and 1907 he acted as assistant professor of mechanical engineering in the University of Michigan, and in 1908 and 1909 he was non-resident lecturer in the electrical engineering department of the university.

## Obituary

Henry Hyde Whitman, assistant counsel to the Public Service Commission for the First District of New York, is dead. He was formerly a member of the law firm of Butler, Stillman & Hubbard. Mr. Whitman was born at Lewiston, Me., fifty-six years ago. He was graduated from Harvard University and from the Columbia Law School.

Thomas A. Cashin, superintendent of the Municipal Railway, San Francisco, Cal., died at his home in that city on Dec. 5, after several months' illness. Mr. Cashin was born in San Francisco thirty-eight years ago. He was appointed superintendent of the Municipal Railway on Oct. 1, 1912, before the construction of the first line was completed. The success of the system is attributed largely to his efficient management. Previous to this appointment to the Municipal Railway Mr. Cashin served as assistant engineer of way and structures for the United Railroads, and later was superintendent of the Fresno (Cal.) Traction Company.

## Construction News

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

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

### FRANCHISES

**Augusta, Ga.**—The City Council of Augusta has revoked the franchise granted the Augusta-Aiken Railway & Electric Company to lay a track on Druid Park Avenue, between Walton Way and Gwinnett Street, to connect the Summer-ville and Monte Sano car lines. The franchise was granted about three months ago on the condition that the track be laid within thirty days. Construction has not been begun by the company.

**Cumberland, Md.**—The Cumberland Electric Railway has asked the City Council of Cumberland for a twenty-five-year extension of its franchise. The present franchise has thirteen years to run.

**Lorain, Ohio.**—Attorneys for the Lake Shore Electric Railway and the Lorain Street Railroad, a subsidiary, have rewritten the two franchise ordinances recently granted by the City Council of Lorain, embodying changes acceptable to them.

### TRACK AND ROADWAY

**Fort Smith Light & Traction Company, Fort Smith, Ark.**—It is reported that this company's line from Fort Smith to Arkoma will be discontinued because of losses sustained by the company in its operation. It is probable that the line will be abandoned.

**Fresno (Cal.) Interurban Railway.**—This company reports that next year it expects to build 7 miles of new line from Sunmaid to Centerville, through a new orange district.

**Los Angeles & San Diego Beach Railway, San Diego, Cal.**—It is reported that the LaJolla line of the Los Angeles & San Diego Beach Railway will be electrified.

**City & Suburban Railway, Brunswick, Ga.**—In order to afford accommodations to the many people who are to be employed at the large shipbuilding plant of the United States Maritime Corporation, the City & Suburban Railway has decided to extend the car line to that plant, which will also include the plants of the Glynn Canning Company, and place the end of the line within a short distance of the large sawmill settlement of the Savannah River Lumber Company.

**Valdosta (Ga.) Street Railway.**—This company has begun the construction of a belt-line loop in Valdosta.

**Chicago (Ill.) Railways.**—The West Chicago Park Commissioners have consented to the extension of the West Division car line through Humboldt Park.

**Sioux City (Iowa) Service Company.**—Announcement has been made by E. L. Kirk, general manager of the Sioux City Service Company, that, owing to the difficulty in getting supplies and labor, all extensions, improvements and repairs on the company's lines will be delayed until after the war.

**Topeka (Kan.) Railway.**—The Public Utilities Commission of Kansas has approved the application of the Topeka Railway to issue \$81,000 of first and refunding mortgage bonds, part of which will be used to make betterments and extensions to its lines in Topeka.

**Waterville, Fairfield & Oakland Railway, Waterville, Me.**—This company will build one-half mile of track in Fairfield.

**Cumberland (Md.) Electric Railway.**—This company proposes to construct an extension to the Kelly-Springfield Tire Company's plant.

**Boston (Mass.) Elevated Railway.**—Another section of the Dorchester tunnel will be opened to the public on Dec. 15, adding much to the convenience of those traveling to and from South Boston and Dorchester. The new section

extends from the South Station under Fort Point Channel to a point beyond where Broadway extension crosses Dorchester Avenue. It is expected that the tunnel will be completed for its entire length and opened for travel next year.

**Duluth (Minn.) Street Railway.**—Rails have been laid by the Duluth Street Railway on its extension to New Duluth, and ballasting is now being done on the line. The line will be placed in operation about Jan. 1.

**Bridgeton & Millville Traction Company, Bridgeton, N. J.**—A block signal system is being installed by the Bridgeton & Millville Traction Company on all of its lines.

**Trenton & Mercer County Traction Corporation, Trenton, N. J.**—This company is rebuilding its tracks on South Broad Street, from Liberty Street to the city line. When this is completed the City Commission will lay out a parkway between the tracks.

**International Railway, Buffalo, N. Y.**—The new single-track line of the International Railway between the city line at Riverside Park and the Wickwire Steel Company's plant on the Niagara River near the town of Tonawanda has been completed and placed in operation. The line is 1½ miles long and serves the new industrial district along the Niagara frontier between Buffalo and Tonawanda. A new power substation was built to supply power to the line. Efforts are now being made by the municipal authorities and commercial organizations of Tonawanda to have the International extend this new line into the city of Tonawanda. The company has a franchise to build an extension to the line.

**Syracuse & Northern Electric Railway, Syracuse, N. Y.**—The directors of the Syracuse & Northern Electric Railway at a recent meeting authorized the sale of 4 miles of railroad track. The track which will be taken up comprises one of two tracks of the company's line from Watertown Junction to South Bay. The rails are to be torn up and sold, leaving a single-track line. The sale of the rail is expected to net the company about \$30,000.

**Goldsboro (N. C.) Electric Railway.**—A report from the Goldsboro Electric Railway states that during 1918 it expects to construct 1 mile of new track and reconstruct 3 miles of track.

**Grand Forks (N. D.) Street Railway.**—About 1 mile of new track will be built by the Grand Forks Street Railway next year.

**Pennsylvania & Ohio Railway, Ashtabula, Ohio.**—This company will rebuild 1 mile of track in Conneaut.

**Chillicothe, Ohio.**—Work has been begun by the War Department on the construction of an electric railway from Chillicothe to Camp Sherman. [Dec. 1, '17.]

**Coatesville (Pa.) Trolley Company.**—Track-laying has been begun by the Coatesville Trolley Company at the south city line of Coatesville, on South First Avenue, and is now progressing toward Boxtown, and will be pushed on to Modena. It is planned to have cars running on the new line before next spring. A route has also been surveyed northward to Rock Run and Honeybrook. Paul S. Stansbury, president. [Sept. 15, '17.]

**Dover-Rossville Transit Company, Dover, Pa.**—The State Highway Department has issued a permit to the Dover-Rossville Transit Company to erect poles along route 124 from Rossville to Dover. It proposes to inaugurate a trackless trolley, but before it can begin the operation of cars it must satisfy the department on several points. It must show that its cars will not have a gross weight of more than 24,000 lb., machine and load, or that they will not be more than 90 in. in width. It must prove that the operation will not be dangerous to other users of the highway. The company states that the poles are to be used to support electric power lines for public use, including the propulsion of motor vehicles. [Nov. 17, 1917.]

**Johnstown-Somerset Traction Company, Johnstown, Pa.**—Officials of the Johnstown-Somerset Traction Company are prepared to push the construction of its proposed line from Johnstown to Rockwood as rapidly as possible through the winter months. The company is having difficulty in securing railroad ties for the line. Kent Miller, Somerset, secretary. [June 16, '17.]

**Philadelphia & West Chester Traction Company, Upper Darby, Pa.**—It is reported that the Philadelphia & West Chester Traction Company will build a high-speed line to Chester from Media, via Morton, and running close to the Baldwin Locomotive Works at Eddystone. The line will take care of passenger service to and from Chester, Eddystone, Philadelphia and other points.

**Columbia Railway, Gas & Electric Company, Columbia, S. C.**—This company's line to Camp Jackson is being extended to the center of the camp between sections F and G, and will continue to within a few yards of division headquarters, then turn to the left and join the main track at the Jackson circle, near the camp post office. The line will be double-track.

**Knoxville (Tenn.) Interurban Railway.**—It is reported that plans of the Knoxville Interurban Railway for the construction of an electric railway from Knoxville to Maryville have lapsed and will not be revived until after the war. The company obtained a charter in October, 1916, and was granted a franchise by Maryville and Blount Counties. Prices and shortages of material and equipment are given as the reason for deferring the action.

**Dallas (Tex.) Railway.**—The improvements outlined by R. Meriwether, general manager, to be carried out by the Dallas Railway under the new service-at-cost franchise were approved by the City Commission at a special session on Nov. 28. It is proposed eventually to carry out work under the program to a total of \$1,000,000. For the immediate future the expenditure of \$400,000 is contemplated. Three new lines will be established and two that are now in operation will be discontinued. The plans for the program of betterments were reviewed at some length in the *ELECTRIC RAILWAY JOURNAL* of Nov. 17, page 914.

**Tacoma Railway & Power Company, Tacoma, Wash.**—It is reported that the Tacoma Railway & Power Company plans to extend its line into Camp Lewis to help in relieving the traffic congestion.

**Charleston-Dunbar Traction Company, Charleston, W. Va.**—Announcement has been made by Fred P. Grosscup, president of the Charleston-Dunbar Traction Company, that the line will be extended to Sattes, the new town to be constructed by the E. I. DuPont de Nemours Powder Company, 6 miles below Dunbar, on the Kanawha River.

**Charleston (W. Va.) Interurban Railroad.**—In answer to complaints against the Charleston Interurban Railroad, the Public Service Commission of West Virginia has entered an order in which it finds the street car service being given in Washington Street between Duffy Street and the west end of the Kanawha City bridge to be inadequate to meet the convenience and necessities of the public. The commission therefore directs that the company shall on or before June 1, 1918, provide such tracks, cars and equipment as may be necessary to give its patrons tributary to that portion of the Washington Street line a twenty-minute round-trip service in addition to the service now given, to enable such patrons to connect with the cars now serving what is known as the outer loop. The commission sets forth that it allows the time until June 1 for the completing of the improvements on account of the inability of the company to secure the labor and materials to provide the track and equipment necessary for the improvements required.

**Milwaukee Electric Railway & Light Company, Milwaukee, Wis.**—The city of Milwaukee has begun a mandamus action against the Milwaukee Electric Railway & Light Company to compel it to extend the Mitchell Street car tracks 1 mile west. It is said in the mandamus action that public necessity requires the extension of this line and that the Common Council has directed that legal action be taken.

## SHOPS AND BUILDINGS

**Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.**—It is reported that the shops of the Chicago, Milwaukee & St. Paul Railway at St. Paul will be enlarged.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—Plans have been made by the Northern Ohio Traction & Light Company for the construction of a freight terminal in Akron. No work is contemplated at present on account

of the high costs of material and labor. The plans call for the erection of four buildings and trackage. These buildings will be constructed one or two at a time as the growth of the business requires. A building for the use of the line department as a storeroom and a garage will also be constructed eventually adjacent to the freight yard. A side track off the main entrance track to the yard and a steam road connection close by will afford facilities for receiving supplies in carload lots directly at the storeroom.

**Philadelphia, Pa.**—Bids were opened on Dec. 4 by the Department of City Transit of Philadelphia for contract No. 539, covering plumbing installation on station buildings at Orthodox-Margaret streets and at Ruan-Church streets, and for contract No. 540 for electrical installations in station buildings at Orthodox-Margaret streets and Ruan-Church streets. The low bidder for contract No. 539 was S. Faith Company, Inc., Philadelphia, at \$5,000, and for contract No. 540, J. F. Buchanan & Company, Philadelphia, at \$5,682.

**Texas Electric Railway, Dallas, Tex.**—This company has purchased a site on East Lamar Street, near the Washington Iron Works, Sherman, and will begin immediately the construction of a carhouse for interurban cars. The new structure will cost about \$100,000.

## POWER HOUSES AND SUBSTATIONS

**Georgia Railway & Power Company, Atlanta, Ga.**—The city of Decatur has awarded a contract to the Georgia Railway & Power Company for the complete electrification of its water works. New electrically-operated triplex pumps and auxiliary equipment will be installed.

**Gary (Ind.) Street Railway.**—A permit has been taken out by the Gary Street Railway, successor to the Gary & Interurban Railroad, for the erection of a brick substation on Jackson Street, near Eleventh Avenue, to cost \$8,000. The building, which is practically completed, will be used as a transformer station for all the city lines of the company.

**International Railway, Buffalo, N. Y.**—This company has placed in operation a new 8000-hp. generator at its old Niagara Street power house. For several months the company has been assembling the turbine and this addition to the company's power plant facilities will be of great aid during the peak-load hours.

**Durham (N. C.) Traction Company.**—During the past year the Durham Traction Company has spent about \$105,000 in improvements to its plant in Durham, most of the work now being completed. A new modern steel and brick addition has been made, built with a view of extending it over the old plant in the future. A new 2000-kw. turbine is being installed. A new Sterling 512-hp. boiler has been installed on the left side of a battery. The right side boiler will be installed as soon as material can be secured, thus giving the plant 1024 hp. A new stack 175 ft. high has been added.

**Johnstown & Somerset Railway, Somerset, Pa.**—A report from the Johnstown & Somerset Railway states that the company will probably place orders next month for equipment for one 300-kw. substation and 10 miles of overhead line.

**Manila Electric Railway & Light Corporation, Manila, P. I.**—C. N. Duffy, general manager Manila Electric Railway & Light Company, is quoted in the Manila papers as saying that owing to demands for power the company's power station must be enlarged. Additional equipment now being installed will give an increased capacity of 10 per cent, but further increases are necessary.

**Charleston Consolidated Railway & Lighting Company, Charleston, S. C.**—A new rotary converter substation is being erected by the Charleston Consolidated Railway & Lighting Company on Clement's Ferry Road, between Five-Mile House Curve and Oaks Curve. The structure will be one story high. It will be made of brick, with concrete foundations and will be fireproof throughout. The station will have a capacity of 700 hp. and will supply current to the suburban line. It is planned later to make this an automatic station throughout.

# Manufactures and Markets

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

## Making Shells Out of Trolley Wire and Rails

Factors That Must Be Kept in Mind by Railway Properties in Placing Orders for Supplies and Equipment

BY R. J. PIKE

Purchasing Agent Mahoning & Shenango Railway & Light Company, Youngstown, Ohio

To the railway man "making shells out of trolley wire and rails" is a very serious subject, and this is practically what is being done at the present time. Raw products which ordinarily would be turned into the articles for which we have daily use in electric railway work are now being turned into munitions and other equally necessary articles for war purposes, to the virtual exclusion of their manufacture into those things which we need to carry on our business.

For every one of us the question of economy has ceased to be one of mere money. Where once we might well measure replacements, repairs or renewals of track, or cars, or lines by the ultimate economy effected, now we must measure the consumption of materials in the light of the possibility, or impossibility, of obtaining more of them.

### EFFECT OF GOVERNMENT CONTROL ON PRICES AND DELIVERIES

A short time ago a requisition was received for 5 miles of No. 0000 trolley wire. At that time, because of the expected price fixed by the government, we contemplated buying only 2 miles of the desired quantity which, we estimated, would, with that which we had in stock, take care of our needs until Jan. 1. In the meantime the government set a price of 23½ cents per pound to the government, the Allies and the public.

We placed our order at a higher price than that quoted by another manufacturer to get ninety days better delivery and advised the manufacturer of this fact, stating that, unless the delivery as promised could be made, he should advise us by return mail. We promptly received the following notice from the manufacturer:

"We have been told to-day that the government may commandeer all copper. We have bought copper for our next three months' requirements, but may not be able to get it, therefore we are accepting your order based on our ability to secure copper, and if we do not get it we reserve the right to cancel."

Upon receipt of this notice and because of our further investigation of conditions, we immediately placed an order for the other 3 miles requisitioned and will consider ourselves lucky if we receive shipment on this order before the close of the war.

From our investigation we learned that the government is now in the market for delivery in the next three months for three times as much copper as there is in the country at the present time.

### MAXIMUM SERVICE SHOULD BE SECURED

To us this condition of affairs can have but one meaning, and that is that every mile of trolley wire now in the air has reached an almost priceless value. The waste of even a tiny bit of it in repairing a break, or the replacement of a stretch, however short, before it has given its last possible hour of service, carries with it potentialities of long interruptions to some part of our service, or even to the impossibility of continuing some part of our ordinary operations.

Within this year copper has sold as high as 36 cents a pound, and the market price would now be higher still had

not the action of the government in fixing a basic price been anticipated. And it might be well to state here that the public is not now buying copper at the government's price of 23½ cents.

A similar situation exists with regard to steel. On Sept. 24 President Wilson approved a scale of steel prices. These prices went into effect immediately and obtain until Jan. 1, 1918.

The following is a comparison of recent prices with agreed prices on a few items:

	Recent Price	Agreed Price	Present Reduction Per Cent
Pig iron .....	\$58.00	\$33.00	43
Steel bars .....	5.50	2.90	47.3
Steel shapes .....	6.00	3.00	50
Steel plates .....	11.00	3.25	70.5
Connellsville coke .....	16.00	6.00	62.5

We purchased steel rails less than two years ago at \$31.50. The present figure is \$102, and while small quantities could recently be purchased for comparatively short delivery, large quantities are quoted for delivery in eighteen months to two years.

In January we purchased steel wheels which were promised for delivery in ten months and were shipped on Sept. 29.

In May we purchased axles for delivery in eight to ten months.

We recently purchased forged steel gears and found that we could not get delivery inside of twelve months and were obliged to accept cast steel heat-treated gears, and only because of the manufacturer's inability to supply forged gears as contracted for we were able to get the castings at the contract price and the cast gears cannot be manufactured inside of twelve weeks. The delay in delivery on gears is because manufacturers are forging steel blocks which are used in the bases of large shells.

### CONSERVATION OF MATERIALS AND SUPPLIES

Aside from the business considerations which require officials and employees in all branches to practise the strictest economy in the use of materials during the present period of unprecedented prices, patriotic motives should influence each of us to employ the methods which will be most helpful to conserve materials and supplies and prevent depletion of stocks which it will be difficult to replenish during the continuance of the war.

In no way can we do more to add to the efficiency of operation than by conserving materials. Material is now the largest factor of expense of our company. During the war we will be forced to do without many materials which we cannot obtain, and our supply of all articles will be greatly restricted.

Duplicate requisitions should not be made. No one thing contributes so largely to unneeded stocks of material. If a requisition is with the stores department for an item and delivery is not made promptly, after a reasonable time, the storekeeper or the purchasing agent should be given the number of your requisition and asked to hurry the material.

The purchasing department endeavors to keep the departments advised of delivery date, and because the material is not delivered as promptly as promised is no indication that the purchasing agent has overlooked it but is probably caused by inability of the manufacturer to obtain castings or other necessary material, or perhaps because of freight congestion or embargoes.

All requisitions should be checked over at the time they are signed to see that the quantity is conservative and that no material whatever is requisitioned which is not needed even to the point of great inconvenience but not, of course, to the point of discontinued operation. Cancellation of requisitions and orders should be requested when changes



in the working program or other reasons which will prevent the materials being used are made.

Don't issue new tools except upon return of broken and worn-out tools. Don't allow nuts, bolts and washers, nails and screws to remain on the floor or the ground where they have been dropped while work was in progress, but gather them up after the job is completed and return them to stock. Show on the requisition what material is to be used for and don't always say "for stock," as with more information it might be possible to substitute something else. Don't hold scrap bolts, tin foil, paint and oil barrels, reels or any other scrap material but turn it into the stores department or request its sale on a requisition.

## Wire Market in Sluggish Condition

**But 60 to 75 Per Cent of General Copper Requirements Remain After Taking Care of Government and Munition Plants**

Transactions in every description of wire—bare, rubber-covered, weatherproof, etc.—have been exceedingly slow, both price and deliveries being obstacles which the jobber, dealer and consumer find difficult to overcome. Stocks are low in first hands, and going down the line the same condition prevails. Some exceptions exist, as might be expected, and these concerns, while content to laud their own shrewdness and forehandedness, are in no hurry to part with their possessions unless a stiff premium price is forthcoming. It is the belief that sales of crude copper are supposed to observe the governmental price; and though deals have been made on a different basis the seller and buyer are in no wise inclined to discuss the matter.

If the trade is looking forward to January for a lower price in copper, and consequently a like revision in wire, the delusion may as well be dismissed, according to the opinion of the best informed who keep in close touch with the primary market. It is said that when the government and the munition manufacturers are supplied with the full amount of copper they need, the quantity left appears to be sufficient to supply 60 to 75 per cent of general requirements. Deliveries to manufacturers and commercial consumers are understood to be three or four weeks behind schedule. At the moment it seems possible that enough of the metal can be provided to supply the demand of the industrial consumers in full.

All contracts now drawn for January and later deliveries are subject to government revision in price; and in consequence there is nothing to retard a buyer from placing his orders for future business. Contracts for future deliveries to consumers carry this clause:

"In consideration of the above price (5 per cent over the official price of 23.50 cents per pound, namely 24.67½ cents) and of the conditions imposed by the War Industries Board in fixing the same, buyer agrees and represents that the copper sold hereby is for buyer's own use in his plant in the course of his regular manufacturing business. By reason of government priorities, shipments at time specified are subject to seller's ability to make same after supplying demands of the United States and its Allies, and complying with priority or distribution orders issued under government authority. Shipments so deferred will be made at the earliest opportunity."

The War Industries Board called a meeting of copper interests for Dec. 14, the announcement saying:

"At the time the agreement on the prices now prevailing was made it was understood that in the case of copper the price determined upon would be subject to possible revision at the expiration of four months. The conference announcement is for the purpose of carrying out this understanding."

Consumers have been placing orders for January, February and March delivery, but they do not look for any change in the price they have contracted for; that is 23.50 cents in car lots. But should a lower price be announced after the conference a rebate will be looked for by the buyers. Three New York jobbing houses are offering to take retail orders for electrolytic for prompt, December and January deliveries at 24.67½ cents, and other jobbers in this market state they expect in the near future to be in a position, through deliveries from producers, to sell at the same price in jobbing lots.

## Public Utilities Will Get Coal

**Fuel Administrator Puts Them on Priority List for Preferential Shipments During Current Month**

On Dec. 2 Dr. Garfield, United States Fuel Administrator, issued several requests to coal producers of which some five thousand will be affected. These requests were designed to insure the fulfilling of the requirements of the users specified, and while not in the form of direct orders from the Fuel Administration, the producers will have to co-operate to meet these requests.

The following request was directed to all operators in Ohio, Michigan, Kentucky, Illinois, Indiana, Alabama, Tennessee, Colorado and Oklahoma:

"Subject to compliance with orders heretofore issued by the Fuel Administration for preference in shipments for certain specified purposes, the Fuel Administration requests that you give preference in shipments for the next thirty days on government orders, railway fuel, domestic requirements, public utilities and munition plants.

"It is necessary in the present situation to give preference in shipments as requested, and we solicit and thank you in advance for your co-operation in this direction.

"We will appreciate it if you will advise the Fuel Administration of any free tonnage you have available which we may call on you to ship for emergency requirements."

In addition all operators in Pennsylvania, West Virginia and Virginia were requested in a similar form to give preference in shipments among others to utilities for the next thirty days.

The request covers practically all of the coal production of the country, outside of the Rocky Mountain coal districts. The Rocky Mountain output is largely consumed in the localities where it is produced.

### EFFECT ON TRACTION PROPERTIES

An order by Priority Administrator Lovett on Dec. 7 directing preferential shipments be given to food, fuel and military supplies places these commodities in a priority sequence. The first is steam fuel for railroads for current use; second, food; third, military supplies; fourth, coal for by-product coking plants, and the fifth includes all others to be given priority. The order for the fifth class reads as follows, in so far as it pertains to traction properties:

"5. Preference and priority in movement only to coal, coke and raw materials for current use, but not for storage, consigned direct (and not subject to reconignment), to public utilities, including street and interurban railways, electric power and lighting plants, gas plants, water and sewer works."

## Large Bookings in Steel Ties

**Immediate Deliveries That Have Obtained in the Current Year Are Expected to Continue During 1918**

Although generally speaking equipment sales for electric railway construction work are not showing any strong tendencies, the demand for steel ties, a comparatively recent product, is still growing. A statement from what is probably the most active company at present engaged in the development of the steel tie business is to the effect that November was the largest month in the history of the company in booking tie tonnage. During the first five days of the present month this company booked 13,000 ties for traction companies in Ohio and Colorado.

Deliveries during the past year have been made according to order, materials and factory facilities permitting shipments being made in from one to two weeks. This same condition as to deliveries is expected to obtain during the coming year.

One of the greatest reasons given by the manufacturers for the continued growth in steel tie bookings is the small labor requirements on installation. With the difficulty that exists at the present time in obtaining section hands this saving in labor requirements presents a very forceful sales argument.

**ROLLING STOCK**

Miami (Fla.) Traction Company contemplates purchasing four new storage-battery cars in 1918.

Seattle & Rainier Valley Railway, Seattle, Wash., is planning to remodel six old cars for one-man operation.

Alexandria (La.) Municipal Railway expects either to build or to purchase six single-truck car bodies during the coming year.

Montgomery (Pa.) Transit Company expects to purchase in 1918 two interurban steel cars similar to three new cars placed in service last August.

Plymouth & Sandwich Street Railway, Plymouth, Mass., plans to introduce one-man car operation, and will purchase two or three one-man safety cars during the coming year.

Dubuque (Ia.) Electric Company will probably purchase a number of light-weight safety cars, if successful in securing a repeal of an existing ordinance prohibiting one-man car operation.

Johnstown & Somerset Railway, Somerset, Pa., expects to purchase two double-truck, combination passenger and baggage cars and one double-truck freight car, some time during the coming year.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is expected to order in the near future the twenty fully-equipped one-man cars provided for in the new ordinance granted to the company at the election in Waterloo on Dec. 5.

**TRADE NOTES**

William S. Boyd, formerly assistant in the purchasing department of the Crucible Steel Company of America, Pittsburgh, Pa., is now purchasing agent of the Page Steel & Wire Company, Monessen, Pa.

Western Electric Company, New York, N. Y., reports that G. A. Schneider, formerly of its San Francisco sales organization, has been appointed manager of its Buffalo office, succeeding J. W. Tabb, who has been transferred to the New York office.

W. O. Wade has resigned as chief engineer and sales engineer of the Railway Improvement Company, New York, N. Y., to become a partner in Wigmore, Hall & Company, Los Angeles, Cal. This supply company represents the Railway Improvement Company on the Pacific Coast for various specialties of the latter, including Rico coasting recorders.

Dorrite Insulation Company, Inc., Jersey City, N. J., has been incorporated with a capital stock of \$200,000. Harry A. Dorr is vice-president; Robert D. Radcliffe, Jr., treasurer, and R. D. Adams secretary. A large two-story brick building is now being equipped. The factory will be in operation about Feb. 1, 1918. The company proposes to manufacture "Dorrite," an insulating material which may be molded, stamped or pressed into all special or commercial sizes and shapes, for signal, third-rail and all insulating electrical uses.

R. N. Ehrhart, chief engineer of the condenser department of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has resigned to take up his duties as president and consulting engineer of the Sedar Coal Company. He has also been retained as consulting engineer by several engineering firms and by his old employers, the Westinghouse Company. Mr. Ehrhart will engage in consulting work for power plant equipment with special reference to turbine and condenser installations. His address is 217 Vine Street, Edgewood, Pittsburgh, Pa.

Arthur D. Little, Inc., Cambridge, Mass., has opened a new chemical research and testing laboratory on Charles River Road near Kendall Square. The plant consists of a main building 150 ft. long and 50 ft. wide, three stories in height, with commodious basement. On the first floor are the administration offices and quarters for a chemical museum, the library and research laboratories occupying the second floor. The third floor is devoted to analyses and tests, with a large and airy lunch room for the staff and the basement contains a complete pulp and paper mill with facilities for general industrial testing on a large scale. The Little or-

ganization is international in its scope and is engaged in work extending from the battlefields of Europe to the Far East. Electric railways have frequently called upon it for aid in solving supply and equipment problems. The new plant is said to be the largest commercial laboratory of its kind in the country.

H. T. Dyett, president of the Rome (N. Y.) Wire Company, has accepted appointment as a member of the Underwriters' Laboratories' Industry Conference for rubber-covered wires and cords. Mr. Dyett was nominated as one of the three manufacturers' representatives on the conference at a recent meeting of the wire and cable section of the Associated Manufacturers of Electrical Supplies. He succeeds the late John C. Bridgman of the Hazard Manufacturing Company. The other manufacturers' representatives are Leroy Clark, president of the Safety Insulated Wire Company; and Everett Morss, president of the Simplex Wire & Cable Company.

**NEW ADVERTISING LITERATURE**

Diamond Expansion Bolt Company, New York, N. Y.: A leaflet descriptive of its Diamond-strand connectors used with specially heavy three-bolt guy clamps.

Railway Track Work Company, Philadelphia, Pa.: Bulletin No. 1. "A Drop of 1000 Feet" describes and illustrates the company's reciprocating track grinder for repair work.

Locke Insulator Manufacturing Company, Rochester, N. Y.: "The Insulator Book," supplement No. 2, describes the specific types of insulators, the products of this company, accompanied by other detailed information and illustrations. The trade is invited to send for a copy.

Condit Electrical Manufacturing Company, Boston, Mass.: "Useful Information," just published by the company, is a book, bound in black and gold, with flexible cover, comprising 164 pages of conveniently arranged tables and information pertaining to the application of electrical protective equipment.

Norton Company, Worcester, Mass.: Booklet on "Tool Room Grinding," describing and illustrating the company's various devices for handling and sharpening cutters and reamers, drills, taps, lathe and planes, tools and dies, together with "some good points to remember." A copy may be had by applying.

**NEW YORK METAL MARKET PRICES**

	Dec. 5	Dec. 12
Prime Lake, cents per lb.	23 1/2	23 1/2
Electrolytic, cents per lb.	23 1/2	23 1/2
Copper wire, base, cents per lb.	30	29
Lead, cents per lb.	6 1/2	6 1/2
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8	7.77 1/2
Tin, Straits, cents per lb.	85	86
Aluminum, 98 to 99 per cent, cents per lb.	36	36

**OLD METAL PRICES—NEW YORK**

	Dec. 5	Dec. 12
Heavy copper, cents per lb.	22	22
Light copper, cents per lb.	19 1/2	19 1/2
Red brass, cents per lb.	17 1/2	17 1/2
Yellow brass, cents per lb.	14 1/2	14 1/2
Lead, heavy, cents per lb.	5 1/2	5 3/4
Zinc, cents per lb.	5 3/4	5 3/4
Steel car axles, Chicago, per net ton.	\$42.00	\$42.00
Old carwheels, Chicago, per gross ton.	\$31.00	\$31.00
Steel rails (scrap), Chicago, per gross ton.	\$34.50	\$34.50
Steel rails (relaying), Chicago, per gross ton.	\$55.00	\$55.00
Machine shop turnings, Chicago, per net ton.	\$17.50	\$17.50

**RAILWAY MATERIALS**

	Dec. 5	Dec. 12
Rubber-covered wire base, New York, cents per lb.	34	34
Rails, heavy, Bessemer, Pittsburgh.	\$38.00	*\$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton.	\$40.00	*\$40.00
Wire nails, Pittsburgh, per 100 lb.	\$4.00	\$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	\$5.50	\$5.50
Steel bars, Pittsburgh, per 100 lb.	\$5.00	\$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$5.80	\$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$4.85	\$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.35	\$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$2.50	\$3.95
Cement (carload lots), New York, per bbl.	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.	\$2.65	\$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.21	\$1.21
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.22	\$1.22
White lead (100 lb. keg), New York, cents per gal.	11	10
Turpentine (bbl. lots), New York, cents per gal.	50 1/2	48 1/2

\*No quotations available for lack of market.