

# Electric Railway Journal

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## Has the Time Come for the Taxpayer to Step In?

**C**OURAGE of a high order in stating conditions, a fine enthusiasm and a keen desire to find the best solution for an admittedly difficult problem—such are the qualities which one must ascribe to the Massachusetts Public Service Commission after reading its latest annual report to the legislature. An abstract of this remarkable document is published in subsequent pages. We say “remarkable,” for rarely if ever has any regulatory body discussed the general electric railway situation with such candor.

But, as the commission itself remarks, “it is much less difficult to know what ought to be done than how to do it,” and from this phase of the case will arise the dissent which many will undoubtedly express in regard to some of the commissioners’ suggestions. It is manifestly true that the credit of electric railways stands impaired, that the properties are deteriorating, that the service needs improvement and that withal the public is paying what it considers high prices. It is equally true that the welfare of communities demands the restoration of credit or the provision of some other means which will enable railways to render first-class service, and also a system of fares which will make the service as useful as possible and help rather than restrict community development. But how is all this to be brought about?

A solution worth most serious consideration, the commission feels, is that of public ownership of practically all the electric railways in Massachusetts. The commission’s reasoning is simple. It believes it to be not impossible that, as the public becomes inured to a policy of higher fares, this may produce better financial results than have yet been realized. On the other hand, the commission feels that the chance of higher fares curing the present financial ills is small and that at any rate there is no immediate prospect of cure. Rather than have the communities suffer from a further extended trial of a method whose success is not certain, the commission argues in favor of the taxpayer bearing part of the cost of transportation, and says it is difficult to escape the conclusion that the only effective remedy is outright public purchase or taking over of the properties.

Here we have a definite challenge to the proponents of higher fares to show not only the presence of beneficial results but also the absence of injurious ones. It also constitutes a definite opportunity for the opponents of public purchase to show that a venture into the controversial and complicated fields of public ownership and taxation would, to say the least, be unlikely to produce favorable results before the coming of those

normal times when higher fares would certainly handle the situation adequately.

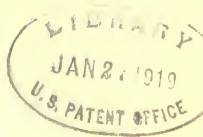
In our opinion the Massachusetts commission depreciates a little too much the possibility of ultimate success from higher fares. Financial aid from taxation may be necessary in the meantime, but this can be accomplished in a temporary manner better than in connection with permanent acquisition. The placing of any transportation cost upon the taxpayer would involve a radical change in public policy, and where adequate public control exists this change would give no reason for adopting another radical upheaval in public policy, from private to public ownership.

The Massachusetts commission sees the issue clearly and states it frankly as the basis for discussion. It is wise in postponing the formulation of any definite plan until the subject has been considered by many minds from many angles and until the public has expressed its opinion.

## Higher Wages Do Not Always Increase Production

**W**ITH every increase in wages goes the hope that it may be offset by some form of increase in production which will tend to keep the net cost at or below the level obtaining before the increase. Apropos of the platform for reconstruction which has been presented to the Senate committee on labor by the American Federation of Labor is the conviction that greater production or improved service should figure more prominently in discussion of labor problems than it does at present. In a recent editorial one of our leading technical journals indicated that conditions are not what they ought to be by noting that in the steel workers’ trade the leaders were co-operating with the government to bring about the desired increase in production. In this case the unit of production, the number of rivets driven or tons of steel erected per dollar-hour, can readily be measured. In other trades it is difficult to measure production on a unit basis, but even here the situation is essentially the same.

Capital would much prefer to pay high wages rather than low if it could get corresponding high prices for its products, but operative in this connection is the economic law that wages and prices can be no higher than the traffic will bear. Attention is directed also to a report of the National Industrial Conference Board to the effect that the adoption of a fifty-four-hour week reduced production in every factory employing more than 750 hands, with moderate and various results only in the case of small and relatively inefficient factories. As reduction in working hours is another form of in-



creased wages, this statement by a high authority would seem to bear out the previous contention.

It is unfortunate that many wage earners seem to think that it is not necessary really to earn more when paid more. On the contrary, common labor has tended to adopt the attitude of doing as little work as possible for the pay received, and advantage has been taken of the reluctance of employers to release men on account of slack habits in work or general laziness, because of the difficulty in securing men to replace them. It has been the experience of electric railways generally that the amount of work done per day by track laborers, for instance, has steadily declined for the past two years, and we are inclined to the belief that this decline is quite general in other industries employing common labor. The problem of how to increase the production of common labor in proportion to increases in wages is far from a satisfactory solution. To our minds it is really a problem in the realm of "human engineering," which involves ceaseless study of methods of getting together with the men; teaching them to understand that the employer's interest and theirs are one, employing incentives which will attract steady men, and displaying a spirit of justice and fair dealing.

#### How Can I as an Individual Help the Engineering Association?

THE minutes of the recent meeting of the executive committee of the American Electric Railway Engineering Association, printed elsewhere in this issue, indicate a desire on the part of the men composing it to get committee work started again, and started promptly. This will be necessary if anything really worth while is to be done in time for discussion at the fall meeting. Like a trolley car, an association possesses mass and hence requires force to accelerate it after it has been at rest for a time. The Engineering Association lost its momentum when it slowed up during the war period. That momentum must be restored by means of a strong and steady pull by everyone interested in the association's success between now and convention time. One practical way in which this can be done is for committeemen to take their responsibilities seriously and for all to co-operate in furnishing promptly whatever data the committees may require to enable them to produce good reports. Another thing that is needed is a careful study by the individual members of the association records so that constructive criticism can be furnished the committees.

The Engineering Association has a creditable record. It has been of great value to the companies because its standards and recommended practices have assisted the companies in securing reliable supplies at reasonable prices and in furnishing the auspices under which their engineers could get together to exchange the fruits of experience. It has a promising future because better engineering than ever will be needed in the coming years. It needs to digest the work done previously and discard that which time has proved to be useless, to lay plans for doing work for the industry which no other agency can do, and to arouse among its members a feeling that it is really worth while from every standpoint.

#### The Increases Asked Are Only Reasonable

THE Denver Tramway Company is asking its patrons to suggest the best remedy for solving the local traction problem. In a recent issue of its little pamphlet *Tram-O-Grams* the company presents a statement of increased expenses and says it is entirely willing to accept any fair and equitable plan that the sound judgment of the community as a whole may consider better and more satisfactory than the one now being pursued. Its comments on possible alternative measures contain some items worthy of discussion.

The Denver situation was brought to a climax—as in many other cities—by the award of the War Labor Board granting increased wages to the employees. It has been suggested by some persons that the matter of increased wages can be taken care of by reducing "other expenses." The Denver company has been known as an advocate of economy measures consistent with good service. We doubt, therefore, if any considerable saving could be made by a pruning knife judiciously handled by a capable critic.

Another suggestion to the effect that the company should "carry its own burden by borrowing money," is easily answered by an invitation for anyone to go out and attempt to borrow money on the afflicted company's credit. It must be remembered that credit only comes from prosperity, and the people as a whole have it in their power to give the corporation better borrowing ability by fair treatment which will restore its earning capacity.

A good point is made in the company's statement to the effect that the men who led the crowds in the recent rioting were those whose wages had been enormously increased and who by their actions were trying to erect a barrier against the payment of higher wages to the car employees. Happily, these measures did not prevail, and the company has been proceeding with the collection of a higher fare. It seems, however, that the people of Denver have great expectations of the value of their additional payment, and some of them are clamoring for new cars, new rails, etc., out of the surplus which they expect will remain after paying operating expenses. The company answers these requests by the statement that the present fare will hardly pay expenses, much less leave an excess for the purchase of such new equipment.

This same expectation has been expressed in other cities where the people who have been obliged to pay a higher fare thought that thereby they have placed the railway company on the high road to prosperity. Actually, we do not understand that the average company is asking for more than an emergency rate which will help tide it over the present crisis until better days bring increased business and lower operating charges. Then and only then will it be fair for the public to insist on reconstruction of the system or additional service. We do not believe, on the other hand, that any management will be so blind as to refuse an extension of facilities where such improvements are likely to bring an increase in revenues. The railway manager knows that his job depends on satisfying the security holders and that their prosperity is contingent on meeting the transportation requirements of a community which is willing to pay for adequate service.



## The List of

### Receiverships Is Lengthening

THE tabulation of electric railway receiverships, foreclosures and abandonments set forth in our Annual Statistical Number has attracted considerable attention in the daily and financial press. The general verdict is that it tells a sorry story, yet if we are to believe the argument of spokesmen for the public in some recent fare hearings, a receivership is nothing for the public to worry about. We wonder if men who utter such sentiments really mean what they say? Glancing at the history of last year's experience in the industry we find that twenty-nine companies—including the extensive properties of Brooklyn and Pittsburgh—were taken over by receivers, and that almost three score companies suspended service in whole or in part. Since Jan. 1 other important properties, including those at New Orleans and Memphis, have joined the increasing number of embarrassed properties, while still others frankly say that they cannot much longer withstand the economic strain to which they are now being subjected. Roads which are thus facing financial embarrassment include properties which before the war were considered among the strongest financially in the country.

There is, of course, a great difference between a receivership and the suspension of service, although the Bay State company experience shows that one sometimes follows the other. Nevertheless, the public does not profit in either case, and if one may regard the thousands of security holders as part of the public there is a distinct loss in every instance. No one gains by destruction of capital.

In this connection we might also consider the suggestion sometimes made in rate cases that service be reduced rather than a fare increase be granted to cover growing expenses. Doubtless there are instances on some properties where an excess of service is given even in normal times and where an elimination of this waste should be the first act of a prudent management. In the great majority of cases, however, a lessening of service would mean inconvenience to the patrons and possibly the development of jitney lines or other competitive agencies. Reduction of service in such circumstances should be made only after mature consideration and for as short a period as possible.

We remember hearing a city attorney in a rate case suggest that in the event of traffic falling off because of a 1-cent increase in fares the company should take advantage of the fact by taking off a corresponding number of cars. While this might be advisable in some cases it is not always practicable because contracts for a minimum day's pay for trainmen would not allow the company to get the full benefit of such a measure. It must be remembered, too, that the welfare of a community depends to a considerable extent on its transportation facilities, and a curtailment of service might result in driving industries to other locations.

There can be no question that the average car rider dislikes a proposal to pay a higher fare. It is necessary, therefore, to make a satisfactory showing for an increased rate and when this is proved the public has its choice of paying the new rate or doing without proper service. In either case the price must be paid, and the

public should think well before giving basis for the opinion that that particular community is not the right place for capital to seek investment. A reputation for playing bogey man with capital is not one in which any city can take pride.

### A Neglected Element in the Electric Railway Return Circuit

WHEN there is excessive potential drop in the track return circuit of the electric railway, current leaves the track, if the conditions are favorable, and wanders back to the power house by devious and sometimes troublesome routes. It must all get back somehow, for one of nature's inexorable laws requires this to be so. Naturally any pipe lines or cable sheath which lie in the path between track and busbar will tempt the stray currents, for another of nature's laws requires them to follow lines of least resistance. The magnitude of the current leakage from the rails depends upon two, and only two, physical quantities—the fall of potential along the track and the resistance between track and busbar. A great deal of attention has been given to reduction of the voltage gradient along the track (usually referred to in terms of volts per thousand feet), but there is little information available regarding the resistance between rails and surrounding soil, the chief element in the stray path resistance. There are several means available for keeping down the gradient, such as good joint and cross bonding, return feeders, numerous substations and return feeder "boosters," but the increase in resistance from rail to earth by insulation of track is a much more dubious proposition. Nevertheless it is well worth while to study the possibilities of doing this. And it is certainly desirable to know how much the resistance is with different kinds of track construction so that, everything else being equal, a type possessing high-resistance qualities can be selected if there is a possibility that the stray current may be an unwelcome visitor in neighboring pipes.

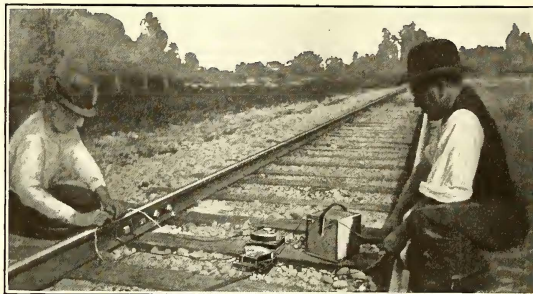
The readers of this paper have probably known in a general way that the United States Bureau of Standards has been conducting experiments in and around Washington for the purpose of collecting track insulation resistance data. The results have been withheld from publication until sufficient time had elapsed to enable measurements to be made in all kinds of weather and to show the effects of time upon the resistance. The bureau is now satisfied that the results are complete enough to be of value to electric railways generally and have authorized publication under the signature of E. R. Shepard, electrical engineer. He outlines and discusses the methods employed and analyzes the results in a very practical manner in this issue of the JOURNAL leading up to a few crisp and suggestive conclusions. These involve no radical expedients for increasing insulation resistance and they indicate that the types of track which are finding increasing favor are inherently of better resistance qualities than the older ones. This, however, is "more good luck than good management," for the matter of insulation has not figured prominently as a factor in the designs. To every signal engineer, as well as to those who are directly responsible for the mischief which may be caused by stray current, Mr. Shepard's article will be useful and stimulating.

# Leakage Resistance of Electric Railway Roadbeds

Results of Tests Covering a Period of More Than Three Years Made Upon  
Railway Tracks in Washington, D. C., and Upon Short Sections of  
Experimental Track on the Bureau of Standards Grounds

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MEN FROM BUREAU OF STANDARDS MAKING TESTS

**A**LTHOUGH much attention has been given to the mitigation of electrolysis of underground structures, electric railway engineers seem to have given little attention to the insulation of

roadbeds or their construction in such a manner as to offer high resistance to leakage currents. In the 1914 report of the committee on way matters of the American Electric Railway Engineering Association, "effect on electrolysis" was enumerated as one of the twelve factors influencing the design for "proper foundation for tracks in paved streets," but it does not appear that this factor was considered by the committee in recommending four standard types of construction.

Practically no data on the resistance of different types of roadbeds are available, although the relative resistances of some types are known in a general way. Measurements made in 1911 and 1913 by G. H. Ahlborn<sup>1</sup> on three electric lines, each several miles in length, showed as follows: An open track on high, well-drained gravelly soil had a leakage resistance of 14.57 ohms per 1000 ft. of single track, while a similar track on low, marshy clay and gravel, with the rails in contact with the earth in many places, had a leakage resistance of only 1.76 ohms. A city track in Washington on crushed rock ballast with a Tarvia surface had a resistance of about 1.81 ohms. Only three lines were investigated.

In the present paper leakage resistance data are presented for a number of types of roadbed for different weather and soil conditions. The several factors which influence the resistance of roadbeds are discussed also. With such information available electric railway engineers will be able to give the subject the deserved attention, and to select those types of construction which are consistent with other features and give the

highest leakage resistance. The leakage path traversed by stray current from electric railways consists of several elements and varies with different types of roadbed construction. In the case of open

track the current leaves the rails and enters the ties through the spikes and the rail base, then passes into the ballast and finally reaches the adjacent earth. In paved streets an additional leakage path is offered through direct contact of rails with the earth, pavement, or other material in which they are imbedded. By far the greatest part of the total leakage path resistance is in the roadbed, particularly in open construction.

In determining the resistance of any type of roadbed an attempt was made to measure the resistance between the rails and a remote ground such as a network of water mains. Such a measurement would include the earth between the roadbed and the remote ground, but this has ordinarily only a very small fraction of the total resistance. The difficulties involved in making resistance measurements on ordinary track systems are considerable in view of the facts that in general such systems are electrically continuous for miles and include many different types of construction, and they are actively employed during the greater part of the twenty-four hours. In order to determine the resistance to earth of any limited section of track it is necessary to isolate that section from the remainder of the track network or else make differential measurements when no cars are in operation.

Investigations discussed in this article were made in the District of Columbia, upon the only three types of open track and the two types of city track which were suitable for the purpose. In order to supplement the information obtained on the city tracks several short sections of experimental roadbeds of different types

<sup>1</sup>See Technologic Paper No. 75 of the Bureau of Standards, entitled "Data on Electric Railway Track Leakage."



were constructed and tested for resistance under different weather and soil conditions over a period of many months.

**DIFFERENTIAL METHOD OF TESTING IS ADAPTED TO MEASUREMENTS IN PAVED STREETS**

In the tests on roadbeds where a limited section of the track could not be isolated, the method illustrated in Fig. 1 was employed. After car traffic had ceased for the night a portable storage battery was connected as shown between the four rails and a water hydrant,

measurements at several slightly different locations at each station and by determining the average potential difference between the track and the earth by means of a number of different underground structures, a fair degree of accuracy was secured. The most reliable and consistent results were obtained by driving a ground rod into the earth not less than 50 ft. from the track and measuring the potential difference between it and the track with a high-resistance voltmeter.

The differential method was employed on the Wisconsin Avenue line in Washington at two different

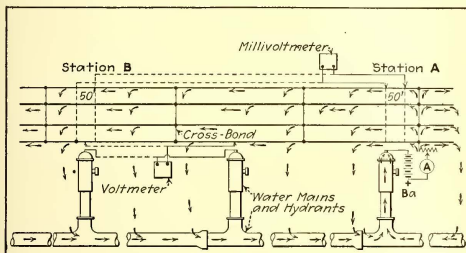


FIG. 1

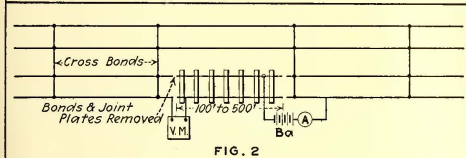


FIG. 2

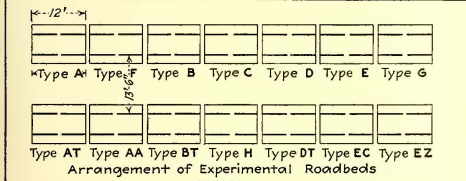


FIG. 3

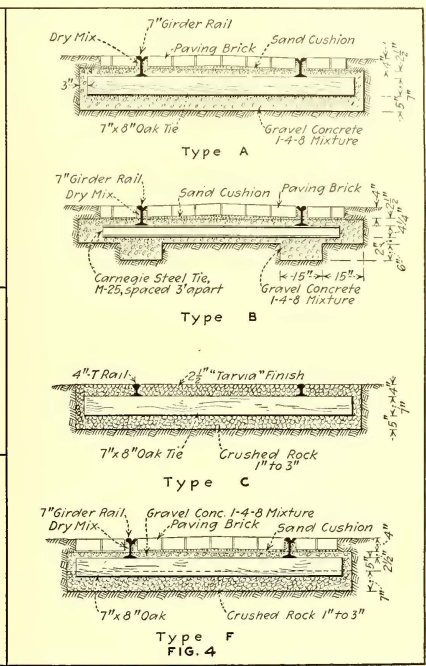


FIG. 4

Fig. 1—Diagram of connections for differential method of measuring roadbed resistance.  
Fig. 2—Diagram showing method of making roadbed resistance measurements in open-track construction.

Fig. 3—Arrangement of experimental roadbeds on Bureau of Standards' grounds.  
Fig. 4—Types of roadbeds employed in Bureau of Standards' experiments.

**DIAGRAMS RELATING TO BUREAU OF STANDARDS' EXPERIMENT ON ELECTRICAL RESISTANCE OF TRACK ROADBEDS**

with ammeter and regulating resistance in circuit. A current of from 25 amp. to 35 amp. was maintained in this circuit. A millivoltmeter was used to measure the potential drop on a short section of track at two stations, A and B, several thousand feet apart, permitting the loss of current to be calculated on the assumption that the rails were of the same weight and resistivity at the two stations and that the battery current was maintained constant. A further measurement of the potential difference between the section of track under test and the earth at some distance away furnished the remaining data necessary for the calculation of leakage resistance. While this test requires great care for accurate results, by making meas-

urements at several slightly different locations at each station and by determining the average potential difference between the track and the earth by means of a number of different underground structures, a fair degree of accuracy was secured. The most reliable and consistent results were obtained by driving a ground rod into the earth not less than 50 ft. from the track and measuring the potential difference between it and the track with a high-resistance voltmeter.

**IN OPEN TRACK THE ISOLATION METHOD IS AVAILABLE**

On open track plates and bonds were removed from four joints, isolating a section of track from 100 ft. to 500 ft. long, the circuit arrangement being as shown in Fig. 2. All cross bonds between the test section and the adjacent track were cut. A battery of three or four dry cells was connected between the test section and the remainder of the track network, and by means

Table I—Electrical Resistance of City and Suburban Roadbeds

| Location | Kind of Roadbed  | Date of Test | Condition of Roadbed                 | Average Potential to Earth, Volts | Leakage Current, Amperes | Distance in Feet | Resistance of 1000 Ft. of Track to Earth, Ohms |
|----------|--|--------------|--------------------------------------|-----------------------------------|--------------------------|------------------|--|
| a        | Gravel ballast to head of 70-lb. T-rails, Much sand and earth washed in.                             | 2-17-15      | Wet.                                 | 2.2                               | 12.2                     | 2,900            | 0.522 double track                             |
|          |  | 2-26-15      | Wet.                                 | 1.3                               | 6.9                      | 2,900            | 0.547 double track                             |
|          |  | 8-14-15      | Wet.                                 | 1.5                               | 8.8                      | 2,900            | 0.572 double track                             |
|          |  | 4-3-17       | Surface dry, ballast moist.          | 2.1                               | 7.66                     | 3,300            | 0.902 double track                             |
|          |  | 4-9-15       | Moist.                               | 1.0                               | 2.85                     | 3,750            | 1.3 double track                               |
| b        | Same.  | 4-17-15      | Moist, no rain for six days.         | 1.5                               | 3.73                     | 2,750            | 1.1 double track                               |
| c        | Crushed rock ballast to head of 80-lb. T-rails, Tarvia finish.                                       | 4-6-15       | Wet.                                 | 2.4                               | 9.0                      | 3,000            | 0.8 double track                               |
|          |  | 8-31-15      | Wet.                                 | 1.8                               | 6.67                     | 3,000            | 0.72 double track                              |
|          |  | 4-5-17       | Quite dry. No rain for twelve days.  | 3.3                               | 6.31                     | 3,050            | 1.60 double track                              |
| d        | Same.  | 4-21-15      | Quite dry. No rain for several days. | 3.2                               | 4.7                      | 1,700            | 1.16 double track                              |
| e        | Open track crushed rock to base of 80-lb. T-rails. Frequent crossings with ballast to head of rails. | 4-2-15       | Dry. No rain for weeks. Surface      | 3.8                               | 3.12                     | 4,100            | 5.07 double track                              |
|          |  | 4-6-15       | dry, ballast wet.                    | 3.5                               | 7.5                      | 6,500            | 9.93 double track                              |
|          |  | 8-31-15      | Surface dry, ballast wet.            | 3.8                               | 4.14                     | 2,360            | 2.17 double track                              |
|          |  | 4-5-17       | Quite dry. No rain for twelve days.  | 4.9                               | 2.1                      | 1,140            | 2.66 double track                              |
| f        | Open track. Cinder ballast from 4 in. below ties to base of 60-lb. T-rails.                          | 10-2-15      | Surface moist, ballast wet.          | 6.85                              | 0.302                    | 361              | 8.2 single track                               |
|          |  | 11-10-15     | Dry. No rain for twenty days.        | 9.8                               | 0.197                    | 361              | 18.0 single track                              |
| g        | Open track. Deep gravel ballast to base of 80-lb. T-rails.   | 9-25-15      | Surface dry, ballast moist.          | 8.2                               | 0.71                     | 462              | 5.34 single track                              |
|          |  | 11-12-15     | Dry, no rain for twenty-two days.    | 9.5                               | 0.615                    | 462              | 7.14 single track                              |

of a low-reading ammeter and a voltmeter the data for calculating the resistance were obtained. The resistance so found is for a single-track roadbed but in the open type of construction, as the resistance to earth is concentrated largely in the ties, that of double track can be taken as one-half the resistance of single track. Measurements by this method were made on the Cabin John line in Washington and on the Washington, Baltimore & Annapolis track just outside of the District line, as designated by *f* and *g* respectively in Table I.<sup>2</sup>

The results of the test are given in Table I, showing data for tracks bearing normal traffic. The Wisconsin Avenue tracks were originally ballasted with gravel up to and around the base of the rails, and earth was filled in to the head of the rails. While part of the earth has been washed away the rails are well imbedded in gravel and earth and the roadbed can be considered as having unusually low resistance. The first three tests were made with the roadbed very wet, and the resistance of 0.5 ohm per 1000 ft. of double track as given is about half that found at the same location under dryer conditions.

The Chevy Chase line is well ballasted with crushed rock and a portion has been paved to the head of the rails with a Tarvia finish. The finish has become somewhat porous, and this condition prevails in locations *c* and *d*. At location *e* the pavement has been omitted except at crossings.

The cinder ballast in open construction of the Cabin

<sup>2</sup>These measurements were made possible through the co-operation of C. S. Kimball, engineer maintenance of way, Washington Railway & Electric Company, and E. W. Weiland, engineer maintenance of way, Washington, Baltimore & Annapolis Electric Railroad.

John line offers a very high resistance to leakage current. Two measurements made under conditions similar to those existing on cinder track were made on the W., B. & A. line which is ballasted with gravel. It will be noted that the gravel-ballasted roadbed has about one-half the resistance of that with cinder ballast. This cannot be attributed primarily to the ballast but is probably due more to the character of the ties.

FOURTEEN SHORT TEST ROADBEDS WERE BUILT

Owing to the difficulties involved in making resistance measurements on city tracks and the limited number of types available it was decided to build short sections of a number of different types of roadbeds on which frequent measurements could be made. While such roadbeds would exhibit different characteristics from similar types subjected to traffic surface drainage and salt which is frequently used to prevent freezing, they would permit of a careful study of the effect of moisture and temperature. They would also enable comparative measurements to be made which could be checked with similar data obtained from city tracks under operation.

Fourteen types of experimental roadbeds were built early in 1915 arranged as shown in Fig. 3. Four cross-sections are shown in Fig. 4. The details were as follows, a condensed description being given in Table II:

DETAILS OF THE SEVERAL TYPES OF EXPERIMENTAL ROADBEDS

*Type A.* (See Fig. 4). Ballast, gravel concrete, 1:4:8 mixture; ties, 7-in. x 8-in. x 8-ft. oak, on 2-ft. centers; rails, 7-in., 90-lb. girder, 4-in. base; spikes, 6-in., driven, four per tie; surface, vitrified paving bricks on sand cushion, 1:3 dry mix, between bricks and rails, 1:3 thin grout swept into joints after laying, 3-in. crown between rails.

Table II—Condensed Description of Experimental Roadbeds

| Type | Ballast                       | Ties                             | Rails        | Surface                 | Special Features  |
|------|-------------------------------|----------------------------------|--------------|-------------------------|---|
| A    | Concrete.                     | 7-in. x 8-in. oak, 2-ft. centers | 7-in. girder | Vitrified paving brick. |   |
| AT   | Concrete.                     | 7-in. x 8-in. oak, 2-ft. centers | 7-in. girder | Vitrified paving brick. | Roadbed insulated with tar paper and pitch                              |
| AA   | Concrete.                     | 7-in. x 8-in. oak, 2-ft. centers | 7-in. girder | Vitrified paving brick. | Roadbed insulated with tar paper and asphalt                            |
| B    | Concrete.                     | Steel, 3-ft. centers.            | 7-in. girder | Vitrified paving brick. |   |
| BT   | Concrete.                     | Steel, 3-ft. centers.            | 7-in. girder | Vitrified paving brick. | Roadbed insulated with tar paper and pitch                              |
| C    | Crushed rock.                 | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Tarvia.                 |   |
| D    | Earth to head of rails.       | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Earth.                  |   |
| DT   | Earth to head of rails.       | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Earth.                  | Rails insulated with pitch  |
| E    | Earth to base of rails.       | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Open construction.      |   |
| EC   | Earth to base of rails.       | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Open construction.      | Ties treated with 10 lb. creosote per cubic foot                        |
| EZ   | Earth to base of rails.       | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Open construction.      | Ties treated with 1 lb. zinc chloride and 2 lb. creosote per cubic foot |
| F    | Crushed rock and concrete.    | 7-in. x 8-in. oak, 2-ft. centers | 7-in. girder | Vitrified paving brick. |   |
| G    | Crushed stone to head of rail | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | No surfacing.           |   |
| H    | Cinders.                      | 7-in. x 8-in. oak, 2-ft. centers | 4-in. T.     | Open construction.      |   |



**Type AT.** Same as Type A in every respect with base insulated as follows: Before laying the concrete a layer of roofing paper was spread over the entire roadbed and at the sides of the roadbed excavation in the street level. This paper was then covered with a mixture of 75 per cent coal-tar pitch and 25 per cent coal tar, applied at a temperature of about 200 deg. Fahr. While this coat was still hot a second layer of paper was applied and then a second coat of tar and pitch. The paper used was a soft tar paper manufactured by the General Roofing & Manufacturing Company and purchased as a 15-lb. felt. The tar was added to the pitch to make it less brittle.

**Type AA.** Same as Type AT in every respect except that asphalt was used instead of tar and pitch.

**Type B.** (See Fig. 4.) Ballast, gravel concrete, 1:4:8 mixture; ties, Carnegie steel ties—M25, on 3-ft. centers; rails, 7-in., 90-lb. girder, 4-in. base; clips, No. 23 tie clips, four per tie; surface, same as for Type A.

**Type BT.** Same as Type B with base insulated the same as in Type AT.

**Type C.** (See Fig. 4.) Ballast, crushed rock from 5 in. below ties to within 2½ in. of finished surface, tamped and covered with sand; ties, 7-in. x 8-in. x 8-ft. oak, on 2-ft. centers; rails, 4-in. T; spikes, 6-in., driven, four per tie; surface, Barrett Manufacturing Company specification as follows: Over base spread 2½ in. of crushed stone, 1 in. to 3 in. in size, and dry roll. Tamp. Spread 1.7 gal. of Tarvia X per square yard over this at a temperature of 200 deg. to 300 deg. Fahr. Cover with fine gravel, not larger than ½ in. and roll. Tamp. Spread evenly ½ gal. of Tarvia X per square yard and finally cover with sand for a wearing surface.

**Type D. Earth Roadbed.** Ballast, earth to head of rails; ties, 7-in. x 8-in. x 8-ft. oak, on 2-ft. centers; rails, 4-in. T; spikes, 6-in., driven, four per tie; surface, earth.

**Type DT.** Same as Type D with rails coated with a mixture of 75 per cent coal-tar pitch and 25 per cent coal tar to make the coating less brittle. This coating was applied hot.

**Type E. Open Construction.** Ballast, earth to base of rails; ties, 7-in. x 8-in. x 8-ft. oak, untreated, on 2-ft. centers; rails, 4-in. T; spikes, 6-in., driven, four per tie; surface, open construction.

**Type EC.** Same as Type E but with ties treated (October, 1914) by Baltimore & Ohio Railroad by the vacuum-pressure treatment with 10 lb. of coal tar cresote per cubic foot.

**Type EZ.** Same as Type E but with ties treated (December, 1914) by the Baltimore & Ohio Railroad by the "Card" process with ½ lb. of zinc chloride and 2 lb. of coal tar cresote per cubic foot.

**Type F.** Ballast, 7 in. of 1-in. to 3-in. crushed rock, supporting 7½ in. of gravel concrete 1:4:8 mixture; ties, 7-in. x 8-in. x 8-ft. oak, on 2-ft. centers; rails, 7-in., 90-lb. girder, 4-in. base; spikes, 6-in., driven, four per tie; surface, same as for Type A. (See Fig. 4.)

**Type G.** Ballast, 1 in. to 3 in. crushed stone, from 5 in. below ties to head of rails, 9 ft. wide; ties, 7-in. x 8-in. x 8-ft. on 2-ft. centers; rails, 4-in. T; spikes, 6-in., driven, 4 per tie; no surfacing.

**Type H.** Ballast, cinders from 5 in. below ties to base of rails; ties, 7-in. x 8-in. x 8-ft. oak, on 2-ft. centers; rails, 4-in. T; spikes, 6-in., driven, four per tie; surface, open construction.

#### TEST ROADBEDS INCLUDED STANDARD TYPES

The types of roadbed experimented upon were made to include those most commonly used as well as to introduce certain modifications in the way of insulating material. Ties treated with several different kinds of preservatives were also used. Type A was built to correspond with Type D, as recommended in 1914 by the Engineering Association way committee; Type AT and AA being of the same construction but with insulating layers laid under the foundations. Type B corresponds closely with Type 3 of the way committee, while Type BT is the same but insulated. Type C is practically a duplicate of the Chevy Chase line. Type F is the same as Type A except that it has crushed stone under the ties.

This corresponds to Type B of the committee and is a popular type of construction. The 1915 committee recommended this type for a standard design.

Each type of experimental track was constructed with a 12-ft. continuous section of roadbed and with two 6-ft. sections of rails as shown in Fig. 3. Each piece of rail in the system was wired to a common terminal board where complete switching facilities were provided.

In the tests the positive terminal of a 10 or 12-volt battery of dry cells was connected to any or all of the rail sections and the negative terminal of the battery was connected to a water service pipe. The resistance between the service pipe connections and the general water system of which it was a part was found to be invariably about 1 ohm. A voltmeter was connected across the battery terminals and a milliammeter was arranged for connection in series with a part or all of any track sections, while the remaining sections in either of the two divisions were also being supplied with current from the positive bus. This arrangement was made to prevent end leakage from the section under test.

Observations were made of the polarizing effect of the direct current, and this was found to increase the apparent resistance of the roadbeds about 5 per cent. No attempt was made to find a remedy for this.

#### TESTS OF EXPERIMENTAL ROADBEDS COVERED WIDE RANGE OF ELEMENTS

The results of the tests on the experimental roadbeds are shown in Table III and Figs. 5 to 7 on pages 176 and 177. The resistance measurements were first made on April 5, 1915, and repeated at irregular intervals thereafter for about three years.

Results of measurements on all types of roadbeds having full concrete ballast are shown in Fig. 5. It is evident that the insulating materials used in Types AT, AA and BT had a pronounced effect in increasing resistance during the first few months, but after three years the effect was so small as not to justify the use of such materials as a mitigative measure.

The resistances of the concrete roadbeds are seen to be very low in comparison with other types and to vary only moderately with the moisture content of the soil. Frozen ground, however, has a very marked effect on all types. The ageing of these roadbeds seems to have increased their resistances slightly, although this is not definitely established. There is practically no difference between the steel and wood tie construction, indicating that most of the resistance is between the concrete roadbed and the ground. Hence in city streets where this type of construction is employed the greater extent of the concrete pavement base might offer even less resistance to leakage current than these experimental roadbeds.

Type F with a crushed stone foundation is seen, from Fig. 6, to have from two to three times the resistance of the full concrete type. This is an additional advantage with this type of construction over the more rigid and more expensive types employing a full concrete foundation.

The effect of insulating the rails with a coal-tar coating is seen in the results with Types D and DT, Fig. 6. While the resistance of the insulated type is

about 50 per cent higher than the other, it is doubtful whether such a treatment would prove of practical value. In this case the leakage is practically all through the spikes which, with the uninsulated Type D, carry about two-thirds of the current. If some practicable means of insulating spikes from the rails could be devised the problem of stray current would be solved to a large degree for many types of roadbed construction.

The cinder roadbed, Type H, gave results probably not typical owing to the fact that soon after its completion heavy rains occurred and washed much sand and earth into the ballast and up around the base of the rails. The wide variations which occur in resistance with this type of roadbed are typical of all types of open construction, as is evident in Fig. 7. Owing to the poor drainage provided for Type H roadbed and the presence of much fine sand and earth in the ballast, results on the Cabin John line, Table I, should be accepted as typical of this kind of construction rather than those for the experimental track.

From the results of the measurements on Types E,

No direct measurements were made on city tracks to determine the relative resistances of single and double-track roadbeds. From measurements made on the experimental tracks, it appears that the leakage from double-track construction of the very low resistance type is not anything like double that from single track, and may in some cases be not more than 25 per cent greater. It may be safely assumed that where high-resistance roadbeds are involved, the leakage from the double track will be nearly twice that from a single track. With concrete or earth ballast and other types of low-resistance roadbeds, where a large part of the total resistance is encountered at a relatively great distance from the rails, the resistance of a single-track roadbed approaches that of double-track construction.

TIE RESISTANCE DEPENDS LARGELY UPON MOISTURE CONTENT

In order to determine the effect of moisture and different preservative treatments on the resistance of wood ties six specimens were selected for investigation, as follows: White oak untreated; red oak un-

Table III—Resistance to Earth of Experimental Roadbeds

Resistance in Ohms Calculated for 1000 Ft. of Single Track

| Date of Test | Condition of Roadbed                                       | Type of Construction |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|--|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              |  | A                    | B    | AA   | AT   | BT   | D    | DT   | F    | H    | C    | E    | EC   | EZ   | G    |      |
| 4-5-15       | Roadbed wet. 0.44 in. of snow on April 3.                  | 0.343                | 0.33 | 0.48 | 0.42 | 0.50 | 0.97 | 1.44 | 0.81 | 4.50 | 5.86 | 4.17 | ...  | 2.88 | ...  |      |
| 4-12-15      | Surface moist. Roadbed wet. Rain on previous day.          | 0.27                 | 0.32 | 0.61 | 0.39 | 0.41 | 0.87 | 1.38 | 0.83 | 3.29 | 4.66 | 2.72 | 3.94 | 0.72 | 9.67 |      |
| 4-22-15      | Surface dry. Roadbed drier than on previous tests.         | 0.29                 | 0.29 | 0.61 | 0.42 | 0.37 | 1.44 | 1.87 | 0.93 | 4.35 | 4.67 | 3.38 | 6.65 | 1.04 | 52.2 |      |
| 6-7-15       | Surface dry. Roadbed wet. Heavy rain on June 2.            | 0.27                 | 0.27 | 0.48 | 0.39 | 0.33 | 0.86 | 1.43 | 0.78 | 1.92 | 4.15 | 3.11 | 3.41 | 9.02 | 10.9 |      |
| 6-29-15      | Surface dry. Roadbed fairly dry. No rain for several days. | 0.31                 | 0.30 | 0.55 | 0.45 | 0.34 | 1.21 | 1.73 | 0.98 | 2.54 | 4.05 | 3.60 | 4.48 | 1.67 | 29.6 |      |
| 7-21-15      | Roadbed quite wet. Rain on previous day.                   | 0.28                 | 0.29 | 0.45 | 0.38 | 0.32 | 0.55 | 1.03 | 0.72 | 1.20 | 2.78 | 2.89 | 1.93 | 0.72 | 6.1  |      |
| 8-19-15      | Surface dry. Roadbed moist, not wet.                       | 0.31                 | 0.28 | 0.64 | 0.38 | 0.29 | 0.78 | 1.09 | 0.88 | 1.20 | 3.40 | 3.14 | 3.14 | 1.26 | 8.8  |      |
| 9-24-15      | Surface dry. Roadbed moist, not wet.                       | 0.33                 | 0.34 | 0.69 | 0.41 | 0.30 | 0.86 | 1.20 | 0.92 | 1.63 | 3.34 | 4.08 | 3.84 | 1.58 | 9.4  |      |
| 10-29-15     | Surface dry. Roadbed moist, not wet.                       | 0.33                 | 0.31 | 0.69 | 0.42 | 0.35 | 0.84 | 1.17 | 0.87 | 1.16 | 3.25 | 3.20 | 3.25 | 1.42 | 6.10 |      |
| 12-4-15      | Cold. Roadbed moist. No rain for several days.             | 0.40                 | 0.34 | 0.95 | 0.57 | 0.40 | 1.32 | 2.26 | 1.02 | 1.87 | 5.16 | 5.15 | 5.67 | 6.00 | 2.17 | 11.7 |
| 1-21-16      | Warm wet. Ground thawing out from 6-in. freeze.            | 0.40                 | 0.38 | 0.94 | 0.59 | 0.41 | 1.08 | 1.84 | 1.35 | 2.59 | 4.80 | 3.82 | 3.98 | 1.55 | 8.21 |      |
| 3-20-16      | Cold. Surface dry. Ground moist.                           | 0.42                 | 0.37 | 0.91 | 0.59 | 0.41 | 1.25 | 2.26 | 1.23 | 3.01 | 5.18 | 4.21 | 5.17 | 1.16 | 10.8 |      |
| 4-19-16      | Warm. Surface dry. Ground moist.                           | 0.40                 | 0.35 | 0.54 | 0.53 | 0.39 | 1.22 | 1.87 | 1.16 | 2.32 | 4.56 | 3.86 | 5.10 | 2.35 | 10.5 |      |
| 8-24-16      | Surface dry. Ground moist. Rain on previous day.           | 0.35                 | 0.35 | 0.44 | 0.46 | 0.34 | 0.92 | 1.39 | 1.11 | 1.63 | 3.42 | 2.98 | 3.02 | 2.29 | 6.6  |      |
| 1-13-17      | Ground frozen 4 or 5 in. deep.                             | 0.66                 | 0.46 | 0.75 | 0.92 | 0.51 | 1.33 | 2.62 | 1.50 | 5.22 | 8.16 | 8.21 | 6.50 | 3.60 | 17.3 |      |
| 2-14-17      | Ground frozen deep. Surface beginning to thaw.             | 0.89                 | 0.67 | 1.1  | 1.24 | 0.84 | 2.20 | 3.58 | 3.36 | 7.50 | 8.37 | 6.40 | 7.75 | 3.73 | 13.3 |      |
| 3-15-17      | Surface dry. Ground very wet.                              | 0.45                 | 0.47 | 0.60 | 0.61 | 0.43 | 0.95 | 1.58 | 1.21 | 2.19 | 5.24 | 2.89 | 3.72 | 1.62 | 4.9  |      |
| 10-3-17      | Surface dry. Ground very dry. Driest condition.            | 0.44                 | 0.50 | 0.51 | 0.61 | 0.41 | 1.33 | 1.64 | 1.38 | 2.25 | 4.38 | 6.35 | 4.68 | 2.58 | 9.8  |      |
| 3-20-18      | Surface dry. Ground wet.                                   | 0.45                 | 0.41 | 0.60 | 0.64 | 0.45 | 0.83 | 1.25 | 1.16 | 1.98 | 4.68 | 3.89 | 3.24 | 2.04 | 6.4  |      |

EC and EZ roadbeds there seems to be but little difference between the untreated ties in Type E and those of Type EC, but the effect of zinc chloride treatment is strikingly shown in the records for Type EZ. For the last named the resistance during the first year was only about one-third that of the other types but it has gradually increased until after three years the effect of the treatment has almost disappeared. This is undoubtedly due to the leaching out of the treating material.

STONE BALLAST AND NON-POROUS PAVING PRODUCE HIGH RESISTANCE

Type C roadbed is seen from Fig. 7 to offer the highest resistance for leakage current of any kind of roadbed for city streets investigated. The clean stone and non-porous surface are responsible for this, but it is doubtful if such a condition could be maintained long in city streets under traffic conditions. Type G roadbed, made with crushed grout ballast but no paving, has an unusually high resistance, but this has diminished considerably with time due to the washing in of earth and sand. The figures for this piece of roadbed show what might be accomplished by the use of a well-drained and clean crushed rock or gravel ballast.

treated; chestnut untreated; red oak treated with 10 lb. of coal-tar creosote per cubic foot by the vacuum process; red oak treated with ½ lb. of zinc chloride and 2 lb. of coal-tar pitch per cubic foot by the "Card" process; red oak treated with ½ lb. of zinc chloride per cubic foot.

The ties were saturated by placing them in shallow vessels filled with water to a depth of about 2 in. They were turned over from time to time and kept covered with burlap which was wet with a hose daily. After two weeks of this treatment they were placed indoors and their weights and resistances measured at intervals covering a period of three years.

Resistance measurements were made over a period of more than three years. They showed a rapid increase in resistance as the ties dried out. For example, the resistances in ohms per foot cube after three and twelve months respectively were as follows: White oak untreated 600 and 6800; chestnut untreated 3000 and 22,000; red oak treated (ZnCl<sub>2</sub> and creosote) 60 and 380; red oak untreated 800 and 14,000; red oak treated (creosote) 1000 and 5200; red oak treated (ZnCl<sub>2</sub>) 1500 and 13,300.

It appears that moisture in excess of 20 to 25 per cent has little effect in reducing electrical resistance of



wood, while with less than 10 per cent of moisture the resistance increases rapidly. Chestnut wood dries out in the air more readily than oak but for the same moisture content its electrical properties are about the same. Creosoting tends to retain moisture within the wood but otherwise has little effect upon electrical resistance. The ties treated with creosote and zinc chloride exhibited a very low resistance due undoubtedly to the effect of the creosote in holding the zinc chloride as well as the moisture.

Ties imbedded in the earth or in paved city streets

several interesting conclusions can be drawn, as follows:

1. The roadbeds constructed with solid concrete ballast and vitrified brick or other non-porous pavements have a low leakage resistance to earth which is affected only moderately by seasonal and weather changes. There is little difference between wood and steel ties in their effect on the resistance of roadbeds of this kind. Insulation is not of practical value in reducing leakage current from such roadbeds. The resistance of single roadbed of this type is from 0.2 to 0.5 ohm under ordinary conditions, but may be two or three

CHARTS  
SHOWING EFFECTS  
OF TIME  
AND WEATHER  
CONDITIONS  
ON ROADBED  
RESISTANCE

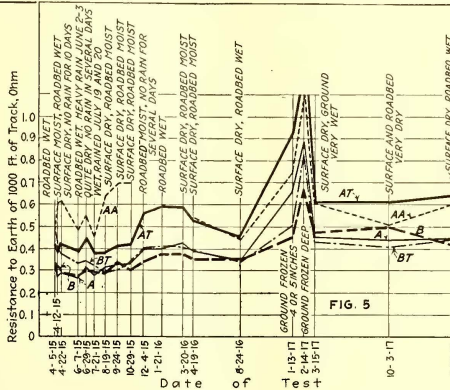


Fig. 5—Resistance of experimental roadbeds A, B, BT, AT and AA from 1915 to 1918.

Fig. 6—Resistance of experimental roadbeds D, F, DT and H.

Fig. 7—Resistance of experimental roadbeds BZ, E, EC and C.

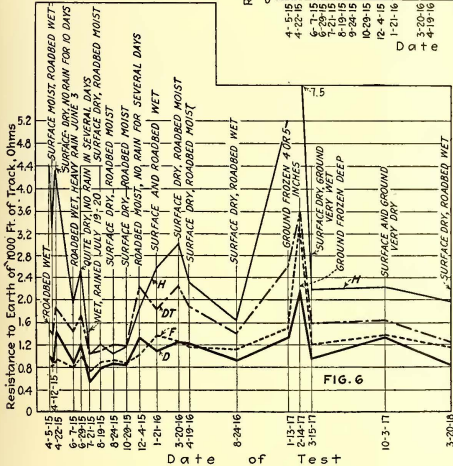


FIG. 6

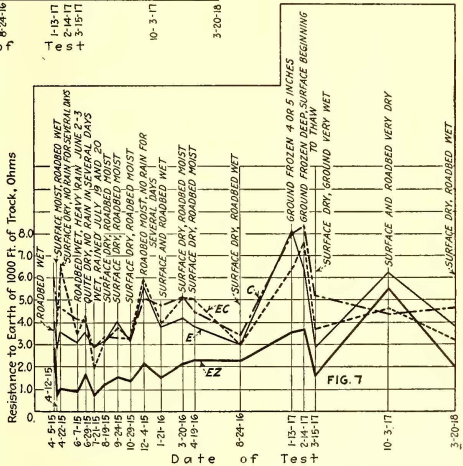


FIG. 7

probably retain moisture in excess of 20 per cent throughout the year and should, therefore, not change their resistance materially with seasonal changes. On the other hand, in open construction the moisture content and therefore the resistance would vary through wide limits.

THE TESTS BROUGHT OUT CERTAIN  
FUNDAMENTAL FACTS

While an accurate interpretation of the results of the tests described in this article is not always possible, owing to many questionable elements such as weather and roadbed conditions and the properties of materials,

times this when the ballast is frozen to a depth of 1 ft. or more. For double roadbed of this type the resistance is approximately 70 per cent of that for single roadbed, or the leakage from double track would be about 40 to 50 per cent greater than from single track.

2. Roadbeds constructed with a foundation of clean crushed stone under concrete paving base have a much higher resistance than roadbeds with a solid concrete ballast. In the case of the experimental roadbed the ratio was found to be about 3 to 1. Roadbeds with a full crushed stone ballast and a Tarvia finish have a very high leakage resistance which is of the order of 2 to 5 ohms per 1000 ft. of single track. The leakage

from a double roadbed of this type and other high-resistance types is from 80 to 100 per cent greater.

3. The resistance of earth roadbed in which the ties are imbedded and therefore kept in moist condition is much lower than that of open construction roadbed, being from 1 to 1½ ohms per 1000 ft. of single track under normal conditions and considerably more when the ground is frozen.

4. The resistance of roadbeds of open construction is subject to wide variation depending upon the condition of the ties and ballast. In very dry weather with good ballast the resistance will be 10 to 15 ohms or even more per 1000 ft. of single track, but in wet weather it will drop to from 3 to 5 ohms. Cinder, gravel and particularly crushed stone, when used as ballast in open-track construction, produce very high-resistance roadbeds. Earth has a tendency to keep the ties moist and therefore to increase the leakage. Open-construction track is often considered to be insulated from the earth, but this is not strictly true. Assuming a potential difference between the track and the earth of 5 volts and a leakage resistance of 10 ohms per 1000 ft. the total leakage per mile would be 2.64 amp. This small leakage current would not ordinarily be harmful to underground structures in the vicinity of the track.

5. Zinc chloride and other chemical salts used as preservatives render ties highly conducting and greatly increase leakage current from the tracks. Unless combined with some other material such as creosote, these salts gradually leach out, particularly in damp climates, and eventually their influence on the resistance of roadbeds disappears. Creosote has very little effect upon the resistance of wood ties.

#### SUGGESTIONS FOR REDUCING LEAKAGE CURRENTS

Electric railway companies can do much toward reducing leakage currents from their tracks by observing the following suggestions regarding roadbed construction:

1. Solid concrete ballast should be abandoned and clean crushed stone should be used as a foundation under ties. This type of construction is approved by the American Electric Railway Engineering Association, as it gives greater resiliency to the track and is cheaper than the full concrete ballast.

2. Where crushed stone or gravel is used it should be kept clean by proper coverings or pavements. If earth, sand or street dirt is permitted to filter into ballast of this character its function as an insulating material is greatly impaired.

3. Salt which is often used to prevent frogs and switches from freezing will greatly reduce the resistance of roadbeds and its use should be avoided if possible.

4. In open construction rails should be kept out of contact with the earth. The roadbed should be well drained to prevent fine material from washing into the ballast and to keep the ties as dry as possible. Vegetation should be kept down, as this tends to keep the roadbed moist and fills the ballast with foreign material.

5. The use of zinc chloride and similar chemical preservatives should be avoided in track where the escape of stray currents is objectionable, and in signal blocks.

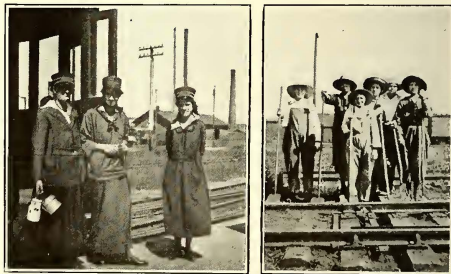
## Motorwomen in Charles City

Give Satisfaction on One-Man Cars—Fifteen Applications for One Job—Woman Section Gang Tried Last Summer

**M**OTORWOMEN have been used exclusively on the Charles City (Ia.) Western Railway street car lines ever since July 1, 1918. The cars are of the one-man type equipped for double-end operation and use Johnson recording fare boxes. Each young woman makes 80 miles a day with an eight-hour shift. As the run is 5 miles in length this means sixteen trips daily. Cars are operated from 6 a.m. to 10 p.m., so that each car has two crews.

The motorwomen are all well educated. Two are college girls and the others are high school graduates. One who served during the summer vacation reluctantly left in the fall to resume her position as music supervisor in a public school.

Miss Marjorie Dodd blazed the trail as the first motorwoman in Iowa. She is a college girl attending one of the largest woman's colleges and the daughter of the Mayor of Charles City. During a prolonged influenza quarantine at the college she returned with pleasure to



AT LEFT, MOTORWOMEN OF ONE-MAN CARS IN CHARLES CITY. AT RIGHT, WOMEN SECTION GANG

the Charles City street railway "job." At one time there were fifteen applications for one vacancy. Much comment has been elicited by the universally careful work done by all of the motorwomen. Not one accident nor automobile collision has occurred during the entire six months the cars have been run by women.

The employment of women on the cars has proved so satisfactory that the company employed a woman section gang on its interurban line for a part of last summer.

## Women Employees on the Steam Railroads

An extended report on the use of women by the steam railroads is contained in a report on the labor results of the Federalized Railroads, issued Jan. 17. It shows that the number of women employed by the railroads had increased from 60,555 on Jan. 1, 1918, to 101,296 on Oct. 1, 1918. Clerical service, including ticket selling, claimed the largest number, and cleaning came next. About 5000 women were employed in the shops in almost every capacity, from common laborers to skilled mechanics.



# A Trilogy of Live Railway Topics

**Illinois Electric Railway Association at Annual Meeting Held in Chicago Considers Primarily the Subjects of Public Utility Regulation by Commissions, Development of Freight and Express Traffic, and Safety Work—W. E. Sparks Was Elected President**

**T**HE Illinois Electric Railway Association held its annual meeting at the Hotel La Salle, Chicago, on Jan. 17. After addressing the association briefly the president, D. A. Parsons, introduced the recently elected secretary of the association, R. D. Prather, who is also secretary of the Illinois State Electric Association. Mr. Prather called the roll of the members, and read the minutes of the last meeting of the association and the financial report. A vote of thanks was then extended to the former secretary of the association, W. V. Griffin, secretary Chicago Elevated Railways, for his excellent work for the association.

## REPORT OF SAFETY COMMITTEE SHOWS LACK OF INTEREST AMONG MEMBER COMPANIES

The only committee report presented was made by H. B. Adams, safety supervisor Aurora, Elgin & Chicago Railroad, chairman of the safety committee of the association. He stated that the committee sent to forty-nine members of the association a letter and questionnaire requesting prompt replies. Sixteen responded, giving the following information: Seven had safety organizations; four had safety supervisors or safety engineers; seven had general safety chairmen with other duties; eight held monthly meetings; two held bi-monthly meetings; one held quarterly meetings, two held occasional meetings, and three held no meetings at all. Fourteen companies would consider having a representative of some member company address a meeting of the employees, and two would not. Four companies had stereopticon or moving picture machines; two had moving picture films; six had stereopticon slides, and six sent out copies of bulletins. Four companies reported that public safety work was being done in their territory, and ten would consider having a speaker from a member company to assist at public meetings during the year. Fourteen companies would advise that one meeting of the association be devoted to the study of accident prevention, but only one company offered a suggestion to aid the safety committee in its work. In closing the report Mr. Adams said: "We believe that there is a great need for mighty effort to conserve life, limb and property, and we hope that each company in this association will resolve to do more and better safety work in the future." Following this report Mr. Adams read a short paper which will be published in a later issue.

H. A. Johnson, chairman of the mechanical committee of the association and master mechanic of the Chicago Elevated Railways, was not present to make a report, but he sent a short paper which also will be published in a later issue.

Following the report and paper by Mr. Adams, chairman of the safety committee, Britton I. Budd, president Chicago Elevated Railways, referred to the safety work

being carried on by the Chicago, North Shore & Milwaukee Railroad, of which company he is president also. An article on the safety work of this company will appear in an early issue of the *ELECTRIC RAILWAY JOURNAL*. Mr. Budd emphasized the importance of every electric railway company maintaining a safety department, and this was further emphasized by President Parsons, who also urged an increased membership in the National Safety Council.

Following the report of these committees, President Parsons appointed a nominating committee consisting of F. E. Fisher, general superintendent Chicago, Ottawa & Peoria Railway; W. H. Heun, superintendent Chicago & Joliet Electric Railway, and Frank E. Johnson, district sales agent the Ohio Brass Company.

## PAPER ON REGULATION DEVELOPS MANY INTERESTING POINTS

The first paper on the program was one by Hon. Carl D. Jackson, chairman Wisconsin Railroad Commission, which will appear in a later issue. His topic was "Regulation," and he introduced it by explaining that he had understood the association to be more broadly interested in electrical problems rather than those of the electric railway industry specifically. Hence some of the members might not entirely agree with some of his remarks which were intended to cover public utility regulation in general.

Diverging occasionally from his paper, Mr. Jackson amplified some of his statements. Illustrating the urgency and seriousness of most of the requests received by the commission for increases in fare, he mentioned the case of the Kenosha, Wis., property, where, due to a lack of funds and the serious competition of the jitneys, the company abandoned service for a period of one month. The community soon realized the absolute necessity of proper railway service, and at the end of that time the commission issued an injunction prohibiting jitneys from operating on streets used by electric railways.

Mr. Jackson said that a solution of the present railway problem will be some form of public partnership, but not public ownership. Good street railway service is an absolute necessity, and one of the problems which the commission had to confront was the fact that a fare increase beyond a certain point, in small cities where the average haul is short, might actually reduce the revenue. He said further that a fare increase alone is not enough, but that the railways must have the co-operation and help of the communities served. In line with his remarks on public ownership Mr. Jackson stated that he does not believe government ownership or operation of the steam railroads should continue, now that the war is over. There was a necessity for such operation during the war, and at that time

government operation was the only solution, but it should not longer be continued.

In the discussion following the paper by Mr. Jackson, Britton I. Budd emphasized the point that there are very few citizens who, although they may not realize it, are not mightily interested in the welfare of the utility, due to the fact that the banks, insurance companies, etc., in which they have their accounts or are insured, are directly affected by its financial condition. One very important point in Mr. Budd's discussion was that employers must use very wise judgment in any talk or action concerning the reduction of wages when food and other necessities are still commanding high prices. Wages make up a very considerable part of the expenses of the railway companies at present, but no change should be considered, at least under the present conditions.

Referring to Mr. Jackson's paper President Parsons stated that he had heard some criticism of the commissions to the effect that they should give greater publicity to their investigations and decisions, and that they might hold their hearings in the communities affected rather than at some distant point. He also said that experience had shown that although the public was often in favor of an initial increase in fare, if the same company had to come back later for a second increase, the public, practically without exception, was found to be very antagonistic to this second request.

#### C. A. LANEY URGES FREIGHT AND EXPRESS PUBLICITY AND REGULATION OF MOTOR TRUCKS

The second paper was by Charles A. Laney, traffic manager Northern Ohio Traction & Light Company, Akron, Ohio, on "Interurban Freight and Motor Truck Competition," which had been previously presented at the Indianapolis meeting of the C. E. R. A. (See ELECTRIC RAILWAY JOURNAL, Nov. 30, 1918.) Mr. Laney added some statements which were in substance as follows: "The situation is one which calls for an earnest organized effort by all departments of an interurban line under the guidance of the traffic department. It is especially important that the men in charge of public relations should be active in spreading interurban freight propaganda. The very widest publicity should be given to the advantages of electric freight transportation, not only in printed advertisements but by word of mouth. Full co-operation would consist in having every official, department head, clerk, stenographer, conductor, motorman, lineman and power-station employee supplied with accurate information, and urged to talk 'freight' to everybody with whom they come in contact. This should be supplemented, of course, with printed publicity.

"We must put behind this department of business all the brains, energy and enthusiasm at our command. It goes without saying that we must equip ourselves to handle the business that will inevitably result from this effort, but with rich prospects at hand that should not be a difficult matter. Through such an organization it will be possible to bring the motor trucks under the regulation of the public utility commissions and require them to meet the expenses and responsibilities of other common carriers, to bring them within the rules of fair competition by eliminating rate discrimination, allowing

them a specified sum per ton per mile and limiting them to a certain tonnage per truck for the purpose of protecting the highways.

"The motor truck has created a new factor in freight transportation. It has added the collection and delivery feature. Since our entry into the war so much freight material has been shipped by express that the old-time distinction between freight and express has been eliminated. Shippers have demanded quicker and better service, and looked to the express service as their benefactor. Since the war this custom has become a habit, and if we want to compete with the motor truck we must rearrange our tariffs so that the public can take advantage of the higher rate, including the collection and delivery feature, and a lower rate for station to station service. This is a period of reconstruction. Let us reconstruct our business, enlarge its scope, and add to its usefulness as a public servant."

#### LIVELY DISCUSSION DEVELOPS ON FREIGHT AND EXPRESS

The discussion which followed the reading of this paper showed that the subject of freight and express is one of vital interest to the railway companies. President Parsons stated that unless wise judgment is used in the \$60,000,000 good roads movement in Illinois the results may be injury to, and further competition with the electric railways. Mr. Budd stated that the auto and truck manufacturers are efficiently organized, while the electric railways and the manufacturers of railway equipment are making no co-ordinated effort to develop the use of the railways for the transportation of merchandise. He suggested that the supply men could be of great assistance to the railways in this connection. He said that the Wisconsin State Council of Defense had passed a resolution condemning the activities and propaganda of the truck manufacturers in that State. He said further that 4-ton or 5-ton motor trucks carrying 10 or 12 tons, and often hauling many trailers, are a danger to pedestrians and other vehicles, and that the taxpayers and the communities through which these trucks operate are seriously affected by the destruction of the roads by the trucks.

Mr. Budd suggested the co-ordinated effort of the railways to combat the propaganda of the truck manufacturers and operators by issuing propaganda of their own for the more extensive use of the railways for freight and express.

J. R. Blackhall, general manager Chicago & Joliet Electric Railway, stated that the development of freight and express on a profitable basis is not possible in all communities. He said that his property could not compete with steam railways at steam rates. Mr. Blackhall spoke of the impossibility of getting an ordinance passed to permit the entrance into Chicago of the various interurban lines operating in that vicinity. He said that the interurban lines could get plenty of business, but not at a profit when it had to be trucked 8 miles or 10 miles from the terminals of the interurban lines into the heart of the city. This he said is the vital point which is holding back the extension and rapid development of electric freight service over the entire State of Illinois.

J. B. Tinnon, engineer maintenance of way Chicago



& Joliet Electric Railway, suggested that if such large manufacturing concerns as the General Electric and Westinghouse companies, which have large advertising appropriations, could spread the propaganda, it would be much more effective than would advertisements coming directly from the railway industries, as the public seems to be naturally antagonistic to public utilities.

President Parsons appointed C. Dorticos of the General Electric Company to act as chairman of, and to form, a committee to consider what the commercial men could do to help spread the propaganda for the electric railways. G. T. Seely, assistant general manager Chicago Elevated Railways, stated that it was entirely a question of selling the service of the electric railways, and also said that there was need for full co-operation between the companies themselves, and for the elimination of the fear that such co-operation might give one company more business than another.

AFTERNOON SESSION DEVOTED TO SAFETY ALLEGORY AND DISCUSSION

At the afternoon session R. N. Hemming, superintendent of transportation Fort Wayne & Northern Indiana Traction Company, presented the allegory of "The Grim Reaper," as was described in some detail in the issues of this paper for Nov. 23, 1918, page 924, and Nov. 30, page 952. Several changes have been made in the sketch since it was presented at the C. E. R. A. Indianapolis meeting. In addition to the two characters formerly participating in the production there was an additional one known as "Work," and a church choir sang a hymn suitable to a funeral occasion to suggest the funeral services of persons killed by accident. In addition an imaginary collision between a railroad train and an automobile was brought about behind the scene with the realistic whistle of the engine, crash of breaking glass and screams of women. The presentation of the allegory was followed by a talk by Mr. Hemming along lines similar to those which he followed at Indianapolis. Striking points brought out were that more accidents are caused by slipping and falling than on railroads, and that twice as many casualties occurred in the United States from accident during the four years of the great war as were suffered by the combined warring nations on the battlefields during the same period. The railways spare no effort to produce increased riding on their properties, thus resulting in an increased revenue, but then they allow this increase in revenue to slip through their fingers as a result of needless accidents. Extensive publicity for the preservation of humanity is necessary, and the railway companies must endeavor to put across legislation to insure a maximum of safety.

The committee on co-operation headed by C. Dorticos, referred to earlier, recommended that the meeting adopt a resolution addressed to the American Electric Railway Association and affiliated Manufacturers' Association, "requesting immediate action in instituting a campaign of advertising and publicity to stimulate travel and shipments via electric railways, such a campaign to be carried on by the manufacturers and by every member of the American Electric Railway Association by means of a catch phrase or phrases, or any other proper method that will get results; and such a committee to promote better means of co-operation between

the manufacturers and the electric railways." This recommendation was referred to the executive committee for further action.

OFFICERS ELECTED FOR THE NEW YEAR

The following were elected as officers of the association for the coming year: President, W. C. Sparks, vice-president and general manager Rockford & Interurban Railway; first vice-president, E. M. Walker, general manager Terre Haute Traction & Light Company; second vice-president, W. L. Arnold, vice-president Elgin & Belvidere Electric Company; secretary, R. V. Prather; executive committee, D. E. Parsons, general manager East St. Louis & Suburban Railway Company; F. J. Baker, president Bloomington, Pontiac & Joliet Electric Railway; H. E. Chubbuck, vice-president-executive, Illinois Traction System; C. F. Handshy, assistant general manager Illinois Traction System; B. I. Budd, president Chicago Elevated Railways; E. C. Faber, vice-president and general manager Aurora, Elgin & Chicago Railroad; J. R. Blackhall, general manager Chicago & Joliet Electric Railway.

After the election a motion was passed referring to the executive committee the question of the financial needs of the association with a view to providing sufficient revenue. The new president and the secretary then briefly addressed the association and the meeting adjourned. Both sessions were well attended, there being some sixty to seventy-five members present.

Skip Stops Save Time in Dallas

The skip-stop system on the lines of the Dallas (Tex.) Railways, the consolidated street car lines under the Strickland-Hobson management, has resulted in a material lowering of the running schedule on all lines. The time saving amounts to about 20 per cent, according to the accompanying table of comparisons of the schedules maintained now and in 1912, which has been prepared by J. F. Monk, inspector.

| Line:          | Schedule |      | Time saved by skip stop |
|----------------|----------|------|-------------------------|
|                | 1912     | 1919 |                         |
| Bryan          | 48       | 42   | 6                       |
| North Belt     | 60       | 45   | 15                      |
| Junius Heights | 60       | 50   | 10                      |
| Erway          | 60       | 45   | 15                      |
| Oak Lawn       | 36       | 32   | 4                       |
| Munger         | 60       | 45   | 15                      |
| Akard          | 30       | 24   | 6                       |
| San Jacinto    | 30       | 24   | 6                       |

The saving of time has been based on the schedules of 1912, the pre-jitney period, on account of the decreased traffic which jitney competition caused the company. When the cars were carrying fewer passengers the schedules were naturally speeded up. But the traffic is much heavier now than it was in 1912, in fact, the railway is caring for twice as many passengers as it did during the time jitneys were running.

In his recent testimony before the Public Service Commission, President Shonts of the Interborough Rapid Transit Company and New York Railways, New York, said that coal, which cost the companies \$3.28 a ton in 1915 now costs \$6.07. About 750,000 tons are used a year. Some rails purchased last year cost \$120 a ton. Before the war similar rail could be purchased for \$30 a ton.

# New Type of Electrically-Welded Joint Successful

Process Used at St. Louis Believed to Eliminate Cracking of Rail Around Joint—Applicable to Old and New Track—Rail Chairs and 6-In. Rail Used When 9-In. Was Unobtainable

THE United Railways of St. Louis, Mo., operate 450 miles of track, with various types of rail, from the 132-lb. rail used under heavy traffic in the city; to the 60-lb. rail used on some country lines, furnishing a wide variety of conditions with which to cope. During the past year, more than 2000 joints have been electrically welded on this property by a new process known as the "compression" method. Prior to the use of this process breakages at the joints had amounted to more than 4 per cent, while since it has been used no breakages have occurred. The joint is made with two fishplates and four  $1\frac{3}{8}$ -in. fillets, as indicated in Fig. 1. In the group Figs. 2 and 3 show two later stages in the formation of the joint. At present rivets are being used for fillets because they are most easily obtained. The two end fillets extend through the two fishplates and the rail web. While for the center fillets shorter

applied as before, but the current is left on for but fifteen seconds. The fillet and the immediately adjacent parts of the fishplates are brought to a welding heat and the hole in the web of the rail is filled, but the web is not heated to a welding temperature. It is believed that this plan will result in reducing the number of breakages which generally occur around the ends of the fishplates. The welding outfit is capable of handling an average of eighty joints per day of ten hours with three men at the welder and one operator.

The welding equipment is followed by a Kleinschmidt grinder, which includes two planer grinders equipped with rotary wheels. The horizontal traveler, which may be adjusted vertically, is supported on the rail by wheels at each end and remains in a level position. The grinding wheel travels back and forth on this support, catching the high spots. The horizontal distance through

NEW TYPE  
OF  
WELDED JOINT  
USED AT  
ST. LOUIS

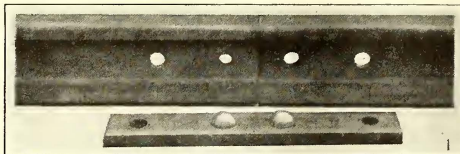
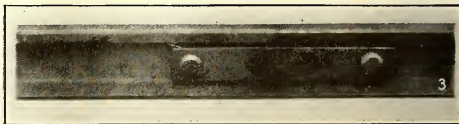
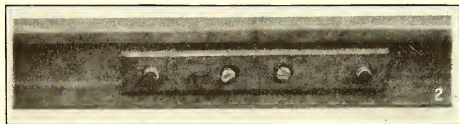


Fig. 1—Fishplate with center fillet ready to assemble on joint.

Fig. 2—Compression joint assembled ready for welding.

Fig. 3—Completed joint ready for service.



rivets are used with the heads between the fishplates and the rail and butting into the hole in the web. This is to provide plenty of material to fill the holes in the web and the plates when the fillets are heated.

## CENTER AND END FILLETS ARE TREATED DIFFERENTLY

An electric welder, shown in Fig. 4, is first placed in position on one of the center fillets, these being nearest the ends of the rail. Pressure is applied hydraulically to the ends of the fillet until 2000 lb. is registered. Then a current of 20,000 amp., requiring 6 volts, is passed through the terminals for one minute.

When the metal begins to melt the pressure causes the fillet to fill the holes in the web and fishplates. With the fillet and surrounding metal at a welding heat the current is turned off and the pressure is increased to 4000 lb. and held there for fifteen seconds. The process is then repeated with the other center fillet. This gives a homogeneous weld of the fillet, fishplates and rail web.

To the two end fillets the initial 2000-lb. pressure is

which the grinder travels may be changed to suit conditions, or the wheel may be held in one position.

Whenever it becomes necessary to re-lay portions of track, new 9-in. Lorain section is used when obtainable, but recently it has been necessary in many cases to use 6-in. T-rail in replacements. For this purpose use is made of a rail chair of dead soft steel measuring 7 in. x 6 in. across the top. After the old rail has been removed, the chairs are placed in position, one on each tie, and the rail is put down. The four clamps are then hammered down firmly over the base of the rail and the chairs are fastened to the ties with screw bolts, electrically driven. Where the old track had been laid in concrete new concrete is poured to a depth of 3 in. to bring it up to the base of the rail.

A photograph reproduced on page 183 shows an interesting type of work which is being done with the welding equipment. This is a 20-in. insert, or "dutchman," and it has been welded just as with ordinary new track, six fillets being used, however. After this welding was completed, pieces of steel 1 in. thick, 2½ in. long and



3 in. wide were welded to the plate supporting the ends of the rails, to prevent the heads of the old rails from cracking and breaking off, which frequently happens when the supports are not used.

In connection with the welding work, a new type of portable turnout and passing track has been developed in St. Louis to prevent welding on single track from interfering with car schedules. This construction is portable as an assembled unit. Whenever the joints inside the turnout are completed, one car of the welding

### New Shop Equipment for D. U. R.

In connection with its extensive shop development at Highland Park, the Detroit (Mich.) United Railway, will install the following equipment: One No. 2 Hilles & Jones single-end power punch with a throat depth of 30 in. and a capacity of punching a 1-in. hole through 1-in. material; one No. 6 Bertsch & Company  $\frac{1}{2}$ -in. plate bending roll; one 3-ft. x 9-ft. Ferguson oil-burning furnace for heating material for the bulldozer; one No. 28

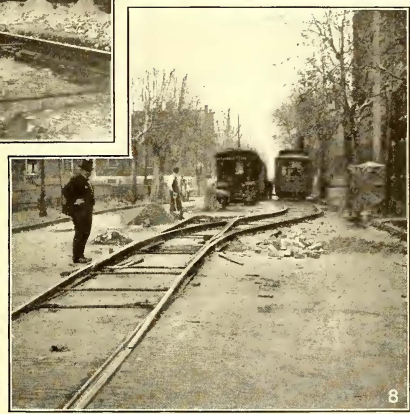
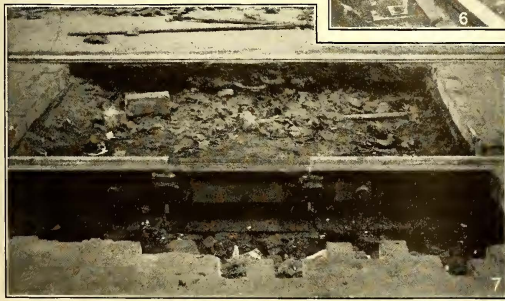
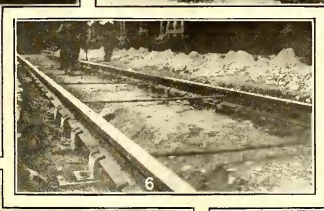
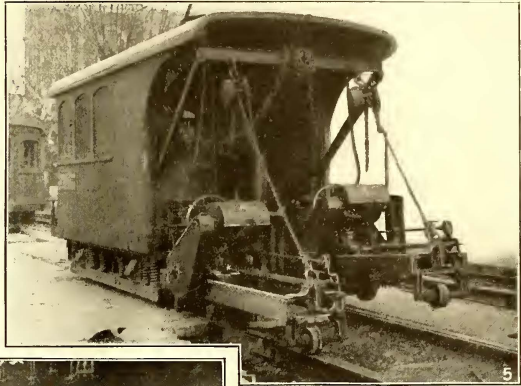
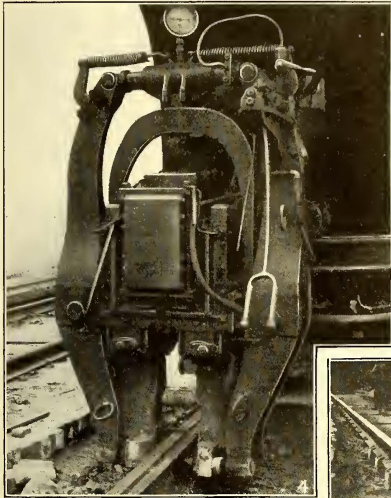


Fig. 4—Welding machine at work on a compression joint  
 Fig. 5—Rail grinder smoothing off a completed joint  
 Fig. 6—Rail chair construction with 6-in. rail replacing 9-in. section.

Fig. 7—Welded insert joint or "dutchman" with special support for head of rail  
 Fig. 8—Portable turnout and passing track for single-track welding work.

#### INSTALLING THE NEW-TYPE WELDED JOINTS ON UNITED RAILWAYS TRACKS

equipment is attached to each end of the portable track and it is dragged to the next point where welding is to be done. In one instance a mile of temporary trolley wire was strung at one side of the permanent overhead and thus the delay due to shifting of the turnout was minimized and the cost was kept down.

The compression joint described herein was invented by E. S. Clark and patented by him in May, 1918. Mr. Clark is engineer of construction for the contractors for the work being done in St. Louis.

Williams-White motor-driven bulldozer; one Buffalo Forge Company No. 9 armor plate bar cutter; one Hilles & Jones Company No. 2 single-end gate shears; one 30-in. No. 444 American Woodwork & Machinery Company wood planer.

The above-listed equipment, part of which is now being received, will be used in the building of 100 double-end steel cars, the first of which was recently completed. The remaining cars will be built as soon as materials and finances are available.

## Temporary Inspection Facilities in New York

### Construction Details of Temporary Inspection Sheds to Meet Emergency on Dual Rapid Transit System in New York City

BY JULIUS GLASER

Designing Engineer Public Service Commission, First District, New York City

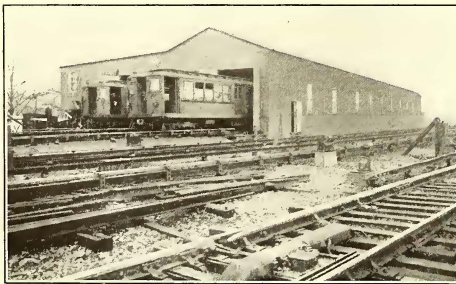
AMONG the most important appurtenances in connection with the operation of a rapid transit railroad are facilities for the inspection of rolling stock. When the dual rapid transit system in New York City was planned, it was intended that storage yards and inspection facilities would be ready by the time the subway trunk lines and elevated extensions were completed; but the war, with its demands on capital, labor and material, prevented the completion, not only of some of the elevated extensions but also of the storage yards and inspection facilities. When operation on the "H" system was inaugurated it was seen that something had to be done at once, and since the construction of some of the new facilities, then building, was hampered by the lack of material and labor, and it would have been impossible to contract for

The details of the construction of these temporary facilities are illustrated in the accompanying photographs. Two inspection sheds, each more than 500 ft. long with pits, trestle approach and track work, were built in three months and one inspection shed nearly 600 ft. long by 45 ft. wide and 27 ft. high was built in less than three weeks, while trains were being operated and inspected within a few feet of the builders. This is extraordinary under present conditions, even though it would not attract attention in normal times.

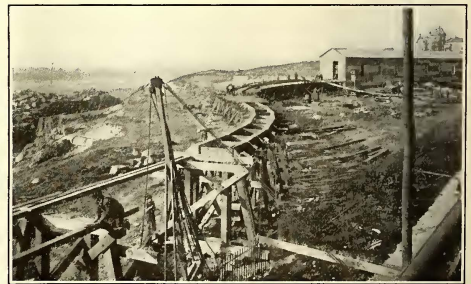
When the specifications and drawings were finished, the invitations to contractors called for bids not only in accordance with them, but also for bids based on alternative schemes with materials which the bidder might have on hand or could procure more quickly than the materials shown on the drawings. That this provision was very valuable was shown by the fact that the facilities could not have been had at such low prices or in such short time, if the bidders could not have availed themselves of it. Six contracts were let to the lowest bidders: One for the track work and inspection pits at Whitlock Avenue for \$21,566; another for \$21,100 for the shed at the same locality; the third, fourth and fifth at Jerome Avenue near Mosholu Parkway for the trestle approach, for the track



INTERIOR OF INSPECTION SHED AT WHITLOCK AVE.



TEMPORARY INSPECTION SHED AT 180TH STREET, NEW YORK CITY



SHED AND TRESTLE IN COURSE OF CONSTRUCTION AT JEROME AVENUE

the remainder, D. L. Turner, chief engineer of the Public Service Commission, issued orders for the preparation of contracts and drawings for the construction of three temporary inspection sheds; one at 180th Street on the White Plains Road line, one at Whitlock Avenue on the Westchester Avenue line, and one near Mosholu Parkway on the Jerome Avenue line.

Emergency inspection pits were also built on the Jerome Avenue elevated structure near 198th Street and at the site of the permanent storage yard at 180th Street. At both these places cars were inspected in the open, with canvas canopies to protect the workmen.

and pit work, and for the shed, at \$19,490, \$23,002 and \$17,500, respectively, and the sixth for \$21,990 for the shed at 180th Street over the pits already constructed by the Interborough Rapid Transit Company for emergency inspection, as previously stated. The contract time was two months for the trestle at Jerome Avenue, three months for the track work and pits at Jerome and Whitlock Avenues and three months for the completion of the three inspection sheds, with the stipulation that they must be ready for use within ten weeks of delivery of contract.

All of the work proceeded according to schedule, with



the exception of the inspection shed at 180th Street, which was required more urgently, because it was difficult to keep men inspecting in the open, especially as this had to be done in all kinds of weather in order to keep the "H" system in operation. Mr. Turner gave the work his personal attention, and, with the co-operation of the contractor, the shed was completed in less than three weeks without injuring a single man, although the work had to be carried on near live electric conductors and while trains were constantly in operation. The total amount expended for this temporary work, in round numbers about \$125,000, would appear to be an addition to the cost of the Dual System, but it must be remembered that the permanent facilities would cost much more than they would if built in normal times.

### Savings Made by Skip Stops

Tests Conducted Over Test Track in Detroit with Gasoline and Electric Cars Give Definite Figures of Economy Secured

**E. J. BURDICK**, assistant general manager Detroit United Railway, who contributed an article on the safety of the skip stop in Detroit to the Jan. 11 issue of this paper, has also compiled data relating to the power saving of the skip stop. These data were obtained as the results of tests conducted on the Shore Line division of the Rapid Railway (a part of the D. U. R. system), the test section extending from the Country Club on Lake St. Clair, north a distance of 5.053 miles. These data form part of testimony which the company has presented to the city in favor of the skip stop.

The electric cars used in these tests were the company's standard city equipment. The instruments used were Thomson's integrating wattmeter, and Weston's volt and ampere meter. The crews were from the company's regular service and were only average operators. The tests were made to verify the statement made by the government engineers that a 10 to 16 per cent saving could be obtained by the application of the skip stop.

The stops differed from those in ordinary service in that they were predetermined. Consequently more of

them were made than would be the case in actual operation. Mr. Burdick estimates that on a busy line in the city a car would stop at but 65 to 70 per cent of the total number of stops used in the trial trips.

The results are summarized in Table II. Three different types of cars were used and three different kinds of trips were run. Trip No. 1 in each case had no stops or practically none. In Trip No. 2 the stops were made approximately 600 ft. apart, and in Trip No. 3 the stops

TABLE I—PERCENTAGE INCREASE IN POWER CONSUMPTION OF COMPARATIVE STOPS

|  | Car 3098, Per Cent. | Car 1104, Per Cent. | Car 851, Per Cent. | Paige Automobile, Per Cent. |
|--|---------------------|---------------------|--------------------|-----------------------------|
| Stops every 600 ft. over no stops      | 89                  | 137                 | 96                 | 24                          |
| Stops every 300 ft. over no stops      | 148                 | 213                 | 167                | 66                          |
| Stops every 300 ft. over 600 ft. stops | 31                  | 32                  | 37                 | 33                          |

were approximately 300 ft. apart. The weights of cars are given in the table. Cars 3098 and 1104 were double truck and car 851 single truck. The gear ratio in all three cases was 15:69. The first three columns in Table I show the percentage increase in power consumption of the different runs and the values are derived from the data in Table II.

To translate the saving in energy to saving in fuel Mr. Burdick estimates that during 1918 the Detroit United Railway power stations consumed 106,837 tons of coal, while the Detroit Edison Company, at its reported rate of 2.9 lb. per kilowatt-hour at the direct-current bus, consumed about 92,104 tons during the same period. The total consumption then is equivalent to 545 tons a day. If only 12 per cent of this energy were saved by the skip stop, and the Fuel Administration estimate was from 10 to 16 per cent, the saving in Detroit would be 23,873 tons yearly or 65 tons a day.

To confirm the figures obtained with electric cars the company conducted a similar test with a five-passenger Paige automobile on a road which extended parallel or nearly parallel to the electric test track, the actual length of run in this case being 5.1746 miles. The percentages of consumption are shown in the last columns of Table II and the data in Table III.

TABLE II—ENERGY CONSUMPTION DURING TRIAL RUNS WITH DIFFERENT STOPS

| Car Number | —Weight—   |                            | —Stops—  |         |                     | —Slow Downs— |         |                     | Total Kilowatt-Hours |         | Kilowatt-Hours per Car-Mile |          | Watt-Hours per Ton-Mile |                     |          | Running Time |                     |          |         |                     |    |    |    |    |
|------------|------------|----------------------------|----------|---------|---------------------|--------------|---------|---------------------|----------------------|---------|-----------------------------|----------|-------------------------|---------------------|----------|--------------|---------------------|----------|---------|---------------------|----|----|----|----|
|            | Empty, Lb. | With Seven Passengers, Lb. | Outbound | Inbound | Round Trip, Average | Outbound     | Inbound | Round Trip, Average | Outbound             | Inbound | Round Trip, Average         | Outbound | Inbound                 | Round Trip, Average | Outbound | Inbound      | Round Trip, Average | Outbound | Inbound | Round Trip, Average |    |    |    |    |
| 3,098      | 47,060     | 48,250                     | 1        | 0       | 2                   | 1            | 9       | 7                   | 8                    | 10      | 10                          | 1.97     | 1.97                    | 1.97                | 82       | 82           | 82                  | 17       | 16      | 16                  | 5  |    |    |    |
| 3,098      | 47,060     | 48,250                     | 2        | 39      | 39                  | 2            | 4       | 1                   | 1.5                  | 18.6    | 19.1                        | 18.8     | 3.68                    | 3.77                | 3.73     | 152          | 156                 | 154      | 24      | 24                  | 24 | 4  |    |    |
| 3,098      | 47,060     | 48,250                     | 3        | 76      | 77                  | 0            | 4       | 2                   | 2                    | 24.7    | 24.7                        | 4.87     | 4.89                    | 4.88                | 202      | 203          | 203                 | 32       | 32      | 32                  | 32 |    |    |    |
| 1,104      | 39,520     | 40,710                     | 1        | 0       | 1                   | 0            | 5       | 7                   | 5                    | 6       | 5                           | 5        | 7.5                     | 6.5                 | 1.99     | 1.48         | 1.28                | 33       | 5       | 72.7                | 63 | 0  |    |    |
| 1,104      | 39,520     | 40,710                     | 2        | 39      | 39                  | 39           | 5       | 5                   | 5                    | 14.5    | 16                          | 3        | 15.4                    | 2.87                | 3.22     | 3.04         | 141.1               | 158.3    | 149.7   | 27                  | 27 | 27 | 16 |    |
| 1,104      | 39,520     | 40,710                     | 3        | 77      | 77                  | 5            | 5       | 5                   | 5                    | 19.6    | 21                          | 4        | 3.9                     | 3.88                | 4.15     | 4.01         | 190.8               | 204.8    | 197.8   | 33                  | 33 | 33 | 33 |    |
| 851        | 28,740     | 29,930                     | 1        | 0       | 1                   | 0            | 5       | 13                  | 18                   | 15.5    | 5.8                         | 6        | 1                       | 1                   | 1.14     | 1.20         | 1.17                | 76.1     | 80.2    | 78.1                | 16 | 16 | 16 | 16 |
| 851        | 28,740     | 29,930                     | 2        | 39      | 39                  | 7            | 7       | 7                   | 7                    | 5       | 6                           | 11.7     | 11.5                    | 11.6                | 2.31     | 2.27         | 2.29                | 154.4    | 151     | 153                 | 0  | 23 | 23 | 23 |
| 851        | 28,740     | 29,930                     | 3        | 77      | 77                  | 7            | 7       | 7                   | 7                    | 5       | 15.7                        | 16       | 15.8                    | 3.10                | 3.16     | 3.13         | 207.1               | 211.2    | 209.1   | 29                  | 27 | 28 | 28 |    |

TABLE III—GASOLINE CONSUMPTION DURING TRIAL RUNS, PAIGE AUTOMOBILE

| Car        | —Weight—   |                          | —Stops—  |                        |          | Gasoline Used, Fluid Ounces |                     | Gas Per Car-Mile, Fluid Ounces |         |                     | Gas Per Ton-Mile, Fluid Ounces |         |                     | —Running Time— |         |                     |         |         |             |
|------------|------------|--------------------------|----------|------------------------|----------|-----------------------------|---------------------|--------------------------------|---------|---------------------|--------------------------------|---------|---------------------|----------------|---------|---------------------|---------|---------|-------------|
|            | Empty, Lb. | With Two Passengers, Lb. | Trip No. | Distance Between Stops | Outbound | Inbound                     | Round Trip, Average | Outbound                       | Inbound | Round Trip, Average | Outbound                       | Inbound | Round Trip, Average | Outbound       | Inbound | Round Trip, Average |         |         |             |
| Automobile | 3,320      | 3,600                    | 1        | No. stops              | 0        | 0                           | 0                   | 48                             | 55      | 51 1/2              | 9.27                           | 10.62   | 9.94                | 5.15           | 5.94    | 5.54 1/2            | 14 min. | 16 min. | 15 min.     |
| Automobile | 3,320      | 3,600                    | 2        | 600 ft.                | 40       | 40                          | 40                  | 64                             | 64      | 64                  | 12.36                          | 12.36   | 12.36               | 6.86           | 6.86    | 6.86                | 25 min. | 20 min. | 22 1/2 min. |
| Automobile | 3,320      | 3,600                    | 3        | 300 ft.                | 77       | 79                          | 78                  | 87                             | 84      | 85 1/2              | 16.81                          | 16.23   | 16.52               | 9.34           | 9.01    | 9.17                | 26 min. | 23 min. | 24 1/2 min. |

# Are Higher Fares Getting Results?

Massachusetts Commission Says It Is Difficult to Escape Conclusion That Only Really Effective Plan for Meeting Existing Situation in State is Outright Purchase or Taking Over of Railways by Municipalities or Commonwealth

**S**HOULD further dependence be placed upon higher fares for the improvement of electric railway finances, credit, property and service? Or should a portion of the cost of service be placed upon the shoulders of the taxpayers, and the credit of the properties restored through public acquisition? These are the questions which have just been raised by the Massachusetts Public Service Commission in its frank and explicit report just submitted to the Legislature for 1918.

In general, the commission avers, the electric railway situation is bad all over the country, and there is little basis for a belief that Massachusetts is specially affected. In this State the situation is critical, and no problem with which the commission has to deal is so serious and at the same time so difficult of solution. The net earnings of the companies have fallen off to such an extent that their credit is impaired, their properties are deteriorating, their service is poor, and for this poor service the public is paying high prices. There is said to be ground for the belief, therefore, that the situation calls for a more radical remedy than has yet been applied.

## HAVE HIGHER FARES PROVED SATISFACTORY?

The sole means at present, says the commission, for improving the financial condition, credit, property and service of the railways is to raise fares. Two objections may be made to this method. One is that it does not produce the results which it is intended to accomplish; the other is that it does produce results which are injurious to the community. No one can truthfully say, it is averred, that the raising of rates has not had a fair trial in Massachusetts, and the conclusions derived from the experience are as follows:

The result has not been what was hoped. With all their raising of fares, our companies seem little nearer financial salvation. To view the matter in the most favorable light, there is a chance that higher fares will, in time, cure the financial ills of our electric railways, but the chance does not seem great, and there is no immediate prospect of such a cure. In the meantime the increased rates are injuring the community in ways which are evident.

When an electric railway by raising fares discourages riding, it becomes at once less useful, less of a public servant; and this effect is cumulative. The tendency of a financially hard-pressed company, when its traffic falls off is to reduce service, and this leads to still more loss of business. It is a question, indeed, whether some railways have not lost as much traffic from curtailed service as they have from increased fares, and the two go hand in hand. More and more the burden falls upon those who ride from necessity rather than convenience, for the latter form of riding is the vanishing factor. A tariff such as the Bay State company proposes, with a 10-cent minimum fare, starts frankly with the assumption that few will ride who do not have to, and involves practical abandonment of the field of short-haul, convenience traffic.

Nor is this all. As the charges increase, the tendency of those who find it necessary to ride is to change their status, by seeking employment or residence where the necessity will no longer exist. To what extent this has yet been done, it is difficult to say, but no one who has

given thought to the situation can doubt that it is a serious danger if fares go higher, or even if they remain at their present level—especially if a period of business depression should set in. It is a danger attaching particularly to the so-called "zone system," which attempts to save the short-haul riding by casting the burden upon the long-haul, and often doubles or trebles the charge from a city center to nearby suburban points. Consistent as it is with cost-of-service principles, this system is inconsistent with the policy which has been followed in the past, and under which our population has been distributed.

The choice in raising fares is therefore between a horizontal increase, which discourages short-haul riding, and a "zone system," which upsets established conditions, invites congestion and stands in the way of the development of the country districts. In the long run, however, the results are equally undesirable and not very different, for a horizontal increase tends to become so high that it has a similar effect upon living conditions, and it is difficult to preserve a low fare in the central area of a "zone system" as further increases in rates become necessary.

Incidental disadvantages of higher fares are the incentive to competition and difficulties in collection. No matter how logical and convincing a case may be made against the largely irresponsible and unreliable operation of jitneys, it is difficult to enlist public opinion in opposition so long as the electric railways charge higher fares and furnish poor service. Experience has also shown that the collection of fares, where pennies are involved or short zones are introduced, is subject to many difficulties and embarrassments which unfavorably affect both revenue and operation.

To sum up the matter, no one can view the present situation with optimism or believe that the policies and methods now pursued are likely, unless general conditions change radically, to bring either good service or good credit, or to further the healthy growth and development of the community.

## THE ISSUE INVOLVED

The essential needs, from the standpoint of the future welfare of the state, are as follows:

1. Restoration of credit, or some other means of providing the capital necessary to place the electric railway properties in condition for first-class service.

2. Return to a basis of fares which will enable the electric railways to play their proper part in the life of the community.

The prime necessity is good service, and it cannot be had without rehabilitation and improvement. Next to good service is a system of fares which will make the service as useful as possible, and help rather than hamper the development of the community on healthful and economically sound lines.

As the commission views the matter, present conditions in electric railways transportation, and still more the conditions which are in sight, both as to service and as to rates, are opposed to the best interests of the State. The only alternative, however, is some plan by which a portion of the cost of service will be taken from the shoulders of the car rider and be met by some form of general taxation.

Even if the principle be conceded, however, it is not easy to apply it. Under the Massachusetts State Constitution it would seem that if a portion of the cost of service is to be borne by the community as a whole, or if community credit is to be used in the



furnishing of capital, the companies must either be publicly owned or publicly managed, and perhaps both.

To some, the commission remarks, this fact will seem sufficient reason in itself for refusing to consider any departure from the present policy. It proceeds, however, to discuss the matter as follows:

Realizing that it is exposed to certain dangers, we do not find the arguments commonly urged against public operation entirely convincing. Doubtless illustrations of inefficiency are not hard to find, but certainly it is no more difficult to find similar instances in the case of private management. Under the spur of competition, private initiative probably develops maximum efficiency, but there is little evidence that this is true in the case of natural monopolies. Publicly operated enterprises may be manipulated improperly for political ends, but so may privately managed public utilities.

This country has never hesitated to take over enterprises when private initiative could not be relied upon to produce the results demanded by the public interest. Illustrations are the schools, highways, canals, water ways, water supply, drainage, fire prevention and irrigation. If, then, a similar point has been reached in electric railway transportation, the Commonwealth will be following no very novel or radical course if it now turns to public operation.

While the management and operation of electric railways would involve the exercise of administrative functions more complex in some respects than those of other enterprises which have already passed from private to public control, we have little fear that the changed conditions resulting from the assumption of direct public responsibility for this public service would be cause for more regret than in the

cases above cited. No doubt the usual amount of human imperfection would be manifested in the case of public operation, but railway service comes so close home to the people that we venture to predict that they would not long tolerate a dishonest or inefficient public management.

But, whatever view may be entertained of the relative merits of private and public operation where conditions permit free choice between the two, the fact that public aid seems to offer the only practicable means of escape from present transportation ills forces us, of necessity if not from choice, to include public operation as an integral part of any plan that may be devised for the solution of our electric railway problems.

If one reaches the conclusion, the commission states, that it is wise to reduce fares to a more moderate basis and support the railways in part by general taxation, and that public ownership or public operation is not an insuperable objection, the question of method arises. In this connection, the thought at once suggests itself that it would be well to adopt the new policy in tentative form first. The commission tried to devise a workable

plan of this sort, but none seemed wholly satisfactory.

It is possible, it is said, that a plan for temporary relief might be worked out by offering the companies the alternative of continuing under the present system, or of accepting public management and moderate fares, for a comparatively short period of years, coupled with certain annual contributions from the treasuries of the cities and towns in which they operate. If this

plan were adopted, this public aid could be limited to a maximum of \$2 per \$1000 of assessed valuation, with the proviso that it should not otherwise exceed a sum sufficient to enable a company to meet operating expenses, depreciation requirements and fixed charges, and pay dividends of 5 per cent upon stock representing bona fide investment. Public management could be provided through a director-general appointed by the governor and placed in charge of every company accepting the plan, or the governor might be empowered to appoint all or a majority of the directors of each such company. Provisions in regard to fares, supervision and jitney competition would be similar to those set forth below in the discussion of a possible permanent acquisition of the properties. This plan might be criticized as a means of tiding the companies over a period of hard

## The Fork of the Road

If some plan of public ownership is not adopted, the alternative is to continue the present policy and attempt to cure electric railway ills by the raising of fares. It is not impossible that, as the public becomes inured to this policy, it may produce better financial results than have yet been realized. Even if this proves to be the case, however, it will be a long time before the credit of the companies is good, and the higher fares, in our judgment, are certain to lessen the value of the railways to the state, and to cause a gradual shifting of population which will be harmful in its results. If increased rates do not improve financial conditions, a period of receiverships and reorganizations will result, which may finally lead to better conditions, but only at the cost of abandoned lines and still worse service meanwhile.

The people must choose. If they are to have good service, undoubtedly they must pay for it, in one form or another. Public ownership will at once insure a much-needed supply of capital and make lower fares feasible, and we know of no other way of accomplishing these results, other than a permanent guarantee of the outstanding securities of the companies, which would be open to objections. Nor do we think that public management is greatly to be feared. Whether there are other disadvantages which will outweigh the benefits received, we are not prepared at present to say.

MASSACHUSETTS  
PUBLIC SERVICE COMMISSION

times at public expense, until a return to more favorable conditions should make operation profitable upon the old basis, but such criticism would not be fair, for the public would receive direct compensation for the financial aid granted, in the shape of lower fares than would otherwise prevail. While this plan would, in the commission's opinion, be preferable, from the standpoint of both companies and the public, to the present system of high fares and low earnings, the great defect in any temporary plan is the difficulty of providing the new capital which is necessary for good service and economical operation. This can be obtained only through the restoration of the credit of the companies or the direct use of public credit.

Even if substantial amounts were granted to meet deficiencies in current earnings, no marked improvement of credit would be likely to result if the arrangement were merely temporary without assurance for the



future. The only alternative would be the guarantee or purchase by the commonwealth, or by some sub-division thereof, of the particular securities issued to provide new capital. But this also is inconsistent with any temporary plan, as it might necessitate measures for protection against possible receiverships and would be likely to involve the commonwealth quite deeply and for an indefinite time in the affairs of the companies.

The commission believes it difficult, therefore, to escape the conclusion that the only plan which can be really effective in meeting the needs of the existing situation is the outright purchase or taking of the railways by the municipalities or by the commonwealth. Under public ownership there would be no trouble about capital, for the credit of the railways would be the credit of the community. Nor would there be any difficulty as to fares, for the commonwealth could at will continue the present policy of placing the entire burden upon car riders, or shift such portion of this burden as it saw fit to general taxation. It would be entirely possible to place the management by contract in private hands, if such course were deemed advisable.

#### PRACTICAL QUESTIONS TO BE CONSIDERED

If the choice should be made in favor of public ownership and operation, the commission notes, certain practical questions must be faced. For the present it only indicates the nature of these questions and suggests in a general way possible solutions, as follows:

*What Railways Shall Be Taken?*—From many points of view, it would be advisable to take all the railways operating within the State. If this were done, certain economies and improvements in operation doubtless could be introduced which would not otherwise be feasible, and the direction of affairs could be placed definitely in the hands of the central government of the State. It might prove, however, that certain sections of the community would be desirous of adopting the new plan, while others would not, in which event it would be possible to provide for the acquisition of particular railways by designated groups of cities and towns, as well as by the commonwealth. Two important exceptions now seem inevitable—the Boston Elevated Railway, already under public operation for a period of at least ten years, and the Massachusetts Northeastern Street Railway, an interstate road interlacing across the boundary between New Hampshire and Massachusetts.

*What Price Shall Be Paid?*—As a matter of procedure the taking could be made at once and a special tribunal could be constituted, adequately equipped to assess the damages after full investigation, subject to the right of the company or of the public to have the finding reviewed by the courts. This tribunal could be either the Public Service Commission or a body specially appointed for the purpose.

The commission has allowed the companies, so far as they could do so by the establishment of reasonable rates, to earn a return upon the original investment without deduction for depreciation except when due to mismanagement. This standard, however, has in certain cases proved of little practical value, as many of the companies are apparently unable, under any rates which they may charge, to earn a fair return upon that basis.

If the commonwealth should acquire the properties, there seems no good reason for departing from the general rule by paying more than their present worth or reasonable market value. The special tribunal in assessing the damages to be paid by the commonwealth would undoubtedly give due consideration to all pertinent facts and indicia of value, such as the original investment, the physical condition of the properties, the character of the territory served, the market value of securities, the recent course of net earnings and the extent to which the possibility of additional earnings has been discounted by increases in fare already made.

*How Are the Properties to Be Managed and Operated?*—1. Somewhat the same plan of management might be followed as in the case of federal operation of the steam rail-

roads, namely, the appointment by the governor of one man as director general of electric railways for, say, five years. No doubt he would wish to subdivide the system into relatively small districts in charge of responsible managers, so that the advantages of direct local supervision over service might be secured, but to handle certain other matters, such as the purchase of supplies or plans for rehabilitation, through a central department. In our judgment a single-headed direction of this kind is preferable to a board of trustees, there being less division of responsibility, quicker action and less liability to change.

2. The director general could have full power to fix rates in accordance with certain general principles laid down by the Legislature. There should be a minimum fare, of not more than 5 cents, but with this exception he could have discretion to establish such schedules as would, in his judgment, produce the maximum revenue consistent with the free movement of traffic, the prevention of congestion in the city centers, and the proper development of the country districts. Very likely this would result in a return to fares not widely different from those which were in force four or five years ago, although higher in certain instances.

3. The roads should continue, for the present at least, under the supervision of the Public Service Commission with respect to accounting, service and accommodations, and it is by no means certain that there should not be an appeal to the commission on rates as well. The director general would be primarily an executive officer, and experience with federal operation of the railroads has shown the need of some independent, semi-judicial and public tribunal with authority to act, in effect, as an arbiter of disputes. The presence of an independent commission with powers of investigation would also help the governor in appraising the quality of the management, and would tend to prevent certain abuses which might otherwise gradually creep in.

4. If the electric railways should be publicly operated at low rates of fare, the commonwealth would be entirely justified in protecting itself against destructive and unnecessary competition. If any other common carriers except taxicabs are desirable upon the public highways, the commonwealth should itself operate them, through the medium of the director general.

5. The present excise tax should be abolished, and some working agreement substituted between the municipalities and the commonwealth with respect to the maintenance and renewal of the street surface between the tracks. Undoubtedly the presence of railway tracks to some extent increases the expense of caring for the streets.

6. Direct acquisition of electric railway properties would enable the commonwealth to provide the capital necessary for rehabilitation and improvement by the issuance of State bonds. It would, of course, be proper to issue such bonds to cover the cost of additions and betterments. It would also be justifiable to spread the cost of extraordinary renewals necessitated by past neglect, beyond those which would normally be made from year to year, over a period of years by issuing serial bonds payable in annual installments.

7. Under the system proposed, a portion of the cost of electric railway service would be met by the car rider, while a further portion, unless conditions radically change, would fall upon the community as a whole, being paid in the first instance at least out of the State treasury. This latter portion could be levied upon the cities and towns served by the railways, in proportion to trackage or population or both, or it could be met directly by the commonwealth through an increase of certain special forms of taxation, such as the inheritance tax, the income tax or the tax upon automobiles. This would be purely a question of public policy and of obtaining the best average results for all concerned. Any general increase in real estate taxes would be met, no doubt, by an increase of rents or prices, and it might prove that the burden could be carried more easily and to greater public advantage in other ways.

It is practically impossible, in the commission's opinion, to give any accurate estimate of the burden which might fall upon the public treasury, if the properties were so acquired, for no one can foretell the purchase price which would be necessary. The best that can be said is that the amount would probably be substantially less than the original investment. Likewise no one can foretell what the revenues or the expenses would be.



There are, to the commission's mind, certain grounds for optimism in regard to the future of electric railways, especially if credit can be restored and an adequate supply of capital insured. The necessities of the situation have stimulated invention, and during the last two or three years new ideas in regard to operation have been developing and gaining ground which seem likely to have an important influence upon the industry. For a long time the tendency was continually toward larger and heavier cars, but it is now in the opposite direction. The experience to date with one-man cars, if reports may be relied upon, has been full of promise. Clearly they represent a labor-saving, power-saving, track-saving device which deserves most serious consideration.

Another new idea which is gaining vogue is a different method of dealing with rush-hour traffic through staggering of hours. It may prove that there are disadvantages in this plan which outweigh its benefits, but it seems to have promise as a means of preventing overcrowding and reducing expense of operation, and public management should make it easier to put it to the test.

Moreover, a unified public management with an adequate supply of capital would make it possible to improve power, shop and track conditions which are admittedly adding to the cost of operation on many of the railways. Unified management should also make it feasible to bring about a standardization of equipment and supplies like that which so many industries in this country have found of greater advantage.

All this, the commission states, is merely suggestive of the possibilities of the future for electric railways, if they can once be placed upon their feet and in a position to seize the opportunities which lie before them. The public itself, it is added, can decrease the expense of electric railway operation and increase revenues without raising rates if it will only co-operate in traffic regulation, accident prevention and the collection of fares.

#### PART PUBLIC OPINION WILL PLAY

In conclusion the commission points out that it has endeavored merely to state the issue and furnish a starting point for discussion. Continuing it says:

The new policy which we have suggested is too far-reaching in its consequences and penetrates too far into fields, like taxation, of which we have little special knowledge, to justify us in urging it with confidence or in developing it at this stage with greater particularity. It needs above all things the consideration of many minds from many angles.

Furthermore, evidence of public demand is essential. It is useless to undertake the difficult task of preparing definite and comprehensive legislation upon this subject, unless there is sound reason to believe that it will be in accord with public opinion and receive the whole-hearted support of the community. So strongly do we feel upon this point that we should not favor the adoption of any plan, no matter how great the public demand might seem to be, unless provision were made for final submission to a referendum vote. It is of vital importance that the people of the commonwealth should accept the new policy, if it is to be adopted, and become directly responsible for its success.

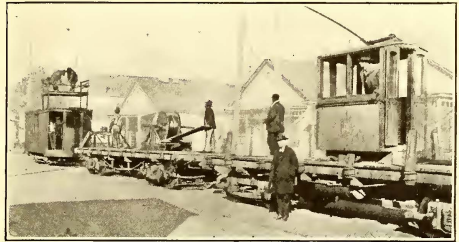
In regard to the Boston Elevated Railway situation, the commission added that, as it had feared, the public trustees had not been able to provide good service. They suffered, however, from conditions beyond their control, which had a similar effect upon all the railways of the State. In the commission's opinion, the public

will be short-sighted and unfair if it charges against public management these adverse conditions which have caused similar shortcomings in private management. As yet there is no reason for a claim that public management has been a failure.

## Tension Blocks Facilitate Replacement of Five Miles of Trolley Wire

This Simple Device Used in Memphis to Maintain Tension and Straighten Kinks in Trolley Wire Proves Advantageous

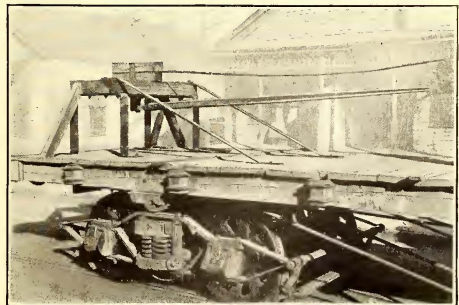
THE Memphis (Tenn.) Street Railway recently installed 3.34 miles of No. 0000 Phono-Electric trolley wire on Main Street between St. Paul Avenue and Jackson Avenue, and 4207 ft. of the same on curves leading from Main Street. This is a double-track line in the most congested district on the system, and a section over which all cars pass. The supporting steel poles



OVERHEAD ERECTION TRAIN AND CREW

have 6-in tops and are set in concrete. The span wires are  $\frac{3}{8}$  in. with porcelain insulation used in spans and guys and wood strain insulators 1 in. x 9 in. used in single and double pull-off ears in special work, through 1800 ft. of which the Main Street trolley was installed.

To facilitate the work of stringing the new trolley wire a clamping or tension block was designed and mounted on a flat car at the opposite end from the reel. The purpose of this block was to reduce as much as possible the waves in the wire, and to maintain a constant tension, as the wire was unreeled. The design and arrangement of the block is clearly indicated in an accompanying illustration. The blocks are white oak 4



TENSION BLOCK ARRANGEMENT USED AT MEMPHIS IN ERECTING NEW OVERHEAD

in. x 5 in. x 30 in., with a 1/4-in. groove cut lengthwise in the center of one 5-in. x 30-in. face on each block. This furnishes a guide for the wire. A downward pressure on the lever maintains a tension on the wire, and tends to straighten out any kinks.

The materials used in the installation of the wire were products of the Ohio Brass Company, and included type N lock hangers, extruded grooved ears, single and double pull-off Detroit trolley clamp ears in curves, and Cleveland wire splicers in straight-line work.

Installation of the new wire and removing the old wire, not including the work on curves, was completed in forty-four working hours with twelve men, including motormen for operating the cars. The total cost for installing the new wire and removing the old was \$0.0212 per foot.

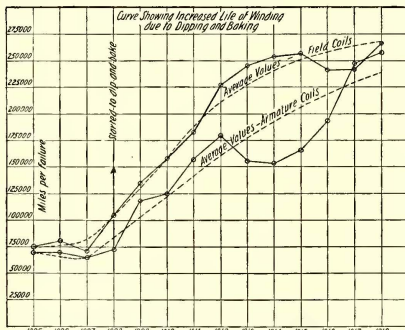
### It Pays to Dip and Bake Railway Motor Windings

BY J. S. DEAN

Railway Engineer Westinghouse Electric & Manufacturing Co.

**A**N EXAMPLE of what can be accomplished in the way of decreasing trouble with old railway motor windings by dipping and baking is shown in the accompanying chart. This shows results for a railway during 1905 to 1918. Armature and field failures per car-mile are plotted from each year's record.

Referring to these graphs, it will be noted that in 1918 there was a decided upward trend which was due



INCREASED LIFE OF WINDING DUE TO DIPPING AND BAKING

to the fact that the master mechanic instituted a systematic schedule of dipping and baking motor windings. Every one-and-a-half to two years (approximately 60,000 to 75,000 miles) during the general overhauling period the field coils and armatures were given a dipping and baking. If when motors were in the shop for other repairs the windings appeared dry, even though the motors had not made their allotted mileage, they were given an extra treatment.

The graphs show that 265,000 miles (seven years of service) was sometimes secured per failure, with windings dipped and baked, as against 75,000 miles (two years of service) otherwise. With 300 motors in service, and assuming that 35 per cent are completely re-wound and 65 per cent repaired each year at a cost of

\$60 for complete rewinding and \$10 for repairs, we have \$2,750 as the saving per year. The approximate cost to dip and bake is \$2 per motor, and as each motor is treated every one and one-half years, we have \$400 as the total cost per year and \$2,350 as the saving per year. The estimated cost to install the plant is \$1,200, hence there was a net saving of \$1,150 the first year and \$2,350 for each succeeding year.

### Portable Fuse Testers Save Time and Labor

**T**HE accompanying illustrations show two forms of portable fuse-testing outfits that have been found to be practicable. The device shown in Fig. 1 is about 15 in. high and is entirely of pipe construction. Two fuse contactors, one being adjustable, are connected in series with the lamp. In the illustration the wiring is shown on the outside of the device for the sake of clearness but as actually installed it runs through the piping. The movable arm is insulated from the end contact and from the piping running to the base by means of an insulation bushing at A. Any size or type of fuse can be tested by making adjustments with the set screw, which permits the movable arm to travel freely on the horizontal cross-pipe. The pipe construction re-

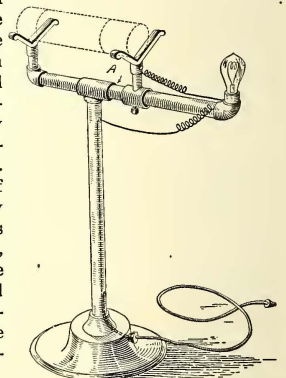


FIG. 1—PORTABLE FUSE TESTER WITH PIPE CONSTRUCTION

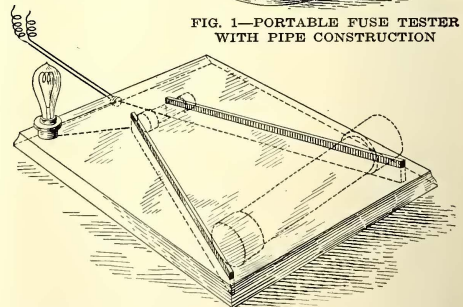


FIG. 2—PORTABLE FUSE TESTER WITH INCLINED CONTACTS

duces the weight to such an extent that it can be carried readily from place to place.

The apparatus shown in Fig. 2 consists of a board with two contacts mounted thereon which approach each other at angle. By this arrangement different lengths of fuses can be tested without the necessity for stopping to adjust the distance apart of the contacts. The illustrations show the main features of the construction so that anyone can make the device.



# Operators and Instructors Necessary for Electric Arc Welding\*

After Proper Equipment Has Been Provided Skill In Operation Is Most Important and Extreme Care Is Necessary to Prevent the Parts from Springing Out of Shape and Avoid Excessive Strains

THE successful application of the electric arc welding process depends very largely on the skill of the operator. The best equipment on the market may be provided, but unless the operator is the particular, neat and careful type of man, the results will be anything but encouraging.

The best operators come from the skilled crafts, such as boiler-makers, blacksmiths and machinists, or men of equal experience in the mechanical field. Only the best men of the respective crafts should be selected to become welding operators, and under competent direction the skilled and enthusiastic operator will seldom make serious blunders in the application of the process. Also, men of this type will continually find new and

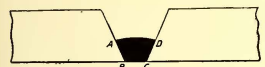


FIG. 1—METHOD OF WELDING TWO PLATES TOGETHER

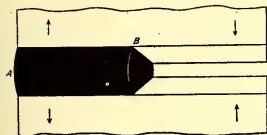


FIG. 2—STRAINS PRODUCED BY COOLING OF THE METAL IN THE WELD

profitable fields for its application, and as time goes on a considerable amount of pride and enthusiasm will be observed among the operators. Each operator should be instructed as to the duty of an electric welding equipment, especially where the individual type is used. He should be given careful instruction in starting up the machine in

the way of seeing that there is nothing lodged in, or accidentally placed in the way of any of the moving parts. Polarity of the welding circuit should be explained to him so that he will have a perfect understanding of its relation to welding. A good practical way to determine the polarity of a welding circuit is by placing a carbon in the electrode holder in place of a metallic electrode. It will be found more difficult to maintain an arc if the carbon is made the positive than if it is made the negative. The detail instructions of the equipment will of course depend on the type of equipment used.

It should be remembered that there will often be welding equipments placed where there is no electrician to look after them, and it will often be necessary for the operators to look after their own equipment, to a large extent. This they can do if their instructions are complete. It is as important for an electric welding operator to understand his equipment as it is for an acetylene operator, not in a technical way but from the

standpoint of care necessary and operation desirable.

When an arc is formed a bright incandescence can be observed, accompanied by a reddish ambient flame, which is due to the burning of the metallic vapor in the oxygen of the surrounding air. It is believed that in the interior of the arc little oxidation of the metallic vapor occurs, because the vapor tends to fill this interior space and therefore displace the air. Oxidation is detrimental in that it reduces the ductility of the metal.

It is now coming to be quite generally believed that the effect of nitrates (caused by the nitrogen in the air) in steel welds is also very bad, and in order that the effect of either oxygen or nitrogen may be reduced

to a minimum, the most important thing to be done is always to weld with a short uniform arc, as a long arc always increases the foregoing actions. The arc is established by touching the wire electrode to be fused to the work, and drawing it a short distance away, say approximately  $\frac{1}{4}$  in. This is best done by a dragging touch with the electrode

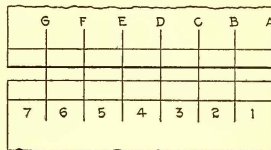


FIG. 3—METHOD OF BACK-STEP WELDING

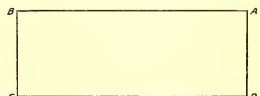


FIG. 4—METHOD FOR WELDING A SQUARE SHEET OR PATCH

slightly out of vertical. The electrode should always be held approximately at right angles to the surface on which metal is being deposited, so that the heat will go straight from the end of the welding wire or electrode. Hence, when the electrode is held at approximately right angles, fusing of the work is assured, assuming, of course, that the proper heat has been provided and the proper arc length is maintained uniform. Furthermore, the work must be clean.

A slight half-circular motion of the electrode will tend to float the slag to the top better than if the electrode is moved along a straight line in one continuous direction. The best results are obtained when the welding progresses in an upward direction.

## PLATE WELDING REQUIRES EXTREME CARE

When welding together plates which have their edges beveled, the arc should be started at point A as in Fig. 1. The welding should then progress to point B, and from B to C, joining the edges together, then from C to D, from D to A, and so on in this manner, filling in a space of approximately 6 in. in length, with the first layer,

\*From 1918 report of committee of Association of Railway Electrical Engineers. For recent articles on the same subject, see the issues of this paper for Dec. 7, 14, 21 and 28, 1918, also Jan. 11 and 18, 1919.

afterward returning for the additional layers necessary to fill the "V." Where this method is used it is not necessary to break the arc until the entire electrode is deposited, and the thin edges are not fused away as would be the case if the operator should try to join these edges by moving the electrode in one direction continuously. Also, when the foregoing method is used the deposited metal will not chill so quickly as to cause local strains to be set up adjacent to the weld. This chilling effect is bad, especially when the mass of the parts being welded is large.

When preparing work for welding, easy access should be provided first for the depositing of the metal along the entire surfaces to be joined together. At the same time more than is necessary should not be removed as it is not ordinarily possible to replace it with metal of equal quality. Furthermore the surfaces on which metal is to be added must be perfectly clean, and the effects of expansion and contraction should be carefully considered.

#### METHODS USED TO RESIST EXPANSION AND CONTRACTION STRAINS

If two pieces of metal are allowed to lie loosely, free to move, they warp and distort in their relative positions during the process of welding, unless precautions are taken. Yet if they are clamped rigidly the stresses which are set up are taken up almost entirely by a slight giving-in of the weld, so that when the parts are released there is no tendency for them to spring out of shape, nor is there any apparent lack of strength in the weld itself due to the stresses being absorbed. This point is reassuring in that it indicates that rigid parts may be safely welded together and no serious stresses left in the weld provided the welding is done properly.

It is the general belief that parts left free to move require no consideration as to expansion and contraction. Nothing could be more untrue. Owing to the fact that in the case of metallic arc welding, where the heat is instantly applied and confined to a very small area in comparison to the total weld, it is necessary to consider practically all welds as being rigid, as is the case shortly after the welding has started, as explained in the following example: If welding is started at *A*, as in Fig. 2, progressing in the direction of *C*, over a distance of approximately 3 ft., by the time point *B* is reached, which is half the length of the seam, contraction will have occurred at the point *A*, so that as welding is continued from point *B* to point *C*, the hot expanded metal placed in the "V" will contract in cooling and will tend to draw the edges closer together. This cannot be done without imposing a strain at point *A*, as indicated by the arrows, thus causing the plates to warp.

#### BACK-STEP METHOD OF WELDING GIVES GOOD RESULTS

A method that has been found to give excellent results is called the "back-step method," for the want of a better name. The object of this method is to avoid stresses which are set up by compelling a slight giving of the weld, as was set forth in a previous paragraph relative to rigid welding.

Referring to Fig. 3, the back-step method of welding is performed as follows: The sections from 1 to 7, inclusive, should be welded by starting at *B*, section 1,

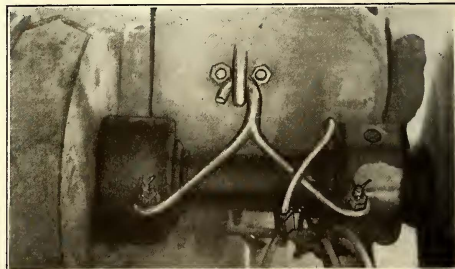
filling in to point *A*, returning to point *C*, section 2, filling in to point *B*, section 1, starting at point *D*, filling in to point *C*, and so on in this manner until all the sections are completed. Each section should be practically finished before starting the next. The length of each section on any seam should not exceed approximately 6 in., and for short seams should be relatively shorter. The work may be stopped at any time without fear of cracking, provided that the portion of the seam gone over is finished flush.

When a square sheet or patch is to be welded in, as in Fig. 4, the work would be started at *A*, finishing the top seam to *B*, and in order that the welding may next be started at the coolest point, the bottom seam would be welded, starting at *D* and finishing up at *C*. The next seam would be *A* and *D*, starting at *A* and finishing up at *D*. Welding would then be started at *B*, completing the weld at *C*, using the back-step method for all seams, as previously explained. Round patches would be laid off in four sections and welded in the same manner as a square patch.

In welding parts of considerable mass, ordinarily the heating and cooling curve is very steep. Where the foregoing method is used, the cooling curve will be considerably lengthened, and local stresses which are present when welding between heavy chills will be avoided. Where mass of the parts is such that local strains may be large, from great differences in temperature, for example in welding car axles, the chill should be removed from the parts by reheating. The higher the carbon in the steel, the more necessary it is that this be done.

#### Safety Carrier for GE-58 Motor

TO PREVENT damage to motors and derailing of cars in case of the breaking of motor frame bolts and the consequent falling of the motor to the ground, the Denver (Col.) Tramway has placed safety carriers on all cars equipped with the GE-58 motor. The carrier is made complete from a few feet of  $\frac{3}{4}$ -in. iron rod. The rod is first bent double, the two ends are brought



SAFETY CARRIER APPLIED TO G.E.-58 MOTOR AT DENVER

together and then the center which is now an end is bent into the form of a hook to fasten into the chain hold of the motor housing. The free ends are then spread, bending from above the hook and an eye is bent in each end to fit over the axle cap bolt. The support is assembled as shown in the accompanying illustration. Several motors with broken bolts have been found suspended from the hooks at various times.



## Lehigh Valley Transit Well Prepared for Snow

New Heavy-Duty Double-Truck Plows Have Been Built and Work Cars Have Been Converted into Temporary Plows

BY W. C. KLEIN

Superintendent of Equipment Lehigh Valley Transit Company, Allentown, Pa.

NEVER before have the lines of the Lehigh Valley Transit Company, which comprise 216 miles of track, been safeguarded from delays in operation caused by heavy snowfall as is the case this winter. The company's snow-fighting system is more efficient than ever because there are more tools with which to work. The company has thirteen double-broom sweepers, six single-truck plows, five temporary double-truck plows (of which three were converted from freight cars and two from work cars) and three heavy-duty double-truck plows. This snow-fighting equipment is operated by well-organized crews supplemented by crews furnished by contractors located in the principal communities served by the railway.

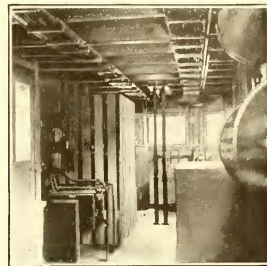
The three new heavy-duty double-truck plows are identical in construction except that one plow had to be made 6 in. lower than the others to allow for clearance of bridges on the property of the Easton Transit Company, a Lehigh Valley Transit subsidiary. Photographs of one of these plows are reproduced and the reader can realize the dimensions better from the statement that the length over all is 40 ft., the bolster centers 18 ft., the length of plow body 32 ft., the width of plow body over side sheathing 8 ft., the height from rail to trolley board 12 ft. 5½ in., and the wheelbase 6 ft. 6 in. The plow body is constructed of a heavy underframe of 8-in. x 12-in. long-leaf yellow pine timbers, which add weight and give strength to receive the end shocks from the plow nose. The body has a 5-ft. door on each side, with five drop-sash windows at each end. All apparatus except the brake cylinder is installed inside the car body. In the interior view it will be noted that

would be carried back onto the track by passing teams. The wing is controlled by means of a block and fall to hoist at any angle from the interior of the car without opening the door—a novel feature. The body is mounted on Brill No. 50-E-3 arch-bar trucks.

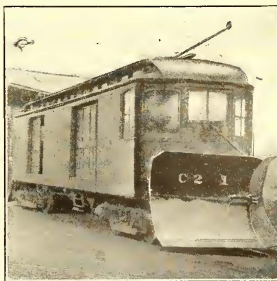
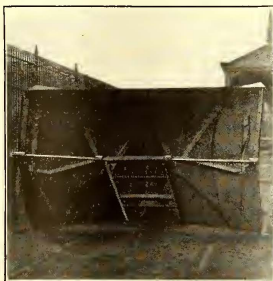
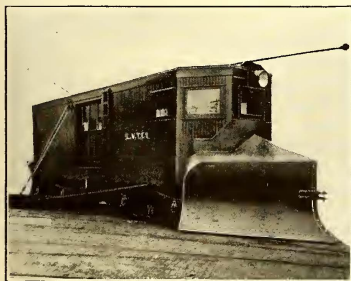
The plow noses are constructed of ¼-in. steel plates, with a binder plate of ¾-in. x 8-in. mild steel stock at the bottom edge of the nose. The noses are braced by two 6-in. I-beam horizontal braces with slide castings attached. The hood of the plow nose is constructed on an angle to allow snow to slide off, preventing accumulation on top. The nose also has a folding canvas strip connected to the plow body and to the top of the snow nose which prevents sleet from interfering with the operation of the nose. The nose is operated by a 12-in. x 12-in. air cylinder, located inside the plow body.

A substantial lever attached to the cylinder is used to pull a ¾-in. iron chain from a sheave wheel located on the countershaft underneath the body. The chains from the plow nose are drawn up on sheave wheels simultaneously with the unwinding of the cylinder chain. The guides of the plow nose slide up and down on two 70-lb. rails well braced against the bumper of the body, and these rails receive the end shocks. This scheme of support permits the plow nose to strike heavy obstructions without damaging the plow and at the same time allows for the vertical operation of the plow nose.

The plows are equipped with Westinghouse No. 121-A motors with GE K-64-A-2 controllers, in conjunction with the contactor boxes of General Electric type. This



INTERIOR OF HEAVY-DUTY PLOW BODY SHOWING APPARATUS AND WIRING



AT LEFT, HEAVY-DUTY SNOWPLOW WITH NOSE IN LOWERED POSITION. IN CENTER, REAR OF TEMPORARY PLOW NOSE SHOWING BRACES AND HINGE POINTS. AT RIGHT, WORK CAR EQUIPPED WITH PLOW NOSE SHOWING NOSE IN RAISED POSITION

the rheostats are well guarded to prevent the operator from coming in contact with the bare grids. In this picture the sand and salt boxes can also be seen.

A 10-ft. wing is fitted on a bracket extending from the plow body on each side of the car for the purpose of throwing back that portion of the snow which otherwise

control makes possible the direct use of current in the motors without air service, the contactor box protecting the controller from burning. All wiring of the plow is exposed on the ceiling, to permit repairmen to locate trouble quickly. This position of the wiring also keeps the cables from salt and snow water, an improvement

over the common practice of installing cables on the floor. The plow is equipped with straight air brakes; with a 25-cu.ft. compressor; with aluminum cell lighting arresters, and with 64-watt incandescent headlights having silvered glass reflectors. In the body are carried jacks, bull rope, car replacers, sledge, small tools and blocks.

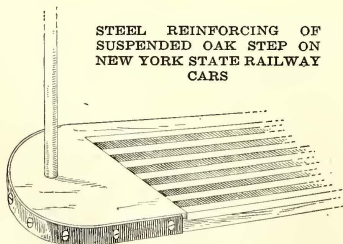
In concluding this brief description of the plow it may be pointed out that its special features are the simple plan for operating the snow nose, the provision for resisting exceptionally strong end shocks and the location of practically all apparatus inside the body

#### UTILIZING OTHER ROLLING STOCK FOR SNOW FIGHTING

As stated earlier we have converted some freight and work cars into temporary snowplows which, as will be seen in the photographs reproduced, is a very simple process. These pictures were taken to show the nose in the raised position and the braces and hinge points. The temporary snow noses are constructed of  $\frac{1}{2}$ -in. steel, well braced to the hinge forgings located at the back of the nose. These forgings fit hinge mates which are located permanently on the work-car body. A top supporting rod is connected from the end of the plow nose to the lever of a countershaft fastened to the cab of the work car. A 12-in. air cylinder, located in the motor-man's cab, is used to operate the countershaft. When the plow nose is not lowered for operation the cylinder raises it to clear the ground by 9 in. The cylinder brackets lock the nose in each position and the noses can be removed in twenty minutes.

#### Increasing the Life of Suspended Car Steps

THE New York State Railways, Syracuse Lines, has a number of cars on which the lower step is of oak, with rounded ends, supported partly by bolt suspension. Much trouble has been experienced with these steps due to their splitting under the effects of weather and use. To prevent this trouble the simple expedient of



reinforcing the ends of the step with 1-in. x  $\frac{1}{2}$ -in. steel strap has been adopted and the results have been very satisfactory.

Formerly the composition anti-slip tread was mounted on top of the step. Recently the plan was adopted of sinking it so that the top projects but slightly above the step level for the purpose of removing danger of passengers tripping over the back edge of the tread when they are alighting.

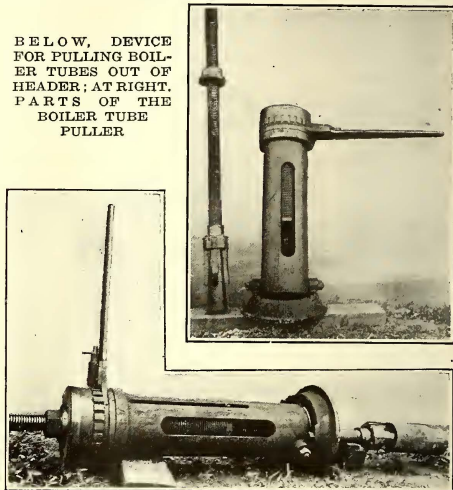
#### Device for Pulling Out Boiler Tubes

AT THE RUSHVILLE shop of the Indianapolis & Cincinnati Traction Company a device has been built for pulling out the tubes of water-tube boilers from the headers by main force. The details of the device are shown in the accompanying photographs.

It consists of the two essential parts shown, a long threaded rod, about 1 $\frac{1}{2}$  in. in diameter, containing at one end an internal expanding clutch, and a ratchet mechanism for applying tension to the rod when it is inserted in the tube to be removed.

The clutch on the pull rod consists of a collar sliding

BELOW, DEVICE FOR PULLING BOILER TUBES OUT OF HEADER; AT RIGHT, PARTS OF THE BOILER TUBE PULLER



on the rod, to which are hinged four swinging clutch jaws sharply toothed at the lower end. At the extreme lower end of the rod is a conical piece which wedges the jaws outward when force is applied. On the threaded portion of the rod is a nut by means of which the depth of insertion of the clutch in the tubes can be regulated.

Tension is applied to the pull rod by means of a threaded tube rotated in a nut forming the upper end of a cast-iron shell, by means of a long handle and ratchet. In order to avoid side strain the shell is hinged at the bottom to a circular baseplate in the manner shown.

With this apparatus it is but a few minutes' work to remove a tube entire. This device was designed and built by Samuel Waggoner, chief engineer of power stations of this company.

The Industrial Department of the International Committee of the Young Men's Christian Association has prepared a syllabus on the subject of the human side of engineering. This is suggested as an outline of a college course on the subject. It will, however, be useful as a guide for systematic reading by anyone interested in improving relations between employer and employee. Copies can be obtained from the Industrial Service Movement, 347 Madison Avenue, New York City.



## LETTERS TO THE EDITORS

### Free Rides and Other Things

SPRECKELS COMPANIES  
SAN DIEGO ELECTRIC RAILWAY COMPANY

SAN DIEGO, CAL., Jan. 20, 1919.

To the Editors:

I have been profoundly interested in the plan advocated by Ralph E. Bauer, of Lynn, Massachusetts, which press dispatches say has been endorsed by Peter Witt, of Cleveland, the street railway expert, that all street car lines in cities be operated free of charge to the public, that the public be permitted to ride whenever and wherever they please without the payment of fare, and that all cost of electric railway operation be paid out of taxes.

A little while ago I might have been against such a remarkable innovation as this, but now I am entirely in favor of it, *provided this idea shall not be confined to street car service only*. As long as we are to have free street cars, I think it absolutely essential for the comfort and convenience and satisfaction of the people that we should have free gas, free electric lights, free water, free telephones and free steam heat served from central plants; all of these various public utilities to be operated by the cities and the *entire* cost of same to be raised by taxation.

California is a popular place with tourists. Hundreds of thousands of them visit our State annually. We will naturally be only too glad to carry them free on our street cars, furnish them with free gas, free electric lights, free telephones, free water, etc. Of course, they do not pay any taxes in our state, but what do we care? It will be merely in keeping with the hospitality California has always shown. People in the immediate vicinity of cities who are not served with street car lines will be carried free on city lines, notwithstanding they pay no city taxes. The people of the cities will gladly pay taxes for free rides for the farmer, the storekeeper and the thousand-and-one people who live in little communities outside our cities. When we all travel free on street cars, we will never walk a block if we can help it, and we and our families will use the street cars four times as much as we do today. It will take four times as many street cars to carry us then. It means four times the power, four times as many men and of course will cost four times as much for the street car service as we are paying to-day. But thank God we shall not have to worry about the cost of any of these things because it will be paid for out of taxes.

When we have established this unusual but delightful and thoroughly welcome condition, why stop? What is the matter with free bread, free meat, free milk, free eggs and butter and groceries? I see no reason why our cities should not buy the necessities of life. They can purchase much more cheaply than individuals or wholesale houses and could allow people to draw all they can use, and all cost would be paid by taxes. I do not know whom they would tax or what they would tax, but they could tax somebody or something. These are trifling details, however, that we do not have to con-

sider in these progressive days. And by the way, why stop at street railways? I see no reason why we should not have free freight and free passenger service on steam railroads, and this wonderful Merchant Marine of the United States. Why not free service on that to all American-born citizens? Let us have free passenger service to Europe, China, Japan or any other place on the seven seas. It will enlarge the minds of the people, broaden their education, and all can be paid for out of taxes. Why should the people of the country be oppressed, burdened or limited in their daily life and happiness when everything can be cured by taxation? It rather makes me mad to think of the time we have wasted when all our troubles could have been resolved by that one simple remedy of making everything free and paying for it by taxation.

In conclusion, let me suggest that we have a free Congress and Senate. Why have primaries? Why have elections? Let every man and every woman be a member of Congress or Senate by *birth*, and go there and say what he or she pleases. There would be the advantage of free railroad travel, and one might add, incidentally, free hotels. Why not? Everybody would then have the opportunity of being his own congressman or senator, and while in Washington of addressing his fellowmen and having laws passed of the particular and special kind which each one thinks is needful according to his view of life or which seem to promise to meet his personal needs.

I am beginning to see that under such conditions we would really have a FREE country in the true sense of the word. Everybody can be a czar, an emperor or a president according to his or her desires. Let's go to it! Yours for freedom " 'n' everything,"

W. CLAYTON,

Vice-President and Managing Director.

### More Data Needed on Carbon Brushes

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

PITTSBURGH, PA., Jan. 21, 1919.

To the Editors:

Among the topics that might profitably be taken up by the appropriate committees of the American Elecsential to make tests to determine how the carbon brushes especially deserves attention. Carbon manufacturers, as well as manufacturers of dynamo-electric machinery, have made numerous tests to determine contact resistances, friction losses, etc., of various carbons. While such tests are of interest, they contribute very little toward the real practical need; namely, a carbon which can stand high current densities and high sparking voltages with small wear.

In order to develop such carbons, it would seem essential to first make tests determining how the carbon wear is affected by current density, sparking voltage and peripheral speed. Present indications are that with many commercial carbons very appreciable densities can be used if there is no sparking voltage, while sparking voltages up to 15 or even 20 volts across the brush cause very little wear at certain speeds, if the current density is low enough. More data along this line should be of great advantage both to the carbon manufacturer and the designing engineer. R. E. HELLMUND, Engineer.

## AMERICAN ASSOCIATION NEWS

### Engineering Association to Resume Committee Activities

AT A MEETING held in New York on Jan. 10 the executive committee of the Engineering Association decided to resume active committee work, restricting reports this year to topics considered especially vital to the welfare of the industry. After consideration of the status of the work of the several committees at the time activities were suspended, due to the disturbed condition of the country, a resolution was adopted substantially as follows: That committee work be resumed to the extent of the subjects considered vital to the industry at present, and that a committee on subjects be appointed to select topics upon which reports shall be presented at the next convention of the association, this committee to act in co-operation with President F. R. Phillips. In connection with the resolution it was understood that if necessary to carry out its intent the committee shall recommend the appointment of new committees or the abolishing of existing committees so that attention may be concentrated upon those matters which will have most direct relation to the problems of reconstruction. The executive committee considered a few of the possible topics for report but no announcement regarding them will be made until the committee on subjects has formulated a report. This should be very soon.

Among miscellaneous matters of business considered by the executive committee and decisions reached thereon, the following were the most important:

The resignation of J. W. Welsh from the several association committees on which he was a member was accepted in view of the fact that Mr. Welsh is now a member of the association staff.

It was voted to continue the association's representation on the joint committee appointed some years ago to determine costs of generating electric power, but to reduce the representation from three to two members. The association has been represented by L. P. Crecelius, E. H. Scofield and J. W. Welsh.

It was decided to revive interest in the work of the joint committee on underground and overhead line construction and to authorize the president to appoint a new committee of the association to act with similar committees from other organizations.

The work of the committee appointed to consider the National Electrical Safety Code was reviewed and it was considered desirable to continue this committee, the president to appoint a successor to Mr. Welsh.

On the subject of power distribution it was decided to continue the committee on standard threads and insulators and to ask the distribution committee to arrange for representation on a joint committee on standard stranding of cable.

Mr. Welsh was designated to act as secretary of the Engineering Association in the absence of Secretary E. B. Burritt.

The executive committee meeting was attended by E. R. Hill, New York City; C. L. Cadle, Rochester, N. Y.; C. F. Bedwell, Newark, N. J.; J. W. Welsh, New York

City, and E. B. Burritt, New York City. In the absence of President Phillips Mr. Hill, third vice-president of the association, presided.

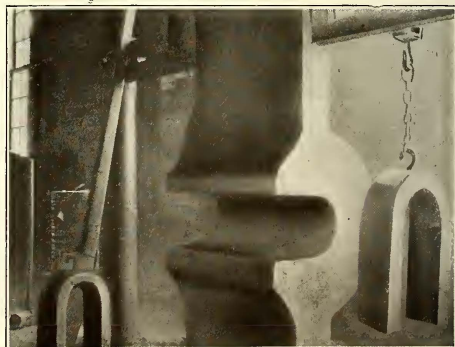
### C. H. Van Hoven Elected President of the Manila Section

AFTER a wonderful record of continuity in the holding of meetings, forty-five having been held in the forty-seven months from the date when it was organized until last November, the Manila company section was obliged to postpone its forty-sixth meeting on account of the epidemic of Spanish influenza which was raging in Manila. The meeting, however, was held a month later, on Dec. 10, 1918. The transportation department orchestra furnished the music.

The result of the annual election was the choice of C. H. Van Hoven, claim agent, as president; F. P. Santiago as vice-president; J. G. Hess, jr., as secretary; B. Solano, as treasurer, and F. Castillo as director to serve for four years. Vice-president Chavez announced the receipt of a cable message from America stating that M. Fariñas and P. Castillo had, respectively, received the medal and honorable mention for the best and second-best papers presented before company section during the preceding association year. (See E. R. J., Nov. 2, 1918, page 793.) The "cable" also announced the award of "honorable mention" by the N. E. L. A. to B. H. Blaisdell for his paper on "A Kilowatt-Hour and the Coal Required to Produce It" (printed in the issue of this paper for March 16, 1918, page 525).

### Getting More Bearing Surface in the Wheel Press

SOME time ago the shop department of the Lake Shore Electric Railway had the ill fortune to break the tail block or anvil of the wheel press at the Fremont, Ohio, shop. Advantage of the opportunity was taken, however, to increase the bearing surface of the tail block



TAIL BLOCK OF WHEEL PRESS BUILT OUT TO INCREASE BEARING SURFACE

by building out the pattern to form the projections seen in the accompanying illustration. The new casting is not only stronger but the work seats itself much more securely than when the left-hand side of the tail block came straight down.



# News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION  
PERSONAL MENTION

## Mr. Gould Would Sell

Controlling Interest in Richmond and Norfolk Railways Reported Offered to the Cities

Frank J. Gould, principal owner of the Virginia Railway & Power Company, which controls the electric railways in Richmond and Norfolk, Va., was reported on Jan. 21 to have offered to consider the matter of disposing of the properties to the cities.

### COMPANY HANDICAPPED

That the company has been greatly handicapped in both cities is a matter of record. Long since it proposed to rehabilitate, extend and modernize its Norfolk properties. To make this possible negotiations were begun several years ago for a new franchise. Many sessions were held between representatives of the company and the city and at one time it seemed as if the prospects were good for an amicable adjustment. Finally, the negotiations were broken off.

After a considerable interval the question of a new grant for the company was taken up again, but in May, 1918, the City Council voted against a combination of the electric light and power and traction franchises in the new franchise proposed by the company. W. H. Venable, counsel for the company, then stated that his company could not consider a franchise which would not include light and power as well as traction. He declared that it was impossible to look upon the two branches of the company's business as other than a whole because securities had been issued covering all of the activities, and the trustees representing the holders would not consent to a separation of the businesses.

Meanwhile, the Chamber of Commerce took up the matter of service in Norfolk. The special traction committee of the chamber made its final report to the board of directors in October. Among other things the report stated that the committee had found itself "powerless to reach any satisfactory understanding and the matter has to be finally settled by the City Council." The committee opposed the City Council granting the company the right to increase its fares to 6 cents "until it first makes improvements in its service to justify the increase."

### RICHMOND RELIEF POSTPONED

With respect to the situation in Richmond the company, as long ago as December, 1917, petitioned the City Council to suggest some remedy for meeting the unprecedented increase in operating costs. This request was referred to a committee which was to re-

port the relief that could be granted and upon what conditions.

The matter dragged for many months. Finally in July, 1918, advocates of the proposed increase to a straight 5-cent fare in that city presented their arguments in favor of the measure. Subsequently the committee on streets of the City Council called upon the company for additional data. This the company promptly supplied.

The street committee early in January finally sent to the Council the ordinance for a straight 5-cent fare, with the recommendation that the measure be passed. While the resolution was adopted providing for the advertisements of the ordinance as proposed by Council, the ordinance itself was not considered. At that time the prospects were that Richmond after many months of effort would have a straight 5-cent fare with labor tickets at six for 25 cents instead of at the prevailing 2½-cent rate—if action taken by the street committee is approved by the City Council as a whole.

## No More Women

This Applies Only to Detroit—Those In Service of Detroit United Railway Permitted to Remain

As a result of the hearing by the National War Labor Board at Washington to consider testimony and arguments of the Detroit (Mich.) United Railway and women conductors, the joint chairmen, William H. Taft and Basil M. Manly, has rendered a decision which prohibits the employment of women as conductors in the future, but permits those now so employed to remain. The chairmen found that while there had been a necessity for the employment of women as a war emergency in Detroit this condition has ended.

It was also held that the fifteen women who had been denied cards for probationary work by the union were entitled to employment and that such union cards should be issued to them.

The chairmen made it clear that the decision was based entirely upon conditions existing in the city of Detroit and was not to be considered as a precedent for street railways elsewhere.

In touching upon the question of women as conductors generally the chairmen strongly intimated an opposition, stating that while this question in its broad sense was not a part of the case under consideration, it would seem that it was an occupation for men because of the long hours, the crowded cars, a possible rough element of passengers, and the night work which would be required of them.

## Settlement Criticised

Agreement of St. Louis and Railway Settling Tax Case Opposed as Validating Franchise Until 1939

A check for \$248,962, executed by the United Railways, St. Louis, Mo., in favor of the city of St. Louis, has been turned over to City Counselor Daus as the first payment on the mill tax compromise settlement arranged recently at a conference between Mayor Kiel and representatives of the company, mentioned in the ELECTRIC RAILWAY JOURNAL of Jan. 18, page 151.

### SUMMARY OF AGREEMENT

The points set forth in the agreement between the company and the city have been summarized as follows:

1. The railway agrees to pay forthwith to the city \$248,962 the amount of the judgment rendered against the St. Louis Transit Company, and interest thereon; to be regarded as an installment payment for the year 1918 on accrued mill tax.
2. Judgment shall be entered in favor of the city and against the railway in the mill tax suits for \$2,320,276; and against the St. Louis & Suburban Railway and the St. Louis & Meramec River Railroad in favor of the city; both judgments to bear interest at 6 per cent.
3. Judgments shall be paid in installments of one-thirty-sixth on the fifteenth days of January, April, July and October, each year, beginning 1920, interest to be at the rate of 6 per cent.
4. The city reserves the right to have payment of judgments become immediately due and payable if the company gets into financial difficulties that make it advisable.
5. The United Railways agrees to assume and pay the judgment against the St. Louis & Suburban Railway and the St. Louis & Meramec River Railroad.
6. The United Railways agrees to pay the mill tax as it becomes due in the future.
7. Stipulation may be set aside if either party violates any provision or condition.
8. That the court retain jurisdiction for the sole purpose of entering an order to enforce the provisions of paragraph 4.
9. The United Railways shall pay the costs of the proceedings in the judgments.
10. The city agrees that the Supreme Court shall affirm the decision of the Circuit Court in favor of the United Railways in the Jefferson Avenue line franchise case.

The opponents of the terms of the settlement immediately jumped to the conclusion that the agreement of the city with respect to the Jefferson Avenue line franchise worked to validate all the other grants of the company until March 18, 1939. When asked about this Mayor Kiel is reported to have replied:

When the question of the Jefferson Avenue franchise came up in the conference, I was under the impression that the court's decision upholding its validity naturally would extend to the other lines. I left that entirely to the city law department.

Mayor Kiel, Comptroller Nolte and President Aloe of the Board of Aldermen were the members of the Estimate Board that arranged the settlement. The storm of disapproval has centered around them and an investigating committee of the Aldermen has

been named to inquire into the matter.

In the Jefferson Avenue line litigation the city contended that the franchise on that line expired several years ago and sought to oust the United Railways. The company argued that the Jefferson Avenue franchise and all other franchises operated by the company were extended until 1939 in the old Central Traction blanket ordinance enacted by the old City Council and House of Delegates. The Circuit Court

some time ago decided against the city and upheld the company's contention. The city appealed and the case now is pending in the Missouri Supreme Court.

The executive committee of the Citizens' Referendum League, through a sub-committee, has decided to ask the voters of St. Louis to recall Mayor Henry W. Kiel for his approval of the compromise agreement with the railway company.

## Transportation the Big Problem

### New Mayors of Detroit, Minneapolis, Providence and Atlanta Give Their Railway Views in Inaugural Addresses

Many Mayors in their inaugural addresses referred to the local railway problems confronting their cities, while not a few of them saw this matter as the outstanding problem before them. Through the remarks of even the most outspoken critics among these officials runs an air of toleration and an unmistakable appreciation of the task before the operators. Offenses of the past come in for more censure than those of the present. This is illustrated best perhaps by the reiteration upon the part of public officials from widely separated parts of the country of the need for valuations and for the simplification of intercorporate relations as essential to any new arrangement with the cities.

#### DETROIT MAYOR FAVORS CITY OWNERSHIP

James Couzens, former business associate of Henry Ford, who took office as Mayor of Detroit, Mich., on Jan. 14, in his inaugural address to the Council, said that an experience of twenty-five years under private ownership was proof that needed service and extensions to the city railway service cannot be compelled. He advocated taking over the lines of the Detroit United Railway, and then tying the system in with a scheme of rapid transit development which will include a short subway in the business district and modern elevated lines elsewhere.

Mr. Couzens has promised, provided the Council consents, to have a purchase plan ready to submit at the April election. This plan will provide for a small initial payment with the remainder to be supplied out of the earnings. He says that the absence of the price in the former purchase agreement was unquestionably the principal reason for its failure to receive adoption. Briefly the program which appears to him to be the only solution of the difficulties of the city is as follows:

1. We should begin negotiations for the purchase of the existing surface lines from the Detroit United Railway, and I am informed by the Street Railway Commission that the company is willing to sell on a fair basis. These negotiations will develop rapidly whether or not the company intends to be fair. Should the company display an unfair or unreasonable attitude we will be ready to adopt war measures, but war is wasteful—no matter whose property is wasted, and both the company and ourselves I am sure will realize this.
2. While these negotiations are under

way time will not be lost in planning for some extensions of the surface lines so that work may be done in the spring.

3. With what plans have already been prepared by Barclay Parsons & Klapp we will, as soon as the present company has been settled with, be ready to submit suggestions for a comprehensive rapid transit system.

Mr. Couzens says that the construction of rapid transit facilities must, of necessity, be considered in conjunction with the surface lines. He said it was difficult at this time to offer in concrete form a program that can be rigidly adhered to. He believes, however, the need for such facilities is urgent in certain sections of the city, particularly through the territory traversed by the present Woodward Avenue line. He says that subway construction to relieve the congestion in the heart of the city must be started first.

J. E. Meyers, the new Mayor of Minneapolis, Minn., considers the local transportation problem to be the outstanding question before the people of that city. He said so in his inaugural address, in which he reviewed railway matters at some length. Mayor Meyers favors an entire new deal with the Twin City Rapid Transit Company. He sees some advantages in service-at-cost operation, and is alive to possible future changes in city transportation. To him motor buses seem to hold certain latent possibilities, particularly as feeders to the railways.

#### SUBSIDY POSSIBLE

Joseph H. Gainer, inaugurated on Jan. 6 for his fourth term as Mayor of Providence, R. I., advocated in his address a complete reorganization of the Rhode Island Company and consideration of gas and electric light rates. He favors a valuation of the railway with a fair return on the amount so fixed and a subsidy to the company if fares sufficient to provide a proper return on the investment are then found to be too onerous. He reiterated a point that has been made frequently of late by public officials by calling attention to the need for the simplification of the corporate organization of the railway by the elimination of the underlying companies.

James L. Key, who was elected Mayor of Atlanta, Ga., on a municipal ownership platform, delivered his initial message to the members of the new City

Council on Jan. 6. He again emphasized his conviction that the city should own its electric railway system and other public utilities. He said, however, that it would be his purpose to see that the Georgia Railway & Power Company, which operates the local railway lines, received fair treatment at the hands of the administration. In this connection he said:

The utilities have been placed here and dedicated to the public use with the people's consent and these utility owners are entitled to fair profit on the property they have so dedicated. They are not entitled to more than a fair return and they are not entitled to any return on what they have not got. They should not be required, however, to accept less than a fair return.

Mayor Key said in order to compute a fair return it was necessary to obtain the reasonable value of the property dedicated to the service of the public. He advised the Council should insist upon this valuation.

#### Wage Agreement in Atlanta

H. M. Atkinson, president of the Georgia Railway & Power Company, Atlanta, Ga., has announced the signing of an agreement with the Amalgamated Association covering wages and service until Jan. 1, 1920.

In the contract that was signed the company agrees to allow the employees to wear their union buttons, to meet committees of the association, to restate within the next fifteen days thirty-three union men who were discharged in 1916 and eight men who were suspended in 1918, besides agreeing to a number of other demands which the men have been making since 1916.

A definite scale of wages was adopted, allowing the motormen and conductors 35 cents an hour for the first three months' service, 38 cents for the next nine months and 40 cents an hour after the first year of service. The wages of all union employees other than the motormen and conductors were left to be decided by the War Labor Board.

The men agree that for the period of one year there will be no strikes or lockouts. In order that harmonious relations may be advanced by the union, a joint committee, representing the union employees in the different departments of the company, will be formed to meet the first Wednesday in each month and confer with officials of the company. When any disputes arise between the company and the union, three disinterested persons will be appointed to arbitrate the matter, the company selecting one, the union the other, and the arbitrators selecting the third.

All non-union employees of the company who desire to become members of the local union are given the right to join within the next thirty days to secure the same rights as all other members.

In the last few years there have been two strikes of the railway employees of the Georgia Railway & Power Company.



## Commission Alive to Conditions

### New Hampshire Body Sees State Aid as Probable Factor in Saving Public Utilities Companies

The Public Service Commission of New Hampshire has presented its report for the two years ended Aug. 31, 1918, to the Governor and the Legislature. With respect to the electric railways the commission says in part:

Street railways in New Hampshire and generally throughout the country are experiencing the same difficulties. They are not prosperous. Some of them have difficulty to get money enough to pay operating expenses, and only one is earning at the present time enough to pay a fair return on the investment.

In many cases fares have been increased, but the revenue has not been increased proportionately. During the past year, we have had two petitions filed by street railways to be allowed to discontinue operation permanently and to junk the property. One case was very happily settled by having some parties interested in the road buy out the road for the same price the owners could have obtained by selling the property for junk. The other case has not been decided.

It is a public calamity to have an electric railway torn up when it is of service to any considerable part of the community. The commission will not grant such petitions unless it is proved beyond any reasonable doubt that the road cannot be made to pay. If the present unfortunate condition of street railroads was peculiar to New Hampshire, it might be argued that there is something wrong with the management. But such conditions prevail throughout the United States, and some people have gone some way to solve the problem. Some ways are to continue they must be relieved from taxes or even receive some assistance by general taxation from the public service.

#### ROADS MUST EXPERIMENT WITH FARES

Whether it is necessary to go to this extreme or not, it may be well to consider the advisability of modifying the present laws. Statutory provisions some years cost the railways thousands of dollars and are burdens they can ill afford to carry under existing conditions. To say that the increased revenue should be borne by those who enjoy the service is logical but not conclusive. Beyond a certain point, an increase of rates will so decrease the amount of riding that the road will actually get less revenue under the higher rate than under the lower rate. The only thing the road can do is to experiment with its rates until it hits upon a schedule which will give it the largest return and then, if this is not enough to keep going, the general public must contribute toward its support if the service is to continue.

In the meantime, those responsible for the management of the street railways should not relax in their quest for efficiency on the theory that all economies are being practiced and the road is being operated in the most efficient manner. They should be alert to the situation and carry out an endeavor to lessen the cost of the service without making it inferior.

It is a striking fact that more than 60 per cent of the railroads and utilities paid no dividends in 1916 or 1917.

#### VALUATIONS NECESSARY

The commission has not had time and money at its disposal to make possible the valuation of all public utility properties in the state, so that it is not known how the stock and bonds already outstanding when the commission was established in June, 1915, compare with the actual investment, except in the comparatively small number of cases in which valuations have been made by the commission. The valuation of utility properties is a very important matter for the protection of the public, as without this it is impossible to determine what the amount of income to be allowed to be collected from the public in the form of rates. The commission is prepared to undertake this work to a considerable extent without any additional money, except as times become sufficiently near normal to warrant the necessary outlay of time and money on the part of the utilities and the State.

Ordinarily, the first step in a rate case is in determining the fair value of the property devoted to public use, but in the emer-

gency of the last year or more the public service commissions have dealt with rate questions on the principle that public service companies should not share in the large profits incident to war contracts and emergency prices, and that they should be satisfied with normal profits, and bear their full share of the burden imposed on the public by the war; that, in general, the utilities should be content if they are as prosperous as they were before the war, but that all determine whether the pre-war conditions were so exceptional as to require departure from the general rule.

## Arbitration Plans Made

### International Railway and City of Buffalo Working Toward Solution of Their Problems

All questions in dispute between the city of Buffalo, N. Y., and the International Railway involving plans for a final agreement relative to permanent control and operation of the railway lines within the city by the municipality will be submitted to a board of arbitration. This action was decided upon at a meeting of the City Council on Jan. 17.

The valuation of the company's property to be used as a basis of an agreement for municipal control will be one of the main questions for the board to solve. One member of the board will be selected by the municipal authorities; one member by the company; and these two will try and agree upon a third member. If no agreement can be reached it is proposed that the chief justice of the Court of Appeals or some justice of the Supreme Court of Erie County shall designate the umpire.

The names of Peter Witt, Cleveland, and J. C. Brackenridge, New York, have been suggested to the City Council as the representatives of the city upon the board.

Another angle to railway affairs in Buffalo developed on Jan. 17 when the International Railway obtained an order from a Supreme Court justice in Albany directing the Public Service Commission to show cause on Jan. 25 in Albany why it should not receive from the railway an answer to the action started before the commission several years ago by former Mayor Louis P. Fuhrmann asking for an investigation of the fares charged by the company with a view of reducing the fare from 5 cents to 4 or 3 cents.

At the time the action was filed the International Railway obtained an injunction restraining the commission from intervening in the case because of an agreement between the company and the city which allowed the company to charge a 5-cent fare. When war conditions made it apparent that the city could not win the case in view of increased cost of operation, the municipal authorities sought to have the application withdrawn. The railway now seeks to compel the utilities board through a mandamus proceeding to receive the company's answer which it is believed would renew negotiations for an investigation which would result in the company being allowed to charge a higher fare than 5 cents.

## Commission Refuses Approval

### Pennsylvania Board Rejects Lease Proposal Between City and Philadelphia Rapid Transit Company

The Public Service Commission of Pennsylvania on Jan. 15 refused to approve the agreement between the city of Philadelphia and the Philadelphia Rapid Transit Company for the operation of the present lines and the city's high-speed lines, when built, as a unified system. The matter has been before the commission for ten months.

The refusal of the commission to approve the lease was based in general on the following grounds:

1. Sinking fund payments, taxes on subsidiary dividends and payments on account of paving, all being obligations under the 1907 contract between the city and the company, are now being treated as fixed charges, and they should not be postponed in case of a deficit under a lease until any dividends are declared.
2. The proposed method for fixing fares is not approved because to do so would in effect be determining that the initial rate of 5 cents is just and reasonable. This the commission refuses to do except in accordance with its regular valuation and rate-making procedure.
3. The depreciation reserve funds for the city's facilities and for the facilities furnished by the company for the use of the property of the city, and they should be deposited with the proper city officials and invested in legal securities other than those of the company.
4. The contract of 1907, under which a 6 per cent cumulative dividend is allowed after all fixed charges, including subsidiary rentals, is not before the commission for approval, having been entered into before the commission was formed. The commission now refuses to approve it in any indirect manner.

In addition to the formal report and order of the commission, two concurring opinions were made public. These were by Commissioners John S. Rilling and Harold McClure. Mr. Rilling's opinion is an expansion of the ideas expressed in the commission's report. He makes several interesting observations, one being that the drafters of the lease appeared to be more concerned in arranging for the payment of dividends than in assuring good service to the public.

He takes issue with the obvious thought of the lease drafters that in case of a deficit the fare should be increased, and in the event of a surplus the fare should be reduced. Mr. Rilling says an increase frequently reduces revenue and vice versa. He favors a 5-cent fare with transfers. The city might make up in whole or in part the difference between the net revenue produced by a 5-cent fare under efficient and economical management and the amount of a fair return to the company. Such a provision should not be made under a long-term agreement, but by means of appropriations to be determined annually.

Mr. McClure's opinion voices an objection against the 1907 contract and the proposed fare system.

Mayor Smith of Philadelphia is reported to have said that he can see no way out of the matter except to renew negotiations to procure a new lease which would overcome the objections of the commission.



### Permissive M. O. Bill in New York

The bill drafted by the Mayor's conference on municipal ownership is ready for presentation to the Legislature of New York State. It reserves to the Public Service Commission the same jurisdiction over rates, service, issuance of securities, operation of a utility and keeping of accounts as it now has over municipal and private utilities. It adds one feature not contained in existing laws affecting the regulation of utilities. By means of the initiative and referendum the regulating body—the Public Service Commission—is made amenable to public opinion. The procedure for acquisition, establishment, financing, maintenance, operation and control has been worked out, so its sponsors say, so as to guard against:

1. Hasty or ill-advised action by a municipality and its officials.
2. Encroachment on a municipality by a private utility.
3. Collusion between public and utility officials.
4. Inefficient or costly service.
5. Improper management and financing.
6. Unjust attacks on private utilities which give good service at reasonable rates.

The state conference of Mayors has made a public statement signed by the president, Mayor Walter R. Stone of Syracuse, and Mayor Cornelius F. Burns of Troy, chairman of the conference's general legislative committee. This statement, in part, is as follows:

The permissive municipal ownership bill which will be introduced in the Legislature places a municipal utility on the same basis as a private utility by submitting it to the same regulations and affording it the same protection. After a most careful study of the utility problem we believe that this is the only effective way to guarantee efficient and economical service under either municipal or private ownership. If this bill becomes a law in substantially the same form as it is presented we believe that any city which is not getting proper service from a private utility can either obtain or provide it. On the other hand, as long as a private utility gives good service at reasonable rates, it can enjoy the protection which it must have in order to operate.

### Seattle Removing Legal Obstacles

Judge Walter M. French, sitting as judge pro tem in the King County Superior Court, in Seattle, Wash., recently, denied the prayers of the complainant in the case of F. A. Twichell, et al., against the city of Seattle and the Puget Sound Traction, Light & Power Company, and dismissed the action. Notice of appeal to the State Supreme Court was immediately filed.

By dismissing the action, the city of Seattle won the first round in the fight to put through the \$15,000,000 deal for the purchase of the railway system of the Puget Sound Traction, Light & Power Company. In a friendly suit, the right of the city to purchase the traction company's holdings was attacked by F. A. Twichell and Charles E. Horton, on the ground that the bonds the city is to issue would become subject to liquidation out of the general fund and therefore on the taxing power.

Mr. Horton, who intervened in the Twichell suit, alleged that the deal

would affect the property of every taxpayer in the city.

The way is now clear for an appeal to the State Supreme Court and every effort will be made to facilitate the procedure in order that the city may conclude the deal with the company.

### Kansas City Restraining Orders Continued

Violence of a more pronounced character than had been committed for several weeks, occurred in connection with the strike of the employees of the Kansas City, Mo., Railways the week of Jan. 12. On more than one occasion dynamite was placed on tracks. Walter Lambkin, explosives administrator for this district, has undertaken investigation of the source of the bomb-laying.

Both Kansas and Missouri federal courts postponed, on Jan. 11, hearings on application for injunction against strikers and others. Restraining orders were continued in effect.

Judge A. S. Van Valkenburgh in the Federal Court for the Western district of Missouri, on Jan. 18 granted an injunction against the Amalgamated Association, and other persons who might interfere with the operation of the Kansas City Railways. This proceeding was under an original bill. The supplemental bills were dismissed that had been filed by the railway and under which restraining orders had previously been in effect.

The company reopened its repair shops last week, and is now operating them at nearly normal capacity.

### California Regulation Stood War Test

"The year 1917-18," covered by the report of the California Railroad Commission forwarded by the commission to Governor William D. Stephens, "was one of intense activity and interest due to war conditions," says the letter of transmittal accompanying the report.

Many utilities made applications for increases of rates, basing their applications mainly upon increased cost of material, oil and labor. Commenting on these, the commission says:

The commission had no hesitancy in allowing such increases as it deemed proper and reasonable. The commission in its actions believes it fully discharged its duty, not only to the public but to the utilities and national government, by allowing such increases as were necessary to enable the utilities to function efficiently and to prevent financial disaster. This policy is not only just and equitable and consistent with the true spirit of fair public regulations but also responsive to the direct needs of the federal government as expressed in official requests and communications.

That the effect of public regulation was of the greatest possible benefit to the utilities themselves during this period (a period that might well be considered the acid test of the efficiency of regulation) is evidenced by the fact that during that period not a public utility in the State of California went into bankruptcy or receivership. The securities of the California utilities were as well able to withstand the strain of war conditions as were those of any utility in the nation, and better than many similar utilities and other industries in sister states.

### Chicago Will Renew Leasing Proposal

No attempt will be made to submit a new traction ordinance to the voters of Chicago, Ill., at the April election. Instead bills will be prepared for the Legislature now in session and while these are being considered the local transportation committee will endeavor to interest the companies in the proposed plan for leasing the properties. This was the program decided on at the meeting of Jan. 15.

The leasing plan has been referred to before in these columns. It involves an arrangement by which the surface and elevated companies might be induced to turn over the properties to the city on a guarantee of an adequate rate of return to be paid out of earnings, the city meanwhile taking majority control of the management through a board of trustees.

One benefit of this arrangement is that it would automatically remove regulation of the lines from the jurisdiction of the State Utilities Commission because the law exempts municipally owned or operated companies from State regulation. This feature of the proposed ordinance appeals to the "home rule" element among the city's voters. The companies in Chicago will be asked to renew negotiations on this basis.

### Columbus Would Pay Back Wages

At a meeting of the new board of directors of the Columbus Railway, Power & Light Company, Columbus, Ohio, on Jan. 15, plans were discussed for meeting the city's request for the improvement of a number of streets. Means were also considered for paying the men the back wages allowed by the Federal War Labor Board.

On Jan. 16, after a conference with Arthur Sturgis and M. J. Chelsea, representatives of the War Labor Board, President Charles L. Kurtz announced that the men would be paid. Owing to the very narrow margin upon which the company has been operating for some time, it is impossible to make this payment just now, but he hopes that the gradual increase in business will enable the company to take care of it within a reasonable time.

The company paid into the city treasury \$28,671 on Jan. 17, as a franchise tax on the gross earnings of its power and light department for 1918. The tax is levied at the rate of 2 per cent, which indicates that the gross earnings for the department were \$1,433,590.

Records show a decrease of 56 per cent in the accidents resulting from persons attempting to board moving cars in 1918, as compared with 1917. An increase of 20 per cent in collisions between cars and automobiles was noted, but there was a decrease of 28 per cent in collisions between cars and wagons. Accidents due to carelessness in leaving cars showed a decrease of 8 per cent.



## News Notes

**Hearing on Change of Venue.**—Arguments on the motion to show cause why a change of venue should not be granted for the trial of the five officers of the Brooklyn (N. Y.) Rapid Transit Company and the motorman indicted for manslaughter in connection with the wreck on the Brighton Beach line on Nov. 1 were heard on Jan. 16 before Justice Stephen Callaghan in the Supreme Court, Brooklyn.

**No Commission Appointments Now.**—Governor Smith of New York has announced that he will not make any appointments to the two vacant places in the Public Service Commission for the First District until the Legislature indicates what action it intends to take upon his recommendations for a single rapid transit commissioner to finish the subway construction, and for a single commissioner charged with regulation.

**Boston Wage Scale Fixed.**—Joint Chairmen Taft and Manly of the War Labor Board, acting as arbiters in the wage dispute of the employees of the Boston (Mass.) Elevated Railway, have approved a scale of increased wages. The new scale provides that employees of the first class shall receive 55 cents an hour, of second class 50 cents and third class 45 cents. The company is given until March 1 to make back payments to employees from Nov. 16 last, on this scale.

**Review of All Contracts.**—The New York State Chamber of Commerce has sent a telegram to the War Department protesting against its opposition to an amendment to the Chamberlain bill, creating a commission to hear cases on appeal from the War Department. The bill relates to the informal placing of orders by the department during the war, and it is said that upward of nearly \$3,000,000 of war contracts are involved. Under the Chamberlain bill right of review before a court is given to the government or to the contractor.

**Engineering Council Establishes Washington Office.**—The Engineering Council has recently organized a National Service Committee which has established a Washington office in Room 502, McLachlen Building, Tenth and G Streets. The purpose of the committee, acting always under the direction of the council, is to give unbiased and technical information to committees of Congress and government departments—chiefly when asked, and to supply engineers with information about pending legislation and executive actions of interest to them.

**Youngstown Begins Operation Under New Plan.**—On Jan. 16 the Ma-

honing & Shenango Railway & Light Company, Youngstown, Ohio, began operation under the new ordinance fashioned after the Taylor grant in use for some time in Cleveland. The initial rate of fare in Youngstown is 5 cents cash with 1 cent for transfers. Operation will be under the direction of William L. Sause, street railway commissioner. Peter Witt will act in an advisory capacity for one year. The terms of the new grant in Youngstown were reviewed in the *ELECTRIC RAILWAY JOURNAL* for Jan. 11, page 99.

**San Francisco Within Its Rights.**—In the action brought by the United Railroads, San Francisco, Cal., against the city of San Francisco, claiming \$6,870,130 damages for alleged losses sustained by the municipality building and operating railway lines on the same streets with its own, the Superior Court has upheld the city's demurrer, stating that any damage resulting to the value of the franchises of the United Railroads had arisen as a result of rightful competition by the city and that the loss did not constitute a cause of action. The issues involved in this case were reviewed in this paper for Nov. 21, page 1109.

**Would Test Boston Act.**—A petition to restrain the State of Massachusetts from paying any money to the Boston Elevated Railway or from borrowing money in anticipation of assessments to be levied on cities and towns in connection with Boston Elevated Railway deficit has been presented to the Massachusetts Supreme Court by Charles-ton taxpayers. The petition declares there is not the "slightest reasonable probability" the road will earn, if operated for the next ten years under act of the Legislature, any net profits available for dividends. The petitioners state they are informed that Boston Elevated Railway expenditures since July 1, 1918, are \$6,000,000 in excess of gross receipts.

**Wants Franchise Forfeited.**—The St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., has been made defendant in a suit filed in the Circuit Court at St. Joseph by Prosecuting Attorney Stephen K. Owen, charging that the company was not complying with the law with respect to the operation of its railway lines and asking that the company be ousted from its franchise. Mr. Owens is quoted as follows: "It is not the purpose of the petition to seek that the court order the company to give service under penalty of contempt of court if the service is not rendered. It is planned to force the company out of business and to have a concern installed that will give service, not excuses."

**City's Share Dwindles.**—According to present indications, the check to the city of Chicago, Ill., covering its participation in the earnings of the Chicago Surface Lines will be for about \$530,000, compared with \$1,959,851 last year, or a shrinkage of 73 per cent. The final figures will not be made up until

the end of the fiscal year, but the city's share for the first ten months of the operating year has been at the rate of roundly \$530,000 for the full year. The shrinkage follows the wage increase of about \$3,500,000 per annum. The increase in the cost of materials has not been specifically figured, but subtracting total outgo from income, the net will result as indicated. The city's share of the divisible receipts is 55 per cent and that of the companies 45 per cent, and the city's share in dollars will be 27 per cent of what it was last year.

## Programs of Meetings

### Central Electric Traffic Association

A meeting of the Central Electric Traffic Association will be held in Akron, Ohio, on March 18.

### Central Electric Railway Association

The annual meeting of the Central Electric Railway Association, which was scheduled for Detroit on Feb. 27 and 28, will be held at Cleveland on the same dates.

### Master Boilermakers' Association

The 1919 convention of the Master Boilermakers' Association will be held in Chicago on May 26-29 at the Hotel Sherman. This will be the first convention since 1916, the association having suspended activities on account of the war.

### National Highway Traffic Association

A conference on "Regulations Covering Speed, Weight and Dimensions of Motor Trucks" will be held under the auspices of the National Highway Traffic Association at the Automobile Club of America, 247 West Fifty-fourth Street, New York City, at 8 p.m. on Friday, Jan. 31.

### Midwinter Convention of A. I. E. E.

The American Institute of Electrical Engineers will hold its seventh annual midwinter convention on Feb. 19, 20 and 21 in New York City. The tentative program includes the following items: A joint meeting on Wednesday afternoon with the American Institute of Mining Engineers at which several papers on electric welding will be presented. A popular lecture on Wednesday evening with moving pictures adopted by the government for the instruction of troops in regard to various mechanical and engineering processes. On Thursday morning a technical session opened with an address by President C. A. Adams. A technical session on Friday morning under the auspices of the electrophysics committee, and on Friday afternoon several papers will be presented under the auspices of the telegraphy and telephony committee.

Thursday afternoon has been reserved for trips of engineering interest to points in and about New York, and on Thursday evening there will be a reception and dance.

# Financial and Corporate

## Interborough Consolidated Loses

Receivership, However, Will Be Avoided If Subsidiary I. R. T. Keeps Up Dividends

Receivership for the Interborough Consolidated Corporation will not occur, President Shonts declared at the recent meeting of the stockholders, "as long as Interborough Rapid Transit dividends can be continued. In time, however," he continued, "this problem must be faced unless the situation is remedied."

The main source of income for the Interborough Consolidated Corporation is the dividends from the controlled Interborough Rapid Transit Company, and these dividends form the basis for the return on the holding company's \$67,825,000 of collateral trust bonds and \$45,740,500 of preferred stock. In June, 1918, the quarterly rate of 5 per cent on the Interborough Rapid Transit common stock paid since 1915 was reduced to 2½ per cent.

The total income of the holding company, therefore, showed a big decline from \$6,955,866 in 1917 to \$4,402,175 in 1918. The annual report of the Interborough Consolidated Corporation for the year ended Dec. 31, 1918, shows net income of \$724,914, equivalent to \$1.58 a share earned on the preferred stock. In the previous year, the company reported net income of \$3,263,910 which, after deduction of 6 per cent preferred dividends, showed a balance equal to 55 cents a share on the 932,626 outstanding shares of common stock of no par value.

The income account for the years ended Dec. 31, 1916 to 1918, compares as follows:

|                                  | 1918        | 1917        | 1916        |
|----------------------------------|-------------|-------------|-------------|
| Total income.....                | \$4,402,175 | \$6,955,866 | \$6,931,357 |
| Expense, taxes and interest..... | 3,677,261   | 3,691,956   | 3,795,139   |
| Net income.....                  | \$724,914   | \$3,263,910 | \$3,136,218 |
| Preferred dividends              | 686,107     | 2,744,430   | 2,744,430   |
| Surplus.....                     | 338,807     | \$519,480   | \$391,788   |
| Previous surplus.....            | 1,645,356   | 1,875,877   | 1,834,090   |
| Total surplus.....               | \$1,684,163 | \$2,395,357 | \$2,225,878 |
| Deductions.....                  | \$550,000   | 750,000     | 350,000     |
| Profit and loss surplus.....     | \$1,134,163 | \$1,645,357 | \$1,875,878 |

\* Appropriation for reduction of amount advanced by Bankers Trust Company on June 29, 1916.

In his comments on the annual report, President Theodore P. Shonts made the following remarks:

If the public authorities shall continue to maintain their present position of refusal to increase the rate of fare and the Interborough Rapid Transit Company shall find itself unable to realize upon its accrued deficits an amount sufficient to enable it to carry it through the lean period as extended by the conditions due to the war, they will have violated the spirit of the city's contract with the company. They will have destroyed its credit and by that act shut off all future investment of private capital

necessary for the development of the city's transportation, and they will not have advanced by a day the city's right to operate the property itself. Furthermore, the city will then have to meet the interest and sinking fund on its own investment either by borrowing against its own accumulating deficits or by taxation. If it pursues the same course as to its entire dual subway investment of \$250,000,000, its annual charges will be at least \$13,333,333.

## Kansas City-Outer Belt Sale Put Off

Present Status of Terminal Company at Kansas City—In Hands of Receiver Since 1912

The foreclosure sale of the Kansas City, Outer Belt & Electric Railway is being postponed, from time to time, by Judge John B. Pollock of the Federal Court in Kansas City, Kan. Judge Pollock a few days ago declined to agree not to sell the property within a year, his leniency heretofore being due to the fact that the bondholders are largely British, with time otherwise occupied during the last few years on account of war conditions.

The company was organized to build and maintain terminals in Kansas City for the Kansas City, Mexico & Orient Railway. The company went into the hands of the receiver, T. A. Bigger, Kansas City, Kan., in October, 1912. A committee of 95 per cent of the bondholders has prevented liquidation. A reorganization committee, of which John W. Platten, New York, is chairman, has handled receiver's certificates of about \$100,000, chiefly to pay taxes of about \$10,000 a year. Taxes of about \$13,000 are now due, and the court has insisted on payment. There are \$1,298,000 of bonds outstanding.

The company has 7 miles of right-of-way from the Missouri River to the Kaw River, half encircling Kansas City, Kan. The Kansas City, Kaw Valley & Western Railway (Bonner Springs Electric Line) leases a small part of this right-of-way, on which it has 1½ miles of track, its physical connection with steam roads.

The Kansas City, Outer Belt & Electric Railway owns the land company that has several hundred acres of factory sites adjoining the right-of-way. This land has been estimated to be worth nearly \$500,000, but it is said to be of less value now than a few years ago. A few tracts of the land are leased.

The court at one time put a minimum sale price of \$250,000 on the Kansas City, Outer Belt & Electric Railway. The figure was later reduced to \$115,000, but this probably would be increased now, in view of the present volume of receivers' certificates and other accumulated indebtedness of comparatively small amounts.

## B. R. T. Receiver Wants \$16,900,000

Statement Made of Immediate Financial Program to Go Before Court on Jan. 27

Lindley M. Garrison, receiver for the Brooklyn (N. Y.) Rapid Transit Company and other Brooklyn properties, made public on Jan. 22 the petition which he will present to Federal Judge Julius M. Mayer on Jan. 27 asking permission to raise almost \$16,900,000 through the issuance of receiver's certificates.

### HOW FUNDS WILL BE USED

The funds are to be used for the purchase of new cars for both subway and surface lines, for the extension of new power house stations and for important additions in equipment and construction facilities, and to cover current expenses.

Notice of the application was served on all parties interested on Jan. 21 and an opportunity for them to present their cases before the court will be given on Jan. 27.

The sum of \$1,100,000 is described as necessary for the payment of damages growing out of the accident on the Brighton line on Nov. 1, with the recommendation that all claims in this connection be paid so far as settlements can be entered into at the earliest possible date.

The application urges immediate provision of approximately \$2,300,000 for expenditures up to and including Feb. 20.

To cover outstanding obligations caused by existing formal contracts will require \$3,782,812 and additional contracts to be entered into within the next sixty or ninety days for construction and equipment and miscellaneous expenditures will require \$1,000,000.

To provide for enlargement of power station facilities the sum of \$2,986,321 is needed.

The balance of the funds required is to be used largely to pay interest on mortgage bonds, taxes and loans of the system.

### UNDERLYING BOND INTEREST MUST BE MET

The importance of paying the interest on the underlying bonds as well as that on the first mortgage bonds of the Brooklyn Union Elevated Railroad in the amount of \$399,175, also due on Feb. 1, is explained by Mr. Garrison as follows:

Aside from this obligation, failure to pay interest on these underlying bonds would, if the default is not made good, force a foreclosure of these underlying mortgages and the possible separation of practically all of the "existing railroads" from the rapid transit lines constructed by the city of New York or separately of the New York Municipal Railway Corporation. If this should be the result the whole plan of unified operation would be destroyed; the contract with the city of New York might be jeopardized, and the security of both the holders of New York Municipal Railway bonds and of Brooklyn Rapid Transit 7 per cent notes would be imperilled.



### Receivership Hearing

In Columbus, Ohio, Case Court Decides to Continue Hearing Despite Changes in Personnel

In opening on Jan. 8 the case in which a receivership is sought for the Columbus Railway, Power & Light Company, Columbus, Ohio, attorneys for both the company and the stockholders' protective committee endeavored to convince Common Pleas Judge Kinkead that the troubles would all be ironed out at the annual meeting, but he stated that the allegations were sufficient to warrant a hearing and he overruled a motion to postpone the trial. He said he was clearly of the opinion that the company had committed a breach of its contract in abrogating its franchise that would injure it and destroy the value of all the stock to the stockholders. He also wished to look into the effect of the contract with the Clark Management Company.

On Jan. 9 John V. Eitel, a stockholder, filed a cross-petition in the receivership in which he not only alleged damages and asked for a receiver, but also asked for an accounting from the Clark interests for the amounts which were alleged to have been received by them from the company. It is proposed by the court to inquire further into the Clark contracts.

A statement of quick assets and of liabilities of the company was prepared by the auditor's office to be considered at a meeting of the new board of directors on Jan. 15. It was stated that no attempt will be made to present the financial condition of the company to Council until all figures have been fully considered and verified.

On Jan. 11 President Charles L. Kurtz requested that holders of rebate slips, received when the 5-cent fare was paid, exchange the slips for tickets at the rate of eight for a quarter, the franchise rate. This will make it unnecessary for the company to return the cash to those who were overcharged for transportation. It is estimated that the rebate slips will aggregate about \$75,000.

When the new officials have secured the necessary information it is their intention to request an increase in fare. The new rate to be asked will depend upon the conditions that confront the company.

For the time the Slaymaker receivership case has been closed. While the court refused to appoint a receiver, the case has been left in abeyance for the adjustment of other questions involving the Clark contracts, until they can come up on the regular docket. Two questions of greatest import, the court said, were whether the Clark Management Company used its position of control to further its own interests and whether the stockholders were damaged by the abrogation of the franchise.

On the stand on Jan. 10 Clarence M. Clark stated that during the past year

his company had received from the Columbus Railway, Power & Light Company \$63,000 as remuneration for acting as fiscal agent. Of this amount \$20,000 had been paid as salary to President McMeen, \$10,000 to Vice-President Crawford for the same purpose and \$5,000 as a portion of the salary of General Superintendent H. W. Clapp. Other expenses brought the expenditures up to \$47,000, leaving \$16,000 as actual compensation for work done. In the sale of bonds, which his company purchased to an aggregate of \$4,500,000 at \$90 to \$100, he stated that the profit had never been more than 13 per cent. The receipts in connection with the construction of the Big Walnut power plant, he said, were \$83,000 for services in 1917 and \$44,000 for 1918.

### Boston & Worcester Declines

Six Per Cent Increase in Revenue Is Outweighed by 18 Per Cent Rise in Operating Expenses

The Boston & Worcester Street Railway, Boston, Mass., was not immune during the year ended Dec. 30, 1918, from the general epidemic of increased operating costs and other ills. Although increased fares caused a gain of \$54,098 or 6.7 per cent in revenue, the

INCOME STATEMENT OF BOSTON & WORCESTER STREET RAILWAY FOR YEARS ENDED JUNE 30, 1917 AND 1918

|                                |           |           |
|--------------------------------|-----------|-----------|
| Operating revenue....          | \$860,277 | \$806,179 |
| Conducting transportation..... | \$370,342 | \$303,464 |
| Maintenance.....               | 186,811   | 147,832   |
| General expenses....           | 86,951    | 90,609    |
| Total expenses....             | \$643,975 | \$541,905 |
| Net operating revenue.....     | \$216,302 | \$264,274 |
| Interest on debt....           | \$123,229 | \$119,758 |
| Taxes.....                     | 56,414    | 60,794    |
| Total deductions ..            | \$179,643 | \$170,552 |
| Surplus for year.....          | \$37,659  | \$93,722  |

expenses of operation increased to the greater extent of \$102,070 or 18.8 per cent.

Interest and taxes also rose, and the net income in 1918 was \$37,659 as compared to \$93,722 for the year before. Dividends were reduced from \$77,457 to \$52,744, and the final result for the year was a deficit of \$15,085 as compared to a surplus of \$16,264 in 1917. The general surplus of the company on July 1, 1918, amounted to the sum of \$11,026.

The company's comparative statement for the last two years is shown in the accompanying table. The total car-miles operated during 1918 were 1,929,616, and the total car-hours operated, 134,357. According to the company's report, it suffered from interference with service and operating delays on account of the unusually severe winter, and this added to the burden of the unusually high cost of materials, fuel and labor that had to be endured in 1918.

### Rhode Island Deficit \$700,000

Providence Company, Despite Fare Increases, Goes Behind for Eleven Months

A net deficit of practically \$700,000 is shown in the report of the Rhode Island Company, Providence, R. I., in its operation of the railway lines of the State for the first eleven months of 1918, filed with the Public Utilities Commission.

Only one month, July, showed a surplus of income over expenses and fixed charges. Every other month showed a deficit which ranged from \$1,632 to \$160,352.

The gross income for the eleven months was \$5,844,731, while operating expenses, fixed charges, taxes, etc., totaled \$6,543,759, leaving a deficit of \$699,028.

This unfortunate showing was made despite two fare increases put in operation in the same period. The report shows that passenger revenue for the period increased 4.69 per cent, while the operating expenses increased 11 per cent, the increase in the former being \$237,055 over the corresponding period of 1917, the total for 1917 being \$5,057,775 as against \$5,294,830 for 1918. The advance in operating expenses was \$474,225, the 1917 figures being \$4,170,030 and the 1918 figures \$644,255.

Three months of 1918 resulted in decreases in passenger revenue. In February the receipts were \$2,309 under 1917, in July they were \$12,598 under 1917 and in October \$14,121 under 1917. The remaining eight months showed increases ranging from \$4,313 in March to \$97,806 in November.

The September and October reports reflect the efforts of the company to reduce expenses by a reduction in service, the former month showing a decrease from the same month in 1917 of 111,003 miles, while in October the mileage showed a reduction of 125,327 car-miles. These reductions represented respectively 8 and 9.23 per cent of the 1917 mileage.

### Bankers Take Over Control

Through an agreement entered into between the principal creditors of the Connecticut Valley Street Railway, Greenfield, Mass., and its allied companies, the Northern Massachusetts Street Railway and the Concord, Maynard & Hudson Street Railway, the supervising management of the three companies has been placed in charge of three committees of bankers, of which Joseph W. Stevens, president of the First National Bank, Greenfield, is chairman.

It is given out that the reason for the change is mainly because the cash working capital of the companies has been practically exhausted by extraordinary expenses of operation and management due to various unfavorable conditions growing out of the years of world war.

## Receiver for Memphis Street Railway

T. H. Tutwiler, president of the Memphis (Tenn.) Street Railway, and F. S. Elgin, former United States marshal, were appointed receivers of the company on Jan. 20 as a result of a petition filed in the Federal Court at Memphis by the American Cities Company, which controls the local Memphis property.

It was claimed that the Memphis Street Railway owed debts amounting to \$150,000 and was embarrassed with respect to wages and taxes and that it was involved in a dispute over a bank credit.

Early in December suit was brought to recover on the promissory note of the company to the Bank of Commerce & Trust Company in the sum of \$150,000. The appeal stated that the railway was entitled to a credit on the note in the sum of \$57,530, which represented the amount on deposit in favor of the bank on Dec. 2, the day on which the note went to protest. T. H. Tutwiler, president of the railway, is reported to have said at that time that while the note was payable on demand, the bank had agreed not to call the note for payment without giving the corporation sufficient time to meet it.

The petition asking the receivership alleged the Memphis company had contracted liabilities totaling \$850,000, which it was unable to pay at this time. The National War Labor Board recently awarded employees of the company a 60 per cent increase in wages. Application to increase fares from 5 cents to 6 cents was made to the City Commission, but later was withdrawn after the commission announced it would submit the petition to a referendum.

## Wants Abandonment Order Modified

Public Service Commissioner Barhite has reserved decision upon a petition by the Dunkirk (N. Y.) Street Railway for a rehearing on the order of the commission on Dec. 14 which approved the proposed abandonment of the Dunkirk Street Railway, leased to the Buffalo & Lake Erie Traction Company.

The order provided that operation of cars might be abandoned, provided security was furnished to the city for the payment of all taxes and assessments and that the tracks and other apparatus belonging to the road should not be removed until further order of the commission.

The Dunkirk company asked that the order be amended so that it will relate solely to taxes or assessments now due or which have become a lien on the property and that the provision relating to future taxes be stricken from the order except installments on paving assessments now levied. The company also asks that the order be modified so that it can abandon parts of its line, as specified. Unless it abandons

its tracks, it says it will be required to maintain them at considerable expense and subject itself to possible liability in negligence actions and future paving assessments on unpaved or partly paved streets, all of which would be obviated if the tracks were removed. The railroad company asks the commission to resettle the order, as indicated in its petition.

## Authorizes Bonds for M.O.

The voters of Fort Collins, Col., by an overwhelming majority, have approved a bond issue of \$100,000 for the purchase of the local lines of the Denver & Interurban Railroad in Fort Collins, consisting of 7.5 miles of line. On Sept. 6 last the street railway committee of the Commercial Club of Fort Collins held a meeting at which plans were discussed for taking over the property. It was understood then that the railway had made a definite proposition to sell the local system for \$75,000, or any part of the line at the invoiced value. The railway is in the hands of William H. Edmunds as receiver.

# Financial News Notes

**Commission Considering Abandonment Plan.**—The case of the Washington Water Power Company, Spokane, Wash., which seeks to abandon some of its city railway lines, has been taken under advisement by the State Public Service Commission. A decision is expected shortly.

**Service to Be Resumed.**—After lapse of three weeks the Bay State Street Railway, Boston, Mass., will re-establish service from Iron Hill Street, East Weymouth, to Columbia Square, South Weymouth. The Selectmen have promised that the company will be paid \$2,500 by popular subscription for immediately needed repairs.

**Montreal Tramway Issue Reported.**—The Montreal Tramway & Power Company, Montreal, Que., is understood to have sold to a syndicate of Montreal bankers a new issue of \$7,300,000 of 6½ per cent five-year gold notes, the proceeds of which will retire the outstanding issue of \$5,300,000 and provide additional working capital.

**New Brooklyn City Director.**—Charles M. Pratt has resigned as a director of the Brooklyn (N. Y.) City Railroad, which is controlled by the Brooklyn Rapid Transit Company, and has been succeeded by Dick S. Ramsey. Mr. Ramsey is president of the East River Savings Institution, New York, and is also a trustee of the Kings County Trust Company, Brooklyn.

**Court Winds Up Chicago Suburban Road.**—Bondholders of the Chicago & Milwaukee Electric Railway, Highwood, Ill., sold under foreclosure and succeeded by the Chicago & North Shore Electric Railway, have received \$2,432,693 as the final proceeds of the sale of the road in an order entered by Federal Judge Landis. The decree means that for each \$1,000 par value the bondholders will receive \$608.17.

**Lake James Sale Feb. 10.**—The Lake James Railroad, controlled by the Indiana Utilities Company, Angola, Ind., including the right-of-way, equipment, real estate and amusement property at Lake James, will be sold at public auction at the court house in Angola, Ind., on Feb. 10. Authority to the company from the commission to abandon the line was noted in the ELECTRIC RAILWAY JOURNAL for Jan. 18, page 158.

**\$3,000,000 of One-Year 6 Per Cent Notes.**—The Spokane & Eastern Trust Company, Spokane, Wash., announces an issue of \$3,000,000 of one-year notes of the Washington Water Power Company, Spokane, Wash., to be put out as of Feb. 2. They will bear interest at 6 per cent, payable quarterly in Spokane at the office of the Spokane & Eastern Trust Company or in New York at the office of the Central Union Trust Company.

**Bonds for Extensions and Improvements.**—At the annual meeting of the stockholders of the Toledo Railways & Light Company, Toledo, Ohio, on Jan. 16, a bond issue of \$3,200,000 was authorized, the proceeds of which are to be used in making improvements and extensions to the light and power property. Plans for the improvements are being worked out by the engineers, but the officers are not yet ready to make any announcement in regard to them. All of the directors and officers were re-elected.

**Foreclosure Sale on Feb. 8.**—Robert C. Swing, special master commissioner, will sell at Cincinnati, Ohio, on Feb. 8 at public auction, without regard to a minimum price, in accordance with the decree of foreclosure of the \$600,000 of 5 per cent mortgage of 1905 and the \$250,000 of 5 per cent mortgage of 1907, all the properties, etc., of the Cincinnati & Columbus Traction Company, consisting of a fully equipped electric railroad extending from Norwood, near Cincinnati, to Hillsboro, Ohio, a distance of 53 miles.

**Opposed to Abandonment.**—The Real Estate Board of the Chamber of Commerce of Yonkers, N. Y., on Jan. 17 filed with the Public Service Commission, Second District, resolutions adopted on Jan. 14 opposing the discontinuance of lines in Yonkers by the Yonkers Railroad and asking for better service. The resolutions favor increased rates of fare for a reasonable period if it is shown that insufficient revenue is being received by the company to enable it to furnish better service and without the discontinuance of any of its lines and including restoration of all night lines.



**Bondholders Buy Evansville Properties.**—The Evansville & Mount Vernon Electric Railway, the Evansville & Eastern Electric Railway and the Evansville Terminal Railway, properties of the Evansville (Ind.) Railways, were sold at receiver's sale on Jan. 18 for \$335,000 to William H. McCurdy, Albert Karges and Marcus S. Sonntag, Evansville, representing bondholders. The Henderson line was not involved in the transaction. The properties will be reorganized in accordance with the plan outlined in the *ELECTRIC RAILWAY JOURNAL* for Jan. 4, page 71. Articles of incorporation for the successor company, the Evansville & Ohio Valley Railway, have already been filed with the Secretary of State of Indiana.

**Foreclosure Action Threatened.**—A delegation of Boston bankers representing holders of bonds of the International Railway and the International Traction Company, Buffalo, N. Y., upon which interest is in arrears, called upon the Mayor of Buffalo recently and asked what the city intended to do in the matter of allowing the company to charge a higher rate of fare. It developed at the conference that if an agreement between the city and company is not reached by Jan. 31, a foreclosure action will be brought against the company by the bondholders. The ninety days of grace for the payment of interest on some of these bonds expires at that time.

**Part of Interest in Cash.**—Notice is given that in accordance with the reorganization scheme for the Barcelona Traction, Light & Power Company, approved on Dec. 19, 1918, 1 per cent will now be paid in full discharge of the half-year's interest due on Dec. 1, 1918, on the bonds of the company against surrender of coupon No. 14. Last June T. Porter, secretary of the committee of bondholders of the company, addressed a statement to the holders of the bonds to the effect that owing to delay and complications resulting from the continuance of the war, it would be impossible for the company to resume full payment in cash of the interest due on its bonds

on Dec. 1. He said then it was hoped to arrange for a payment of part of the due interest in cash, with deferred payments for the rest of the interest.

**Lehigh Valley Passes Dividend.**—Harrison R. Fehr, president of the Lehigh Valley Transit Company, Allentown, Pa., at the annual meeting of the company on Jan. 13 in submitting his report to the stockholders, said: "Owing to the smaller net earnings your board of directors did not feel justified in continuing dividends on the company's preferred stock." For the fiscal year ended Nov. 30, 1918, the total gross earnings are reported to have increased to \$3,320,000, or \$445,000 more than the preceding year, while the total operating expenses increased \$594,000 to \$2,500,000. The total net income (including other income) was \$1,029,000 for 1918 as against \$1,179,000 for the year before. The gross earnings increased 15 per cent, while the operating expenses increased 32 per cent, and the net divisible income decreased \$105,281, or 23 per cent.

**Status of Mount Vernon Displacement.**—Full information has been received regarding the Mount Vernon (Ohio) Railway, which was reported as facing dismantlement in 1917 and as being confronted with an injunction against dismantlement in 1918. It appears that after the foreclosure sale of this 9-mile property for junk in 1917, it was all dismantled except the rails in pavement inside the city of Mount Vernon. The city secured an injunction against the tearing up of this track until some security was given that the street would be repaired thereafter. Upon a full hearing in the Court of Appeals of Knox County, the city was defeated because the ordinance made no provision for such repair. The city then applied to the State Supreme Court and received late in 1918 leave to file its case. It is now pending therein.

**Want Constituent Charters Forfeited.**—A petition has been made to Attorney-General Charles D. Newton of New York to take steps to have the charters of the eighty-three constituent companies of the Brooklyn Rapid Transit

System declared "legally dead" and forfeited. The petition is made by Leslie J. Tompkins, formerly first assistant district attorney of New York and now a professor of law in New York University, and Edwin M. Otterbourg, a lawyer, acting as citizens. They say they "represent no private or selfish interest nor do they represent any civic, social or business body in making this petition." Mr. Otterbourg is quoted to the effect that "the forfeiture of these corporate charters will make it possible without delay to reorganize this entire system." According to him "the organization of a new company under private or public ownership would be entirely practicable." State Attorney General Newton has referred the application of Messrs. Tompkins and Otterbourg to Deputy Attorney General Cheney, until recently a Public Service Commissioner for the Second District. Attorney General Newton, it was said, will take no action until he has received Judge Cheney's report.

**Seattle M. O. Line Now Running Behind.**—The annual report of Thomas F. Murphine, Superintendent of Public Utilities of Seattle, Wash., on the municipal railway, recommends the elimination of ticket fares, regulation of jitney traffic, establishment of safety zones on Fourth Avenue, and a ban against parking cars at the curb on business streets. According to the report, the municipal railway system during the last eight months of the year ended Nov. 30, showed a net surplus of \$2,277, exclusive of depreciation. The first four months of the year indicated a loss, exclusive of depreciation, of \$12,543. The report states that the purchase of the new cars will mean that, as soon as the Ballard substation is completed and new power feeders can be placed on Division C, the municipal lines will be able to give service adequate to the needs of people tributary thereto. Mr. Murphine suggests a number of improvements, and recommends that an ordinance be drafted providing for the sale of \$200,000 in utility bonds to cover the improvements. Mr. Murphine has been reappointed to office by Mayor Hanson.

## Electric Railway Monthly Earnings

| AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL. |                   |                    |                  |               |            |
|---|-------------------|--------------------|------------------|---------------|------------|
| Period  | Operating Revenue | Operating Expenses | Operating Income | Fixed Charges | Net Income |
| 1m., Nov., '18                                  | \$177,453         | \$164,179          | \$13,274         | \$38,568      | †25,294    |
| 1m., Nov., '17                                  | 175,788           | 133,120            | 42,668           | 35,612        | 7,056      |
| 11m., Nov., '18                                 | 1,952,758         | *1,694,245         | 258,513          | 400,407       | †141,894   |
| 11m., Nov., '17                                 | 1,995,776         | *1,434,301         | 561,475          | 392,872       | 168,583    |
| EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.  |                   |                    |                  |               |            |
| 1m., Sept., '18                                 | \$98,293          | \$55,051           | \$43,242         | \$15,252      | \$28,600   |
| 1m., Sept., '17                                 | 77,984            | *44,016            | 33,968           | 12,058        | 24,299     |
| 12m., Sept., '18                                | 1,074,683         | *97,794            | 476,889          | 156,875       | †335,380   |
| 12m., Sept., '17                                | 921,734           | *504,640           | 417,274          | 128,470       | †300,115   |
| EL PASO (TEX.) ELECTRIC COMPANY                 |                   |                    |                  |               |            |
| 1m., Oct., '18                                  | \$95,245          | *\$74,992          | \$20,653         | \$6,818       | \$13,835   |
| 1m., Oct., '17                                  | 111,011           | *65,970            | 45,041           | 6,501         | 38,540     |
| 12m., Oct., '18                                 | 1,245,437         | *\$537,740         | 391,697          | 80,321        | †311,776   |
| 12m., Oct., '17                                 | 1,284,075         | *777,855           | 506,218          | 64,601        | †441,617   |

| FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y. |                   |                    |                  |               |            |
|---|-------------------|--------------------|------------------|---------------|------------|
| Period  | Operating Revenue | Operating Expenses | Operating Income | Fixed Charges | Net Income |
| 1m., Oct., '18                                    | \$276,854         | *\$214,512         | \$62,342         | \$53,019      | \$9,323    |
| 1m., Oct., '17                                    | 257,713           | *184,107           | 73,606           | 50,509        | 20,097     |
| 10m., Oct., '18                                   | 2,853,380         | *2,028,309         | 825,071          | 508,129       | 316,942    |
| 10m., Oct., '17                                   | 2,290,802         | *1,611,674         | 679,127          | 493,218       | 185,910    |
| HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.      |                   |                    |                  |               |            |
| 1m., Nov., '18                                    | \$569,259         | *\$385,502         | \$183,757        | \$4,883       | †\$179,755 |
| 1m., Nov., '17                                    | 527,250           | *278,940           | 248,310          | 4,848         | †245,219   |
| 1m., Nov., '18                                    | 6,052,741         | *3,491,315         | 2,541,426        | 56,444        | †2,498,042 |
| 11m., Nov., '17                                   | 5,596,927         | *2,814,344         | 2,782,583        | 50,080        | †2,739,458 |
| NEW YORK (N. Y.) RAILWAYS                         |                   |                    |                  |               |            |
| 1m., Nov., '18                                    | \$903,152         | *\$839,765         | \$63,387         | \$278,141     | †\$169,052 |
| 1m., Nov., '17                                    | 998,423           | *745,716           | 252,707          | 281,139       | †19,691    |
| 12m., Nov., '18                                   | 4,618,971         | *4,095,558         | 523,413          | 1,390,580     | ††607,801  |
| 12m., Nov., '17                                   | 5,387,350         | *3,935,109         | 1,452,221        | 1,408,747     | †292,486   |
| SAVANNAH (GA.) ELECTRIC COMPANY                   |                   |                    |                  |               |            |
| 1m., Nov., '18                                    | \$107,901         | *\$90,889          | \$17,012         | \$25,532      | \$68,520   |
| 1m., Nov., '17                                    | 88,104            | *\$57,690          | 30,414           | 24,451        | 5,963      |
| 1m., Nov., '18                                    | 1,165,107         | *822,148           | 342,959          | 301,458       | 41,501     |
| 12m., Nov., '17                                   | 9,556,58          | *6,536,924         | 3,187,734        | 289,203       | 29,031     |

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

# Traffic and Transportation

## Local Board Lacks Authority

New Orleans Body Loses in Suit Seeking to Fix Its Rights Over Fare Rates

Judge King in the Civil District Court at New Orleans, La., has refused the injunction sought by the Board of Public Utilities against the increases in rates of fare for electricity and for gas for the New Orleans Railway & Light Company, provided for by an ordinance of the Commission Council of the city. The court gives three reasons why the act creating the board is unconstitutional. Should the Supreme Court sustain the decision on appeal, the Board of Public Utilities will cease to exist.

Late in December the board, acting upon the advice of Attorney General Cocco, laid the foundation for a test suit to determine its power and authority to regulate the public service corporations of New Orleans by adopting a resolution abrogating and annulling the rate increases allowed by the Commission Council and ordering the restoration of the old rates. In order to make the resolution effective the commission sought an injunction through the court.

In its decision denying this injunction the court said in part:

"The sole and only question presented to the court in this case is, who has control of the public utilities in the city of New Orleans, the Commission Council of New Orleans or the Board of Public Utilities of the city of New Orleans? It is purely a legal question to be determined under the articles of the constitution, the statutes of the State and the decisions of our courts.

"Article No. 319 of the constitution says: 'The electors of the city of New Orleans and of any political corporation which may be established within the territory now, or which may hereafter be embraced within the corporate limits of said city, shall have the right to choose the public officers, who shall be charged with the exercise of the police power and with the administration of the affairs of said corporation in whole or in part. This article shall not apply to the board of directors of the city debt, nor shall it be construed as prohibiting the establishment of board or commissioners, the members of which are elected by the Council or appointed by the Mayor with the consent of the Council.'

"It is clear from the act that the functions of the Board of Public Utilities are local in character to be exercised in the city of New Orleans, and they constitute the exercise of police power of the city and an administration in part of its affairs.

"The act authorizing the members of the Board of Public Utilities, appointed by the governor, not elected by the electors of the city of New Orleans, to exercise them in this city contravenes article No. 319 of the constitution and in this respect is null and void. It has been so decided in the case of the State of Louisiana vs. the Lafayette Fire Insurance Company, 134 La. 73. The same doctrine was held in Watson vs. McGrath, 111 La. P. 1097-1109 La. P. 838 and 52, La. P. 1604.

"The Board of Public Utilities are local of a corporation and cannot sue or be sued. At best, if it were constitutional, it is but another department of the city government, such as the commissioner of the department of public property, commissioner of public finances, an commissioner of public safety and city engineer, and they cannot sue or be sued separately.

The act in question also violates Articles Nos. 31 and 32 of the constitution. Article No. 31 says:

"Every law enacted by the General Assembly shall embrace but one object, and that shall be expressed in its title." Article No. 32, says:

"No law shall be revived, or amended by reference to its title, but in such cases the act revived, or section as amended, shall be re-enacted and published at length.

"The enacting section of the act in question does not amend or prescribe for the amendment of any scribe, section or provision of the city charter, but declares that the amendment shall be made and effective through the addition of certain provisions without change or amending any section or provision in any respect whatsoever.

"There is no amendment or change in the body of the act to sustain the title which declares that the object is to amend the city charter. The act clearly violates these two articles of the constitution. For these reasons the rule *post* is dismissed.

## Denver Restores Six-Cent Fare

The Denver (Col.) Tramway went back to a 6-cent fare on Jan. 16. This action followed a decision by the Supreme Court of Colorado reversing a ruling made by the Public Utilities Commission for increased charges in favor of the Mountain States Telephone & Telegraph Company. The question of jurisdiction had been raised by officials of the city of Denver and the matter was taken to the Supreme Court on stipulation for the purpose of bringing a test of Sec. 6 of Art. 20 of the Constitution.

F. W. Hild, general manager of the Denver Tramway, in a letter to the Mayor telling of the company's voluntary return to the 6-cent fare, said it was the policy of the company to abide solely by the legal rights as orderly determined. The 6-cent fare will be restored pending a final decision in the telephone rate case. There will be no charge for transfers. The 7-cent fare, with 1 cent additional for transfers in Denver had been granted by the utilities commission, while the 6-cent fare had been authorized by the city and approved by the commission.

The majority opinion of the court in the telephone case held that two agencies entered into the regulation of public utilities companies, namely, the commission and the municipality. It cleared the doubt hanging over the meaning of the twentieth amendment in respect to special charter cities, among which are Denver, Pueblo, Colorado Springs, Grand Junction, Fort Collins and Boulder, setting forth that these municipalities have exclusive right to fix the rates. All other territory comes within the provisions of the commission. It is estimated that the decision deprived the commission of jurisdiction over nearly one-half of the population of the State, the six cities having in excess of 400,000 inhabitants.

The telephone company has announced that it intends to file a petition for a rehearing.

## Portland Fare Readjustment

Maine Commission Hopes New Changes Will Solve Rate Question—Recent Increase Disappointing

To aid the Cumberland County Light & Power Company, Portland, Me., toward a new start if the railway service is to be better and the rates not unreasonably increased, the Public Utilities Commission will order changes in the present zone system to cure discriminations from which some patrons suffer, and will authorize an entirely different method of collecting fares. Both are somewhat radical. This will put some additional burdens on the company. The commission believes, however, that if successfully carried out the changes will improve service.

### RETURN OF PRE-WAR CONDITIONS MAY HELP

The commission says that the fares on the Island lines must under present conditions be raised to 6 cents like those paid on the rest of the system. It is estimated that this may furnish \$45,000 additional revenue, less than one-fifth that now needed. Notwithstanding this need the commission says it will not now authorize any further increases in railway rates. It looks forward to a return to pre-war conditions to help in the final adjustment.

At the time of the original appeal of the company to the commission for relief the State's experts testified, and it was conceded, that the petitioner required additional net revenue of not less than \$122,956 a year. It was estimated that the schedule then adopted would provide \$110,000, and that the balance might be obtained through economies in operation by rerouting some cars and cancelling some car units.

At the final hearing the experience of August, September and October, under the new schedule was available. October traffic was influenced to such an extent by the influenza epidemic that it was disregarded by mutual consent. August and September showed an increase in gross passenger revenues of eight-tenths of 1 per cent, instead of the 10 per cent necessary to produce \$110,000. The gross increased \$1,754 over the corresponding two months of the preceding year. At the same time operating expenses increased \$20,506.

### WHAT THE RESULTS SHOWED

Taking all operations into account the net operating revenue for the two months in 1918 was \$17,547 less than in 1917. But the expenses included an additional allowance of \$10,460 per month for depreciation, recommended by Mr. Feustel, the street railway expert employed by the State. There was, therefore, an actual gain of \$3,372 net for the two months, or \$1,686 a month against approximately \$10,000 a month agreed to be necessary to maintain the solvency of the railroad operations if conditions remained the same as they were when this petition was filed.

Before the hearing was completed



the War Labor Board ordered an increase in wages amounting to about \$150,000 a year. This with the minimum requirement found by Mr. Feustel amounts to \$22,500 a month. The net increase indicated by August and September leaves a deficit of more than \$20,000 a month or nearly two and one-half times the entire rental charge.

There was no expectation that the increased revenue derivable from a 6-cent fare on the Island lines would provide anywhere near the minimum amount required before this latest increase in wages, and with that increased payroll the company would still be behind twice its rental charge. Faced by this development the petitioner asked the commission to go beyond the prayer of the petition and construct a schedule that would enable it to meet the present demands.

In explanation of the change which the commission proposed now to put into effect it said:

It is obvious that unless there is an early marked improvement, both the company and the communities which are dependent upon it will be in a serious situation. If the railroad operations were not being supported by the light and power department the crisis already would have been reached, but this department cannot, and will not be permitted to carry such a burden indefinitely. It would result either in unreasonable rates for light and power users, or in crippled service, and both are wrong.

### Final Chicago Fare Hearing on Feb. 3

The Chicago (Ill.) Surface Lines must wait several weeks more for an answer to its appeal for a 7-cent fare. This was the outlook when the last evidence was introduced before the State Utility Commission on Jan. 17, at which time an adjournment was taken until Feb. 3 for final arguments. President L. A. Busby was the principal witness during the several hearings.

The city made its fight mainly on the valuation of the property. The purchase price as fixed by the city ordinance is about \$156,000,000, but the claim is made that this should not be considered for rate-making purposes. The city contends that the real value is nearer to \$70,000,000 if deductions are made for franchise and intangible values, depreciation, renewals charged to capital account and a few other items. The companies contend that all these allowances are provided for in the ordinance and bonds have been issued for the full amount under the terms of the contract.

Some members of the commission have hinted that the entire fare should be devoted to transportation purposes, thus excluding expenditures for maintenance of paving, for the city's 55 per cent and part of the allowance for renewals. Mayor Thompson was a witness at the final hearing. He argued in favor of the sacredness of the present contract which calls for a 5-cent fare, although he admitted having indorsed the plea of the employees for a change in wages, which had been made inadequate because of war conditions.

## A Precedent in Pennsylvania?

### Review of the Opinion of the Commission There in the First of the Six-Cent Fare Cases to Come Before It

In the first of the 6-cent fare cases to be decided by the Public Service Commission of Pennsylvania, complaints filed against the advance from 5 cents to 6 cents a fare zone by the Conestoga Traction Company, Lancaster, Pa., were dismissed, the commission allowing the increase.

#### OTHER SIMILAR APPLICATIONS

The decision is regarded as indicating that the commission will allow other fare increases to remain against which complaints have been filed. Included in these are the advances made by the Harrisburg Railways from 5 cents to 6 cents a zone and the Valley Railways, Lemoyne, Pa., from 5 cents to 7 cents a zone.

Although the increase at Lancaster is permitted, the commission recommends that in the future should there be any marked reduction in operating expenses or increase in revenues, the company is to readjust its rates, and if it fails to do so the commission proposes, upon notification, to make such changes as are warranted.

The Conestoga Traction Company operates in Lancaster with ten interurban lines extending into surrounding territory. There are about 164 miles of single track, of which about 20 miles are in Lancaster. The system is operated on a zone basis. The Lancaster city zone includes the entire city and 1 mile beyond. By a schedule of rates filed effective on Aug. 2, 1918, the company increased its regular zone fares from 5 cents to 6 cents. Increases were also made on return-trip and commutation rates.

The complaints were directed against these increases, particularly those on its interurban line between Lancaster and Coatesville and in the city of Lancaster. Complaint was also made that in Lancaster the increase violated the provisions of certain franchise ordinances granted to some of the respondent's constituent companies. In so far as this part of the complaint was concerned, the commission pointed out that it had, in its report in Wilkingsburg vs. Pittsburgh Railways, P. U. R. 1918, F, page 131, held that rate regulating franchise conditions do not preclude it from exercising the supervisory powers delegated to it by the provisions of the public service company law. This part of the complaint was, therefore, dismissed.

#### BURDEN OF PROOF ON RESPONDENT

As to the reasonableness of the increased rates complained of, the respondent assumed the burden of proof. It appeared to the commission that the increase was made to meet in part increased operating cost resulting from war conditions.

The average interurban rates per mile under the increased rates were

as follows: Single fares 2.4 cents per mile; round-trip 1.8 cents per mile; monthly tickets 1.6 cents per mile.

In its opinion, on which is based the order continuing the increased fare, the commission says in part:

Whether the proceeds of all of its capital stock and bonds were used in acquiring or constructing its system was not definitely shown. Its bonds and preferred stock are worth par. The value of its common stock was not shown.

From the foregoing statements it would appear that respondent will receive, under the increased rates, an annual net revenue to be applied for depreciation and fair return for the year ending Aug. 1, 1919, the sum of \$283,526. We should bear in mind that out of this sum it is obligated to pay as rental or dividends on its leased lines the sum of \$1,257.

Under these facts is respondent justified in making the increase in its rates which are complained of? The answer to this inquiry is to be found in ascertaining whether \$283,526 annual net revenue is sufficient to allow a proper sum for depreciation and pay a fair return on its investment in real property needed in the rendering of its service to the public.

#### PROPERTY NOT VALUED

No valuation of respondent's property was shown. The amount of its capital stock and outstanding bonds and the number of miles of track is practically all the evidence indicating value. The commission will not attempt to make any determination as to the fair value of respondent's used and useful property. It deems it unnecessary to do so. The making of a detailed valuation would impose a burden upon respondent that is not required to meet the exigencies in this case.

It is a matter of almost common knowledge that a street railway system, such as respondent's, may have a value per mile of track of any sum from \$20,000 upward. If we use the figures of \$30,000 per mile, respondent's system would have a value of approximately \$5,000,000. We do not say it is of this value. It may be more or less. What we intend to say is that if we use the evidence we have, with our knowledge of street railway values, we can reach a conclusion as to whether or not the sum of \$283,526, respondent's annual net revenue as ascertained above, for the year ended Aug. 1, 1919, will be sufficient for depreciation and a fair return upon its property.

From all the evidence, the commission has reached the conclusion that the increased rates of respondent are not unreasonable. If in the future there should be any material reduction in operating cost or if respondent should receive increased revenues, it should adjust its rates in conformity with its obligation to the public. If it fails to do so the commission, on having its attention directed thereto, will make such adjustment as the public needs demand. The complaint will be dismissed.

### A Rookie at Louisville

The Louisville (Ky.) Railway has for some time followed the plan of giving new men accepted for employment their preliminary training on the loop at the Kentucky State Fair Ground, which embraces about 1½ miles of track. This line is idle all year, except during the State Fair in September. It makes an excellent circuit upon which the motormen try out the air and the conductors learn how to handle their gates and bells. After a few days' work with the regular instruction car, under the direction of an inspector, the men are placed under the charge of older men for a few days on the city lines.

## Six-Cent Fare Upheld

In Deciding Chicago Elevated Case Court Holds Utilities Commission, Not City, Has Jurisdiction

Circuit Court Judge Jesse A. Baldwin issued a ruling on Jan. 22 denying the application of States Attorney Hoyne for an injunction to restrain the Chicago Elevated Railways from charging the 6-cent fare which was granted recently by the Public Utilities Commission of Illinois.

Judge Baldwin declared that no matter what agreement the municipality had with the elevated roads regarding fares the State commission had sole jurisdiction over the matter. He said:

Although the city possesses the power to permit or prohibit railroad companies from laying their tracks and operating their roads across, over or upon its streets and highways, neither Chicago nor any other municipality in the State has the power, by prescribing in the ordinances the rates of fare to be charged, to make such contracts with railroad companies concerning such rates as will deprive the General Assembly of Illinois of its rights under the police power to change these rates of fare from time to time.

A formal order of the court was not entered at once due to a request of States Attorney Hoyne for an opportunity for his office and other attorneys representing other objecting parties to confer on the matter and decide what step to take next. Later Mr. Hoyne said:

The Supreme Court of this State has frequently held that city ordinances limiting the rates of street car and gas companies were valid and binding contracts which could not be broken. The decision of Judge Baldwin is that such contracts must be held to have been made subject to the right of the State to change the rates fixed in such contracts and that therefore when the Public Utilities Commission was created by law in 1913 that this commission can change all such rates and that therefore the city of Chicago and all other cities have been absolutely deprived of home rule over public utilities by the passage of the public utilities act. If Judge Baldwin is right in his construction, the people of Chicago should rise at once and call upon the present Legislature to repeal this legislation.

States Attorney Hoyne immediately filed a petition asking for an injunction restraining the railroad companies from collecting the increased rate on the ground that such a rate was a violation of the contract and franchise of the companies with the city.

The 6-cent fare went into effect on the elevated roads Nov. 19 last with the consent of the commission. The commission decision was outlined in the issue of the *ELECTRIC RAILWAY JOURNAL* for Nov. 23, page 940.

## Houston Case to Court

The Houston (Tex.) Electric Company filed suit in the Sixty-first District Court against the Mayor and City Council of the city of Houston, praying for a temporary injunction restraining them from enforcing the 5-cent fare ordinance passed on Nov. 6. The petition also seeks to restrain the city from interfering with the plaintiff in collecting the 6-cent fare provided in the ordinance passed by

the Council on Sept. 19, which was defeated in the election held on Nov. 5.

The petition also asks a peremptory writ of mandamus requiring the City Council to exercise its own judgment and discretion as manifest in the ordinance of Sept. 19 and preventing it from delegating its rate-making powers to any other agency.

The basis of the suit is the contention of the company that rate-making is a legislative function which, through the charter granted the city of Houston by the Legislature in 1905, it specifically delegated to the governing body of the city of Houston, which is in fact the Mayor and City Council. It is further contended that the city is without legal authority to redelegate this power and, therefore, the action of the Council in abrogating its functions is null and void.

The case is expected to come to trial this month.

## New Jersey Company Explains to Public

The Public Service Railway, Newark, N. J., is securing new data for the arrangement of rate schedules in the preparation of its zone system report to be submitted to the Board of Public Utility Commissioners on March 1. During August and September the company made an investigation of the riding on all its lines in the collection of data for the zone report, but the fare raise which became effective on Oct. 5 made a supplementary census necessary. The company has issued this statement:

It was a foregone conclusion that the change in rate would cause some diminution in riding, and the actual loss of riders is almost identical with the estimates of the company officials. The investigation is for the purpose of determining just what class of riders was affected by the increase in fare. It is generally taken for granted that those who have ceased to patronize the cars are the so-called short riders, but the entire study which the railway is making of the zone system has been pursued on the basis of leaving nothing to chance. Naturally, under the zone system, the long-distance rider would pay more than the short-distance rider, and to fix equitable charges for service it is essential that there should be knowledge of the volume of riding that would originate in each zone and the length of rides that would be taken by the users of the cars. The company has in its possession the facts when the 5-cent fare was in operation, and it is to determine as nearly as possible what changes have developed since the fare was raised that the count will be made.

## Commission to Check Service in Rochester

An immediate check of the present service of the New York State Railways in Rochester was ordered by the Public Service Commission for the Second District of New York on Jan. 13, following a request by Herbert J. Winn, William A. E. Drescher and George Eastman, a committee representing Rochester business interests.

An inspector was sent to Rochester after Commissioner Barhite brought the matter to the commission's attention with instructions to make a com-

plete investigation of the traction service and inform the Rochester public of the results of the checking up. The railroad company, following advertisements that it intended to curtail its service 25 per cent, was cited before the commission on Dec. 11 at which time it was agreed that the company should make certain service reductions during the non-rush hours only, starting on Jan. 2.

The Rochester committee informed the commission that it secured Price, Waterhouse & Company to make an examination of the railway company's books on which to base an intelligent opinion as to the need of increased fare, actuated only by the desire to serve the public interest. As another situation has now arisen the committee respectfully asked, with the same object in view, whether it would not be possible to have an inspector detailed by the commission to check up the service and for the benefit of Rochester give the public the facts as shown by such investigation. The commission, upon receiving the request, took immediate action.

## Increase for Lake Erie Line

The Public Service Commission for the Second District of New York at its regular session on Jan. 14, Chairman Charles B. Hill presiding, passed an order authorizing George Bullock, as receiver of the Buffalo & Lake Erie Traction Company, to increase the rate of fare to 3 cents a mile on interurban cars during the war and for six months thereafter. The order granting the increase may be reopened at any time when it appears to the commission that the reasons for permitting the receiver to charge the increased fare no longer exist. The new fare rate goes into effect on Jan. 27.

In granting the increased fare to the company the commission holds that although it may not be of permanent benefit to grant an increased fare on account of desperate financial conditions of an electric railway, such relief may be granted with the hope of preserving the road for the public until a more favorable financial condition of the country may lead to permanent relief.

The road's receiver asked permission to increase interurban rates in New York State from 2 cents to 3 cents per mile. The road runs from Erie, Pa., to Buffalo, about 20 miles within Pennsylvania and 68 miles in New York State. The intrastate service in New York is on a 2-cent-a-mile basis and the receiver applied for a 2½-cent rate, then 2½ cents and finally 3 cents. Pennsylvania has granted a 3-cent rate and the United States authorities have allowed the same rate for interstate business. The receiver filed a 3-cent-a-mile tariff, effective on Sept. 8, 1918, but its operation was suspended by the commission, pending the investigation concluded on Jan. 14.



## Transportation News Notes

**Seven Cents in Wausau.**—The Wisconsin Valley Electric Company, operating in Wausau, Wis., has been authorized by the Railroad Commission of Wisconsin to increase its fares from 5 cents to 7 cents. The company asked permission to charge a 10-cent cash fare.

**Fare Provisions Hold.**—Federal Judge Henry T. Reed has ruled against the Dubuque (Iowa) Electric Company in its application for a writ of supercedas to cancel the provisions of its franchise, which requires a half fare for workmen during certain hours of the day.

**Injunction Proceedings Delay Fare Increase.**—Because of an injunction suit filed in the courts of Lake County, Ohio, the Cleveland, Painesville & Eastern Railway has postponed the application of the 25 per cent increase ordered some time ago by the Public Utilities Commission of Ohio.

**Another Restraining Order in Illinois.**—The DeKalb-Sycamore & Interurban Traction Company, DeKalb, Ill., has filed a bill in the Circuit Court of De Kalb County restraining the State's Attorney of that county and the Public Utilities Commission of Illinois from preventing the company raising its passenger rates, citing that the passenger service is conducted at a loss of \$24,000 a year.

**New Dayton Ordinance Receives First Reading.**—At the regular meeting of the City Commission of Dayton, Ohio, on Jan. 15 the ordinance providing a straight 5-cent fare for all Dayton railways received its first reading. Fares for children under twelve years of age will remain at 3 cents. Representatives of the companies have insisted that they will not be able to pay the wage increases awarded by the Federal War Labor Board unless the fare is fixed at 6 cents.

**Rate Hearing Postponed.**—The Interstate Commerce Commission has postponed until Feb. 10 the hearing on the petition of the Louisville & Southern Indiana Traction Company and Louisville & Northern Railway & Lighting Company for an increase in fares between Louisville, Jeffersonville and New Albany, the "Falls Cities." The hearing had been set for Jan. 22 at Washington. The companies were granted a rehearing after the petition had been denied following a special examiner's investigation a few months ago.

**A Message to Car Riders.**—The International Railway, Buffalo, N. Y., is placing "Take One" boxes in all of its

cars in Buffalo and will soon start the publication of pamphlets designed to educate the public to the needs of a higher rate of fare and also for keeping the traveling public informed of traction conditions. In this way E. G. Connette, president of the company, hopes to win the good-will and support of the public for the special referendum election in March, at which time the question of higher fares will be voted upon. A prominent Buffalo newspaperman has been engaged to prepare the pamphlets.

**Wants Eight-Cent Zones.**—Henry H. Crapo, president of the New Bedford & Onset Street Railway, New Bedford, Mass., sought permission of the Public Service Commission to establish a new fare schedule based on a zone rate of 8 cents. The only objection to the petition was offered by the residents of Marion, Mass., who claim that under the zone system as filed they would have to pay a fare of 8 cents in each zone between Marion and New Bedford, although it is the intention of the company to charge a local fare of only 7 cents in the zone nearest New Bedford. The commission took the matter under advisement.

**Merchants' Association Asks Fair Play.**—The Merchants' Association of New York City has written to the Board of Estimate & Apportionment protesting against the refusal of the board to permit a temporary increase of fare that will enable the transit lines to meet their expenses and protect the city in its liability for its contribution to the cost of the dual subway system. The association also protests against any attempt to commit the city to public ownership and operation of the transit lines without the fullest discussion and consideration. The letter to the Board of Estimate is signed by Lewis E. Pierson, as acting president.

**International Wants Interurban Increase.**—The International Railway, Buffalo, N. Y., has filed with the Public Service Commission for the Second District, a new passenger tariff applying between points on its interurban lines, the new high-speed line, the Buffalo and Lockport line, the Buffalo, Tonawanda and Gratiot line and the Buffalo and Niagara Falls line which it proposes to put into effect on Feb. 27. Fares between practically all points are increased under the tariff. One-way fares computed on distances shown indicate that they are based on 2½ cents per mile, maximum nearest multiple of 5 with a minimum single fare of 5 cents.

**Receivers Ask Court to Increase Fares.**—Homer A. Miller and Emil G. Schmidt, receivers for the Des Moines (Iowa) City Railway, have asked Judge Martin J. Wade of the Federal Court to grant an increase in fares over the present rate. The application cites the recommendation of the Iowa Conciliation board that the company is entitled to a 7-cent fare. The receivers also

ask the court to construe the terms of the franchise in order that they may be advised as to what course to pursue in the future management of the company. Mr. Miller is a Des Moines banker. He has served notice to the city attorneys that he will serve as receiver without pay.

**Two and One-Half Mile Line Wants Increase.**—The application of the St. Louis & Jennings Railway, operating in St. Louis, Mo., and St. Louis County, for increased passenger rates, will be heard in St. Louis on Jan. 27, by Commissioner Edward Flad of the Public Service Commission of Missouri. The railway begins at Robin Avenue and runs to Jennings Station Road, a distance of 2½ miles. The application asked for an increase of fare from 2 to 5 cents for adults and 1 to 2 cents for children. A report of an engineer, submitted by Director of Public Utilities Hook sets forth that the revenue in October was \$1,297, and the expenses \$1,239, showing a profit of \$58. The expenses did not, however, include \$500 in bond interest.

**Seven Cents in Ossining.**—The Public Service Commission for the Second District of New York at its regular session on Jan. 16, Chairman Charles B. Hill presiding, authorized the Hudson River & Eastern Traction Company to charge a 7-cent fare in Ossining, the order to remain in force until Jan. 1, 1920, and thereafter until the Ossining trustees revoke the action amending a franchise taken on Dec. 17, and with the further understanding that the order may be reopened when it may appear that the reasons for allowing the increased fares no longer exist. The commission had previously determined that a 7-cent fare was just and reasonable and necessary in order to permit the railroad to have a fair return on the value of the property used in the public service. The village trustees removed the legal obstacle to the installation of the increased fare by providing the necessary consent.

**I. C. C. Confirms Fare Increase.**—The Interstate Commerce Commission has approved the single-trip fare of 10 cents and the commutation fare of \$1 for fourteen rides on the lines of the Steubenville, East Liverpool & Beaver Valley Traction Company between East Liverpool, Ohio, and Chester, W. Va., and has dismissed the complaint against the fares. The cities of East Liverpool, Ohio, and Chester, W. Va., complained in the proceedings of the fares charged by the company for the transportation of passengers between those points. Prior to April 1, 1918, the fare was 5 cents; on that date the single-trip cash fare became 10 cents and a commutation fare of \$1 for fourteen trips, or slightly more than 7.1 cents per trip, was established. These fares were alleged to be unjust and unreasonable and, in so far as the city of Chester was concerned, unduly prejudicial to its citizens. With this view the commission disagreed.

## Personal Mention

### Bay State Trustees Named

New Officials Experienced in Railway Management, Finance, General Business, Labor Affairs and Railway Law

The Bay State Street Railway, Boston, Mass., on Jan. 15 filed with the Secretary of State a certificate that it has been reorganized under the name of the Eastern Massachusetts Street Railway, and that it has otherwise complied with all the provisions of the legislative act of 1918 to bring the company under the service-at-cost law. Brief mention of this was made in the *ELECTRIC RAILWAY JOURNAL* for Jan. 18, page 157. In less than an hour after the certificate was filed, Governor Coolidge sent to the Executive Council the nominations of five men to act as public trustees of the reorganized company. The Governor's nominees for the board of trustees are:

Homer Loring, Boston; Isaac Sprague, Wellesley; Earle P. Charlton, Fall River; Fred J. Crowley, Lowell, and Arthur G. Wadleigh, Lynn.

The trustees are appointed for terms of five years and are eligible to reappointment. The period of public control, by agreement between the company and the commonwealth, is ten years. Each trustee is to be paid a salary of \$5,000 annually. They are to have general charge of the road in the interest of the people, practically as the trustees of the Boston Elevated Railway have charge of that property. They will take control on Feb. 1.

Mr. Loring has been president of the Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa, operating 130 miles of electric railway doing a tremendous freight business. He is director of the Mohawk Hydro-Electric Company, operating water-power and lighting properties in central New York; Western Light & Power Company, operating in northern Colorado, and of Westinghouse, Church, Kerr & Company, New York, construction engineers. He was president of the Association of Massachusetts Street Railway Security Owners, which conducted a successful educational campaign on behalf of the street railways of the State in the early part of 1918. It is generally conceded that the association's activities were largely responsible for securing the passage of remedial legislation last summer. He was one of the speakers at the meeting of the American Electric Railway Association held on Nov. 1, and an abstract of his remarks will be found in the issue of this paper for Nov. 2.

Mr. Sprague has been connected with N. W. Harris & Company since 1886, as clerk, manager, partner and president after incorporation until Dec. 31,

1915. For several years he was president of the Wellesley National Bank. He is now a director of Harris, Forbes & Company; Harris Trust & Savings Bank; Puget Sound Traction, Light & Power Company and Harris Safe Deposit Company.

Mr. Charlton has been a resident of Fall River for many years and has been interested in a chain of 5 and 10-cent stores. He is vice-president and an active member of the F. W. Woolworth Company and on the board of directors and the executive board. He owns the Charlton Mills, Fall River. He is a director of several banks and is very familiar with the needs of transportation.

Mr. Crowley has been employed for twenty years or more as motorman in Lowell and vicinity. He is a prominent member of a street railway labor organization. He is familiar with labor conditions and knows the needs of the public and the demands of street railway operation. He has been a member of one of the local exemption boards.

Mr. Wadleigh has been city solicitor of Lynn for many years and acted for his city and other towns in many of the hearings in relation to the Bay State Street Railway. He is a lawyer and has always practiced in Lynn.

The trustees have full power to manage and operate the new company, and may appoint and remove at their discretion the president, treasurer and clerk of the new company, and all other officers except the board of directors. They have the right to fix and regulate fares, and are to determine the character and extent of the service and the facilities to be furnished. Within sixty days after the new company has acquired the property of the old company, and after a public hearing, they must put into operation rates and fares which, in their judgment, will produce sufficient income to meet the cost of service.

### Mr. Stone Resigns as Trustee

Galen L. Stone, one of the original board of public trustees of the Boston (Mass.) Elevated Railway, has resigned from the board. Two of the first appointees now remain—Stanley Miller and John F. Stevens. Former Lieutenant-Governor Frothingham left the board to take a major's commission in the United States army; William M. Butler left the organization with the explanation that the signing of the armistice cancelled his obligation to serve as trustee because of war conditions. Mr. Stone's resignation is said to be because of poor health.

In his letter of resignation, Mr. Stone gave Governor Coolidge no reason for his action. In the Governor's letter of

acceptance, however, reference to Mr. Stone's health is made in a way that would seem to establish it as the cause of his retirement.

"It is with great regret," wrote Governor Coolidge, "that I received your resignation as a member of the board of trustees of the Boston Elevated Railway. I wish to take this opportunity to express to you my appreciation of the public service which you have rendered in serving on this board. I appreciate that your health is such that it would be hazardous for you to continue."

### Col. Williams Resigns

Will Retire as Head of Brooklyn Rapid Transit Company, But Continue as Officer of Subsidiaries

Col. Timothy S. Williams, president of the Brooklyn (N.Y.) Rapid Transit Company, is to be relieved on Jan. 31, at his own request, of all responsibility for the operation of the Brooklyn Rapid Transit Company and the New York Municipal Railway Corporation, a subsidiary, it was announced on Jan. 23 by Lindley M. Garrison, the receiver. This action will not deprive Colonel Williams of the positions to which he has been elected by the directors of other companies in the system.

In a letter to the receiver, Colonel Williams urged that this action be taken in order that he might have a long rest. His salary of \$50,000 a year as president of the Brooklyn Rapid Transit Company will automatically cease. He will continue to receive \$25,000, which is paid him annually by subsidiary companies. Mr. Garrison in replying to Colonel Williams expresses his sincere appreciation of the fidelity, ability and energy "with which you have assisted me in the existing complex and difficult situation with which my duties required me to become acquainted."

Colonel Williams has been connected with what is now known as the Brooklyn Rapid Transit System for nearly twenty-five years. After he was graduated from Cornell University in the class of 1884, he came to New York and became a reporter on the old *Commercial Advertiser*. Ultimately he left newspaper work to become private secretary to Governor Hill. Governor Flower retained him. When Governor Flower retired from office and undertook the reorganization of the Long Island Traction Company, out of which grew the Brooklyn Rapid Transit System, Colonel Williams was made secretary of the reorganization committee. This was in the Spring of 1895. A few months later he was made secretary and treasurer of the Brooklyn Heights Railroad and when the Brooklyn Rapid Transit Company was organized he was made a director, and secretary and treasurer. In 1900, he became vice-president of the Brooklyn Rapid Transit Company and its constituent companies, and in 1911 he succeeded Edwin W. Winter as president.



## New Elevated Organization Announced

An announcement made under date of Jan. 16 by C. D. Emmons, general manager of the Boston (Mass.) Elevated Railway, to all officials and employees of the company follows:

The operating organization of this company under the direction of the general manager and as approved by the board of trustees under date of Jan. 16, 1919, will consist of six departments as follows:

Maintenance department, including tie and timber department, under the jurisdiction of H. M. Steward as superintendent of maintenance.

Transportation department under the jurisdiction of Edward Dana as superintendent of transportation.

Power department under the jurisdiction of F. S. Freeman as superintendent of power.

Rolling stock department under the jurisdiction of John Lindal as superintendent of rolling stock.

Inspection department under the jurisdiction of C. E. Learned as superintendent of inspection.

Purchasing department under the jurisdiction of Edward Mahler as purchasing agent.

H. B. Potter is appointed assistant general manager.

E. M. Flint is appointed chief clerk to the general manager.

E. E. Kester, formerly general agent of the Illinois Traction System, Peoria, Ill., has been appointed assistant traffic manager of the system, with headquarters at Peoria.

J. P. Pope has been appointed acting manager of the Kentucky Traction & Terminal Company and Lexington Utilities Company, Lexington, Ky., to succeed S. H. Dailey, resigned. Mr. Pope has been acting as electrical engineer on these properties for a number of years.

Arthur W. Thompson, vice-president of the Baltimore & Ohio Railroad and a federal director of railroads, has been elected president of the Philadelphia Company, Pittsburgh, Pa., to succeed Judge James H. Reed, whose resignation from the company is noted elsewhere on this page.

Walter F. Crossley, former general superintendent of the Cairo Railway & Light System, included in the Illinois Traction System, has been transferred from Cairo, Ill., to Springfield, Ill., and will hereafter be connected with the Illinois Traction System in the capacity of a special representative.

B. F. Fortner, formerly with the Public Service Company of Oklahoma, has accepted a position as superintendent of distribution with the Okmulgee Ice & Light Company, Okmulgee, Okla. Through a typographical error in the issue of this paper for Jan. 4, Mr. Fortner's name was spelled incorrectly.

J. A. Jefferis, general manager of the Kerrens-Domewald Coal Company, St. Louis, Mo., has been appointed fuel agent for the Illinois Traction System, according to bulletin issued from the office of H. E. Chubbuck, vice-president executive, Peoria, Ill. Mr. Jefferis will retain his connection with the Kerrens-Domewald Coal Company.

Oscar T. Crosby has resigned as Special Commissioner of Finance for the United States in Europe, but intends to

remain in Europe to advise the American peace delegation on financial questions. Mr. Crosby, who was a pioneer in electric railway work and a successful operator, was president of the Inter-Allied Council on Finance and Purchases, which had charge during the war of the allocation of American loans to the Allies and the determination of priorities on purchases in this country. With the cessation of hostilities, he is said to have felt that his work there was finished. Previously he had been Assistant Secretary of the Treasury, but resigned this post some time ago.

J. Bert Forbes has been appointed superintendent of instruction and efficiency of the Puget Sound Traction, Light & Power Company at Tacoma, succeeding E. C. Clarke, resigned. Mr. Forbes will continue the accident-prevention work and will have full charge of the instruction of the Tacoma Railway & Power Company and Pacific Traction Company trainmen, co-operating with the superintendent of transportation and the superintendent of investigation and adjustments. Instructors will be appointed from the transportation department to work under Mr. Forbes' direction. Mr. Forbes will report to George W. Rounds, general superintendent.

Judge James H. Reed on Jan. 16 announced his resignation as president of the Philadelphia Company, Pittsburgh, Pa., which controls the Pittsburgh Railways, the Duquesne Light Company and other properties. Mr. Reed has been striving for some time to induce the directors to relieve him of some of his burdens. He will be succeeded by Arthur W. Thompson, vice-president of the Baltimore & Ohio Railroad and a federal director of railroads, but will remain as chairman of the executive committee and vice-president, and will retain a more or less active connection with the property. James D. Callery, who has been president of the Duquesne Light Company, will become chairman of the board of the Philadelphia Company and Mr. Thompson will succeed him as president of the Duquesne Light Company.

Walter H. Wylie, St. Louis, Mo., has been appointed traffic manager of the Illinois Traction System in charge of both passenger and freight business of the company. Mr. Wylie has represented the Illinois Traction System for several years as general agent at St. Louis and previously had been connected in an official capacity with various of the large railway systems of the West and Southwest. His appointment was made in connection with the reorganization of the passenger and freight department of the Illinois Traction System, removal of traffic headquarters from Springfield to Peoria, and the appointment of new chief traffic officials announced in an official bulletin from the office of H. E. Chubbuck, vice-president executive. The changes were effective from Jan. 20, on which date the passenger and freight traffic

departments were merged to be supervised from the main office of the company in Peoria.

## Obituary

John Henry O'Neill, inspector and chief instructor of the Union Street Railway, New Bedford, Mass., is dead. Mr. O'Neill was born in Boston on April 9, 1869. Before becoming connected with the Union Street Railway in 1890 he was employed by the Boston (Mass.) Consolidated Railway and the Edison Electric Light Company, Boston.

Earl G. Nichols, master mechanic of the Bangor Railway & Electric Company, Bangor, Me., died recently of pneumonia. Mr. Nichols entered the service of the company as a motorman. Later he was transferred to repair work at one of the carhouses. He was then promoted to foreman and after serving in this capacity for some time he was made master mechanic. He is survived by his widow and one son.

George Sherwood Hodgins, editor of *Railway and Locomotive Engineering*, with which he had been connected for fifteen years, died of pneumonia on Jan. 18. Born in Toronto, Canada, Mr. Hodgins was for a number of years mechanical engineer for the Canadian Pacific Railway. Coming to New York City about twenty years ago, he had since been engaged in editorial work, and also spent much time in scientific research work. He was first with *The Gas Age*, later with *The Railway Age*, and then with *Railway and Locomotive Engineering*.

Capt. Howard W. Irwin, Co. H, 118th Engineers, A.E.F., died on Jan. 6 of pneumonia at Camp de Grasse, France. Captain Irwin was well known in the New England electric railway field, having recently resigned from the post of superintendent of car repairs of the Bay State Street Railway, Boston, to enter the army. He was educated at Purdue University. After gaining experience in an electric utility plant in Minnesota, he came to the Bay State Street Railway about eight years ago as superintendent of instruction. His first important work was the general design of the instruction cars used by this road. These marked a distinct advance over previous equipment of the kind. They have been fully described in the *ELECTRIC RAILWAY JOURNAL*. For a time Captain Irwin was detailed for special work in the equipment department of the Bay State company. He was keenly interested in electric railway engineering, a regular attendant at New England Street Railway Club meetings, and had a future full of promise. He is survived by his widow and two daughters.

# Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

## Soft Coal Rules Rescinded

Fuel Administration Expects Decrease in Price of Coal to Follow New Order

According to a Washington dispatch Fuel Administration officials expect a decrease in the price of bituminous coal and coke to result from the order of Jan. 17 discontinuing maximum prices on these commodities and eliminating the zone system of their distribution. The order is effective Feb. 1, but does not affect anthracite coal.

The regulations rescinded by this order include those governing purchasing agents' commissions and profit margins allowed wholesale and retail dealers. The Fuel Administration announced, however, that these were subject to reinstatement if price, wage, labor, production, or other conditions which may arise require it.

Reduction in the demand for bituminous coal as the result of the ending of hostilities and the mild weather this winter made it impossible, officials said, to maintain maximum prices.

The only restrictions on domestic consumption of fuel that remain are on anthracite and natural gas.

With the issuing of the order affecting bituminous coal and coke, the Fuel Administration began preparations for the stoppage of most of its activities. Orders went to district representatives to give notice to employees that the offices would cease functioning on Feb. 1.

## Maintenance Equipment Fairly Active

Current Market, However, Is of "Hand-to-Mouth" Variety With No Tendency to Stock

While there may not be a particularly vigorous market for new rolling stock equipment and supplies, there is nevertheless a fairly active market for maintenance equipment. To be sure, the volume of purchasing is not as large as it has been in past years. However, there is sufficient material for this purpose being ordered to keep the supply field in an optimistic frame of mind.

It is more apparent now perhaps than ever before that orders of a "hand-to-mouth" variety are occupying virtually the entire market. Almost no stock orders are being placed. This fact, however, gives a more stable tone to the supply market in that a more even, though small, purchasing load is the result. In other words, until conditions in the electric railway field be-

come better there is less probability of a fluctuating demand.

As evidence of the degree in which traction companies are now placing orders a couple of items have come to notice showing orders for field coils and car wheels. In the former case where normally orders would average around twenty they are now for around five coils; likewise in the matter of car wheels current orders are for two or three instead of a dozen or more.

## \$4,210,000 for Cars

Brooklyn Receiver Outlines Expenditure Upon Which Court Will Pass on Jan. 27

An expenditure of \$4,210,000 for new cars and for car reconstruction is the program set down by Receiver Garrison of the Brooklyn (N. Y.) Rapid Transit Company for the approval of Judge Mayer in the Federal Court, to whom he is responsible. The item as included in the receiver's budget of Jan. 22 to the court, to which brief reference was made in these columns last week, is: To provide for fifty additional surface cars already contracted for, and improvements to existing equipment, approximately \$710,000; to purchase and equip 200 additional surface cars to comply with court orders affecting additional surface car equipment from \$1,500,000 to \$2,000,000; purchase of 100 additional subway cars, say from \$2,000,000 to \$2,500,000.

In connection with the item of \$2,500,000 for additional subway cars Mr. Garrison says:

I am advised by W. S. Menden, chief engineer, that on account of the increase in traffic on the rapid transit lines, and in view of the fact that additional lines are to be placed in operation during the present year, orders should be placed immediately for at least 100 additional steel subway cars, each of which is estimated to cost a minimum of \$18,000 and a maximum of \$25,000. These additional 100 cars should be available for service before the winter season of 1919-1920.

No contracts of have been entered into for the acquisition of any of this equipment and no determination has been made as to the type of car that may be required, except that fifty of the 200 cars are specified as trail cars and a tentative order for car bodies for this number of cars has been agreed upon without any formal order having been placed.

The expenditure of \$4,210,000 for cars represents three of sixteen items in a total budget of \$16,900,000 upon which the court will be asked to pass on Monday, Jan. 27.

## Pole-Line Materials Market

Yellow Pine Crossarms Have Advanced in Price While Insulator Pins Are Lower

Some interesting developments have taken place in the pole-line materials market quite recently. Northern cedar pole cutters are offering distributors a contract for their requirements for the first six months of the current year at present prices. This is the first time, it is reported, that such a thing has happened in this field. Owing to freight, labor and weather conditions there appears to be little prospect of any drop in price. Still there is a possibility that the decision on Monday last in the California lumbermen's freight rate case on shipments east of Denver may be reflected in lower prices to the consumer.

Prices on wood insulator pins are beginning to ease off. During the war they went as high as \$25 per 1000 owing to the demand for wooden bolts for wood shipyards. Pins now can be had for around \$20 to \$21 per 1000. Normal price is in the neighborhood of \$11 to \$12 per 1000.

Yellow pine has advanced about \$4.50 per 1000 board-feet, which brings crossarms about 5 per cent higher. Fir, however, which it is understood is used more for this purpose, has not changed.

Pole-line hardware is holding firm in price. The producers state that lower prices cannot be immediately expected because present prices are below the level that would correspond to the current quotations of iron and steel. The reason for this is that the producers early accumulated large stocks of iron and steel at prices much under the current market and consequently did not feel justified in advancing hardware prices as steel went higher.

## Westinghouse to Build Electric Locomotives at Essington

Discussing the prospects for the year 1919 at the Essington, or South Philadelphia Works of the Westinghouse Electric & Manufacturing Company, R. B. Mildon, assistant to the vice-president, made the following statement:

"We share the general opinion in the industrial field that business will slow down somewhat owing to the readjustment of the industries from a war to a peace basis; but by spring this phase should be over and then for the next few years we should have a period of prosperity.

"As far as the Westinghouse Works



at Essington is concerned, we have enough orders on hand to keep us busy for the next year without considering new business which is now beginning to develop.

"We are at present making nothing here but ship propulsion machinery, but our plans contemplate bringing here all of our turbine and electric generator construction work that is now being handled at East Pittsburgh. Before we can accommodate this additional business, however, we shall have to erect several new buildings, including an office building, a shop for making turbine blades, and an electric generator shop. Unless we are mistaken in our expectations, however, this new construction work should begin this spring.

"Looking a little further ahead into the future it is probable that we shall in time erect a building for the construction of electric locomotives. The electric railroad situation is unquestionably very favorable and a large amount of electrification will be undertaken in the next ten years. We co-operate with the Baldwin Locomotives Works in the manufacture of electric locomotives and our location here, so close to the Baldwin plant, makes this the proper place to do our part of the work.

"In other words, we plan to build at Essington all of our large and important apparatus, and as the demand for this class of apparatus is certain to increase rapidly from year to year, we expect to see our plant expand in the near future to many times its present size."

## Effect of Fires on Equipment Market

Probably Between 5 and 10 Per Cent of 1918 Rolling Stock Purchases for Replacement of Cars Lost by Fire

While it may not be exactly a nice thing to depend upon, it seems nevertheless true, that fires play no inconsiderable part in the market for electric railway materials. Last year there were quite a few fires in the early months that destroyed carhouses, shops and a large number of cars. In preceding years fire also took its toll of railway equipment. This material, buildings and cars had to be replaced. No accurate check has been made on the total fire loss and subsequent replacement, but it is probably true that the loss by fire in 1918 accounted for between 5 and 10 per cent of the orders placed for rolling stock last year. In addition orders for quite a volume of supplies, not to mention buildings, were given to replace those lost.

Sometimes where the damage has not been too great the cars can be salvaged. In such cases, dependent on the extent of the damage, equipment supplies must be purchased. Seats, curtains, cord, floor treads, motor parts, paint, glass, headlinings, etc., are as a rule most apt to be called for.

## Recent Incorporations

**Evansville & Ohio Valley Railroad, Evansville, Ind.**—The Evansville & Ohio Valley Railroad has filed articles of incorporation with the Secretary of State of Indiana, presumably as the successor of the Evansville & Eastern Electric Railway, the Evansville, Henderson & Owensboro Railway and the Evansville & Mount Vernon Railway. Capital stock, \$1,500,000. Among the directors are Marcus S. Sonntag, William H. McCurdy and Albert Karges.

**Eastern Massachusetts Street Railway, Boston, Mass.**—A certificate of incorporation has been filed by the Eastern Massachusetts Street Railway, organized to take over the property of the Bay State Street Railway.

## Franchises

**Buffalo, N. Y.**—William B. Cutter, receiver of the Buffalo & Depew Railway, has asked the Public Service Commission for the Second District of New York for authority to construct a single track road in the town of Lancaster from the present terminus of the company at Burlington Avenue and Ellicott Road along Ellicott Road to Central Avenue and in Lancaster village from the intersection of Ellicott Road with Central Avenue, south in Central Avenue to about 50 ft. northerly from intersection of Central Avenue with the New York Central tracks and also from the intersection of Burlington Avenue with Ellicott Road easterly in Ellicott Road to Central Avenue. The United States Housing Corporation has agreed to loan the petitioner up to \$45,000 for the new construction, to be secured by receiver's certificates, and the American Car & Foundry Company has agreed to donate \$5,000 toward the construction.

## Track and Roadway

**Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.**—Work will be begun at once by the Augusta-Aiken Railway & Electric Corporation on the rehabilitation of its system. Motors, controllers, motor armatures, rails and other equipment needed will be ordered immediately.

**Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.**—Plans are being made by the Honolulu Rapid Transit & Land Company for an extension of its system. It is understood that the plans of the company will be submitted to the various improvement clubs of the city before they are finally decided upon. The company has obtained a statement from Governor McCarthy that he will not oppose an extension of its franchise.

**Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.**—It is reported

that this company proposes to construct an extension of its lines in Waukegan to Greenwood Avenue.

**New Orleans Railway & Light Company, New Orleans, La.**—J. D. O'Keefe, receiver of the New Orleans Railway & Light Company, has authorized the expenditure of \$60,000 for repairs to the tracks and lines of the company. The money will be used principally in the replacing of worn-out switches, frogs, fish-plates and such repairs to the tracks and rails as may be deemed essential to immediately relieve present conditions. Mr. O'Keefe estimates that about \$40,000 of this sum will be expended for materials, the other \$20,000 being for labor.

**United Railways & Electric Company, Baltimore, Md.**—The Central Construction Company, Harrisburg, Pa., has been awarded the contract by the United Railways & Electric Company for its proposed double-track extension to the yards of the Bethlehem Shipbuilding Corporation at Sparrows Point.

**Bay State Street Railway, Boston, Mass.**—The Bay State Street Railway has re-established car service from Iron Hill Street, East Weymouth, to Columbian Square, South Weymouth, and from Columbian Square to Lincoln Square, Weymouth Landing. The resumption of service resulted from a conference by Wallace B. Donham, receiver of the Bay State Street Railway, and the Selectmen of Weymouth. The latter promised that if service was resumed the company would be paid, by popular subscription, \$2,500 for immediately needed repairs. The service was discontinued Dec. 14, when the Selectmen refused to pay to the company \$13,500, which it had demanded for repairs as a condition of continuing service.

**Morris County Traction Company, Morristown, N. J.**—An automatic signal system has been installed by the Morris County Traction Company on its single-track line between Danforth Road and Elm Street, Madison.

**Brooklyn (N. Y.) Rapid Transit Company.**—Application has been made by Lindley M. Garrison, receiver of the Brooklyn Rapid Transit Company, to the Federal Court for permission to issue receiver's certificates to the amount of nearly \$16,900,000. The sum asked for provides not only for all the current obligations of the Brooklyn Rapid Transit Company and its two subsidiaries, the New York Municipal Railway and the New York Consolidated Railroad, but for important extensions of power station facilities, for the purchase of additional subway and surface cars, for construction now going on and for additional contracts for construction and equipment to be entered into within the next sixty or ninety days.

**New York Municipal Railway, Brooklyn, N. Y.**—The Public Service Commission for the First District of New York has canceled the bids received

recently for the elevated part of the Fourteenth Street-Eastern District line and has recalled from the Board of Estimate three contracts which had been awarded for the construction of a part of the elevated structure in Westchester Avenue. These bids will be readvertised later.

**Cincinnati (Ohio) Traction Company.**—To improve street car service to Kennedy Heights and Pleasant Ridge, the Cincinnati Traction Company is contemplating taking over the track of the Interurban Railway & Terminal Company leading from Norwood.

**Oklahoma Union Railway, Tulsa, Okla.**—It is reported that the Oklahoma Union Railway will construct an extension from Kiefer southward.

**St. Thomas (Ont.) Street Railway**—The City Council of St. Thomas plans to construct an extension of the St. Thomas Street Railway.

**Northampton, Easton & Washington Traction Company, Easton, Pa.**—The Board of Public Utility Commissioners of New Jersey has ordered the Northampton, Easton & Washington Traction Company to place a standard deck of ties on its bridge No. 51 and to do all the work necessary in the way of grading approaches to the structure before May, 1919, and to place standard inside guard rails on five other bridges before July 1.

**Philadelphia, Pa.**—The Public Service Commission of Pennsylvania has approved the plan of the Department of City Transit for the completion of the Frankford elevated system from Callowhill Street to Front and Arch Streets.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—The Baltimore & Ohio Railroad and the Monongahela Valley Traction Company contemplate rebuilding the approach to the bridge across the Monongahela River, to cost about \$15,000 and also the construction of a bridge from Cleveland Avenue to the railroad station and express office, estimated to cost \$15,000.

### Power Houses, Shops and Buildings

**Lethbridge (Alta.) Municipal Railway**—The Lethbridge Municipal Railway contemplates the purchase of a 300-kw. d. c. generator, 600 volts, for direct connection to its present engine.

**Savannah (Ga.) Electric Company.**—A new 665-hp. boiler will be installed by the Savannah Electric Company at its Riverside power house.

**Hagerstown & Frederick Railway, Frederick, Md.**—The new power plant of the Hagerstown & Frederick Railway at Dam No. 5 on the Potomac River has been completed and placed in service. The plant, including the dam, cost about \$450,000.

**St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.**—The Missouri Public Service Commission has ordered the St. Joseph Railway,

Light, Heat & Power Company to install additional equipment in its power plant in order to give St. Joseph adequate heat, traction, light and power service by Feb. 15. The company was also ordered to furnish not later than May 1, plans for increasing the capacity of the present plant, or plans for a new plant or purchase of energy from an outside source.

**Interborough Rapid Transit Company, New York, N. Y.**—The Public Service Commission for the First District of New York is preparing at an early date to acquire the necessary property for the construction of storage yards in connection with the Pelham Bay Park line, the Corona elevated line and the Livonia Avenue branch of the Eastern Parkway line.

**Toledo Railways & Light Company, Toledo, Ohio.**—At a recent meeting of the stockholders of the Toledo Railways & Light Company a bond issue of \$3,200,000 was authorized, the proceeds of which will be used in making improvements and extensions to the light and power property. Plans for the improvements are being worked out by the engineers.

**Pennsylvania Railroad, Philadelphia, Pa.**—Plans have been filed by the Pennsylvania Railroad for seven new buildings at Greenwich Point, Philadelphia, to cost \$138,000.

**San Antonio (Tex.) Public Service Company.**—Fire recently destroyed the power plant of the San Antonio Public Service Company at Villita and South Presa Streets, causing a loss of \$25,000.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—Construction work is practically completed on the new power house of the Monongahela Valley Traction Company at Rivesville, and rapid progress is being made in the installation of new equipment. It is expected that the plant will soon be placed in operation.

### New Advertising Literature

**Sherwin-Williams Company, Cleveland, Ohio:** A folder on its insulating products.

**National Tube Company, Pittsburgh, Pa.:** Two folders entitled, respectively, "The Answer" and "The Chief Consideration."

**Blaw-Knox Company, Pittsburgh, Pa.:** A third and revised edition of its booklet describing the Blaw single-line clamshell baskets.

**Deister Concentrator Company, Fort Wayne, Ind.:** A bulletin dealing with the No. 7 Deister-Overstrom diagonal deck coal-washing table.

**Union Electric Company, Pittsburgh, Pa.:** A cloth-bound catalog of 1124 pages. The numerous electrical and railway supplies and apparatus made by the many manufacturers for which the company is agent have been illustrated, described and list-priced in this new catalog, No. 8.

### Rolling Stock

**Bamberger Electric Railroad, Salt Lake City, Utah,** intends to build four new motor cars and three express trailers.

**Virginia Railway & Power Company, Richmond, Va.,** mentioned in the ELECTRIC RAILWAY JOURNAL of Oct. 19, 1918, as contemplating the purchase of twenty-five new cars, has been reported as having ordered a number of cars of a new type; these should arrive in the near future.

**Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.,** has received the thirty new one-man cars ordered from the American Car Company, as noted in the ELECTRIC RAILWAY JOURNAL of July 27, 1918. The company, it is reported, is making investigation preliminary to purchasing twenty-five additional cars.

**Trenton & Mercer County Traction Corporation, Trenton, N. J.,** has applied to the New Jersey Public Utility Commission for authority to sell twenty-eight old summer car bodies and fifteen of the single-truck closed cars of the company as junk. The matter was taken into conference by the commission. The company had no further use for the cars as rolling stock because of the fact that they were condemned by the commission and an order to sell is expected. President Johnson said that the company had ordered six new cars and these are expected to arrive in a fortnight.

### Trade Notes

**Irving Burrows** has been released from the United States Navy, where he served as an ensign, and will shortly reopen the San Francisco office of the Blaw-Knox Company at 528 Second Street.

**Lehigh Car Wheel & Axle Works, Catsaqua, Pa.,** is reported to have increased its capital from \$300,000 to \$600,000, and to have arranged to increase its indebtedness to \$600,000 to be used for general expansion.

**Wellman-Seaver-Morgan Company, Cleveland, Ohio,** has opened a San Francisco office at 415-417 Rialto Building, in charge of Norman E. Ross. Business originating from California, Nevada west of the 115th meridian, Lower California and the counties of Josephine, Jackson and Klamath in Oregon is in this territory.

**C. J. Brown,** who has been connected with the sales division of the R. D. Nuttall Company for the past three years, has become associated with Frank M. Erb, representing in the Pittsburgh district the Silver Manufacturing Company, National Forge & Tool Company, Horsberg Forge Company and Meadville Malleable Iron Company. Mr. Brown will be located at 902 Second National Bank Building.