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Six-Cent Fares and an Association Publicity Bureau

THE campaign of the electric railways for increased fares to meet the rising costs of operation brings up again, and more forcibly than ever before, the need for an active publicity bureau for the American Electric Railway Association. We do not believe, with the author of a recent letter in our correspondence department, that such a bureau would interfere with the work being done for individual companies by privately conducted bureaus or present publicity agents. Rather, it would help them in their work and correlate the efforts being made generally to help the public understand the present electric railway situation. This also is the view, as we understand it, of most of those who have contributed letters on this subject to recent issues of this paper. To make the matter concrete we have asked Ivy L. Lee to summarize the discussion which has been going on in these columns by giving his views as to what such a general bureau could do and how it might conduct its service. Mr. Lee's article appears elsewhere in this issue.

The Higher-Fare Campaign Must Include the Public

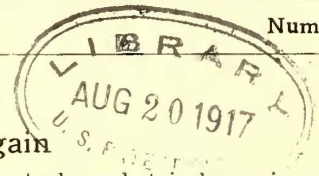
MR. LEE clearly points out that it would be a grave mistake to suppose that it is needful only to convince individual commissioners or legislators of the correctness of the railway point of view. The prime need is to convince the general public. Once that is done, the public's belief will certainly be reflected in the concrete acts of regulative bodies. In the principal electric railway problem before the public to-day—the need of greater revenues to meet the tide of rising costs—there can be no question that in the beginning, at least, public sentiment was adverse to rate advances. The public, however, can be made to see that what is threatened by a fixed 5-cent fare is not only the prosperity of the railways but really the electric railway facilities enjoyed by the public. Once that point is thoroughly understood it will find its reflection in the acts of the commissions. The situation is not peculiar to any one state. The electric railway problem is the same all over the country. The interests of all companies are affected by the wave of sentiment for municipal ownership and operation, which has been made an issue in New York City for the fall campaign. It certainly seems a fitting time to decide whether some real progress cannot be made toward the establishment of a publicity bureau by the American Electric Railway Association. It will never be needed more than now.

Wooden Cars May Come Back Again

THE condition of the steel market is becoming more tense almost daily. This condition is being felt by the car manufacturers, for their inability to get steel plate and shapes is greatly delaying the delivery of cars on order. At the same time that this condition prevails in the steel market, there is a plentiful supply of wood which might be used for the purpose. The drive in the industry for the use of lighter weight and more durable cars has so accustomed the railway men to thinking only of steel when new cars were under consideration that the tendency is to neglect the possibilities of wood altogether. Perhaps, however, the fact that an emergency exists which makes it practically impossible to get steel plate, and consequently steel car deliveries within a very long delivery period, may serve to deflect attention to cars of wooden construction. They cannot be built as light as steel cars, but, in the event that a company is badly in need of additional rolling stock, there are advantages in reverting for the time being to cars of wooden construction. The steel car will cost less per mile for current to propel it, during all the years it is in service, but for the immediate present a wooden car which could be delivered comparatively very promptly could be earning a substantial revenue during the ten to eighteen months or more that it might be necessary to wait for its steel likeness. The use of wooden cars under these circumstances may be well worth consideration by those companies which are facing abnormal possibilities for increased business without adequate equipment to secure it.

Keep Up Versus Pick Up in Maintenance Work

FOR the purpose of emphasis we wish to reiterate the line of thought which ran through the articles by S. L. Foster and P. Ney Wilson appearing in the issue of the JOURNAL for Aug. 4. It seems trite to say that prevention is better than cure, for there is no argument possible. But assenting to this axiom is one thing and acting upon it is another. The present condition of the track, line and rolling stock on some properties indicates that maintenance work is not keeping pace with deterioration and that a day of reckoning is ahead. The writer remembers that on one property in particular there was some years ago a regular epidemic of trolley wire breaks. As Mr. Foster says, "When a trolley wire breaks the whole system of interdependent elements of operation is paralyzed." The service interruptions in such cases cost more than



adequate maintenance would have done. The evil effects on a patron's mind of a series of service interruptions, such as those which were the necessary result of the epidemic of overhead troubles referred to, last much longer than the trouble itself. He feels that such a condition reflects carelessness in many ways besides that shown in the particular breakdown. Mr. Wilson points out that "way engineers delight in construction work, but the steady grind of track maintenance is not so pleasant." The same is true, of course, with regard to equipment and line work. No routine work is inherently pleasant, except as it is considered a part of the thorough performance of duty.

Interpretation of Cost Data on Special Work Reconstruction

SINCE the publication of the first installment of the cost data on special work renewals in the Equipment and Maintenance section of this paper a reader has suggested that further details, such as the proper size of repair gang and the number of man-hours and amount of supervision on each job, would enhance the value of the tables. It is undoubtedly true that data of this kind could be elaborated greatly with some profit to the user, but the problem is to give the results of experience in the form most likely to be useful. The compiler of the tables felt that by averaging the costs over a long period the incidental variations would eliminate themselves in the process. The different special conditions of each job thus tend to neutralize each other, giving a figure comparable with the average cost of work done on other properties.

As an example of the difficulty of going into much detail it may be said that the proper size of track gang for a given job has been studied for many years by the Brooklyn Rapid Transit Company and still no definite figure can be given. Many variables, such as width of street, traffic, number of other jobs being done, labor market, season of the year, weather, characteristics of foreman, and special reasons for speeding up the work affect the size of the gang so that it has not been found practical to work out a proper size of gang for each variable or combination of variables. It may be of interest to note, however, that the average track gang on this system contains about twenty-five men including one foreman. As stated in the explanation accompanying the cost figures, these are based on track labor at 20 cents per hour. The foreman's wages, which would not raise the average wages of the rest of the gang more than 1 or 2 per cent, are included in this figure. The number of man-hours can, therefore, be calculated for each job by dividing the cost as given by 20 cents.

The whole subject of cost data is a difficult one to handle on account of the number of variables involved. As has been emphasized to these columns from time to time it is difficult to make comparisons of data from different properties, particularly with reference to track maintenance costs. As pointed out editorially in our issue for July 21, 1917, the chief value of such data is to encourage close study of local unit costs with a view to justifying expenditure or impelling toward economy.

Tell Your Local Civic Bodies All About Your Troubles

ALTHOUGH we have published some very good examples of higher-fare publicity issued by different companies recently, we believe that as a whole the electric railway companies which are seeking more income are not doing enough talking about it. By this we mean that they are not doing enough in the way of formal talks, given for the enlightenment of public opinion.

In each city where increases of income are sought it is most desirable that a responsible representative of the company, the higher in rank the better, should seek an opportunity to talk about the situation to the local Chamber of Commerce, to the Rotary Club, to the Common Council, to the leading labor organization or in a public forum, etc., and he should see that copies of his remarks are prepared for the press. This sort of publicity work has the true home-made quality and can be most useful in establishing a sympathetic understanding of the business aspects of the situation as the first step toward getting helpful expression of public opinion. The electric railway man wants the public to realize that the service given to the public will suffer if the utility company income isn't sufficient to meet the increased costs of giving service.

A simple, direct, business-like talk, such as any intelligent electric railway manager would make in a friendly chat with a business friend, is exactly the kind of talk that is most useful and most needed. Hifaluting oratory is not the thing. A public that is asked to pay higher fares wants the company and its spokesman to get down to brass tacks. So the talk should be simple, direct and plain. The following outline of points may be helpful.

First—Express your desire to have the public know all the facts, in the belief that they will give you a fair judgment and a square deal.

Second—Show how (with fares fixed) electric railway costs have risen. Show that it takes nearly twice as many nickels to buy electric railway supplies now as it did three years ago, while the fare has not increased.

Cite a dozen or more important items, such as coal, lumber, oil, steel, iron, copper and the like.

Having driven that point home, show the crisis that this fixed fare and rising costs have produced. The average man doesn't care a rap about your troubles. The next thing is to show him that this crisis means trouble for him.

If their investment in electric railways doesn't pay—and it doesn't under present conditions—investors will drop it to go into other things. And this will mean disaster. Disregarding the disaster to the company, either in the form of receivership or anything else, a lack of a constant supply of investment support means some very real and concrete discomforts to the public. A prosperous utility company can give good service, build new lines, put on new and better cars, put in better roadbed, better heating and lighting, keep its cars clean, etc. But the alternative is—

1. That you'll have to give car service on a headway of ten minutes instead of five minutes.

2. That the cars will be crowded.
3. That rails and roadbed will be like the rocky road to Dublin.
4. That cars will be dirty.
5. That new sections of the city will have to go without new car lines.

It was to insure good service and to insure its being kept up that the law declares that investors are entitled to a fair return on their investment. Their companies can prove that they are not getting this fair return. Under the public service law the electric railway companies are not allowed to make big profits, but they can't give service at all without some profit.

After all, there's no occasion for ill feeling or denunciation or any other sentimental outburst in the case. It's a simple matter of the public and the public service commissioners knowing the exact business facts as to the situation with each separate company and of making a ruling accordingly.

And good, homely talks to influential civic bodies along these lines cannot help being useful. For the public good-will is absolutely essential. To get a verdict from the public service commission alone is not enough. The public does not have to accept that as final. It can go back to the legislature.

Neglected Positive Stops—

An Insidious Operating Evil

IN an article by John A. Beeler published on another page of this issue attention is called to a feature of electric railway operation that, so far as we know, has been absolutely overlooked heretofore. This is the neglect of what Mr. Beeler terms the "positive stop," by which is meant a stop made by cars at a certain point for arbitrary reasons and not to pick up or discharge passengers. That failure to keep track of such stops as these may constitute an appreciable handicap to efficient operation is almost obvious. Nothing is easier to establish than such a stop, and after it has once been established, nobody is particularly concerned to bring about its elimination, with the result that train crews—who are always influenced strongly by tradition—may keep on making the stop for years, even though the reason for its establishment has been forgotten and long since ceased to apply.

In the past on many electric railways all kinds of positive stops have been introduced with reckless abandon. Stops have been established during progress of track reconstruction, or bridge work, or other temporary interferences, and after the completion of the work apparently no one thinks of removing the stop order. Some stops even mark the place of accidents that have happened in the distant past, while others indicate the stores or residences of people who have or have had "pull."

On a road with 100 cars a total of 5,000,000 such positive stops might well be made annually, and, judging from such data as are available, it is easily conceivable that 200,000 of them might be absolutely unnecessary. The cost of power and wear and tear for each of these may be set at 0.5 cent, giving a total possible saving of

\$1,000 per year, to say nothing of the savings due to faster schedule speed in case the situation of the eliminated stops permitted actual incorporation in the schedules of the time that was saved. In short, this matter is one that should be promptly looked into by every electric railway to the end that needless stops may be eliminated.

Electric Railways and Power Generation

IN last week's issue of the JOURNAL there appeared two tables showing approximately the situation regarding the generation, purchase and sale of power by electric railway companies as it existed about a year ago. The data were based upon the August, 1916, edition of the *McGraw Electric Railway Directory*, the latest source of information available when the compilation was undertaken. The figures given are not to be analyzed too closely, as no hard and fast line can be drawn which will divide the purchasing and the generating railways, but the data will serve as a general guide. The percentage of generating companies shown is slightly higher than that given in the latest report of the United States Bureau of the Census, but the small difference could easily be due to the manner in which the companies forming groups or syndicates are listed in the two compilations. Roughly speaking from 50 to 55 per cent in number of the railway companies are still generating power. That this group includes many large ones is evident from the fact that about two-thirds of the mileage and of the cars are operated on power so generated.

A study of the situation by states as disclosed by the tables is interesting but is significant only in connection with an analysis of the local power plant conditions. When the power business as such is highly developed, the central station naturally captures a good share of the railway business, because it can offer attractive prices. The railway load improves its load factor and, as was clearly explained by the late H. G. Stott in a paper abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for June 24, 1916, page 1170, the question of purchasing versus generating power comes down ultimately to that of load factor. If a railway load can be taken on by a central station without an increase in equipment cost and operating expense equal to that which would have been incurred by the railway in meeting its own requirements, then the question answers itself.

The advance in the art of power generation has been recently so rapid that plants built only a few years ago are greatly handicapped in competition with those more nearly up to date. The central stations have the greater incentive to modernize their equipment because the cost of power is everything to them. In the case of the railways, while power is a considerable element in operating cost it is not the most important one. The power department may not always, therefore, obtain the support which it needs. Constant modernizing of its equipment, however, will enable it to make a continuously creditable showing.

Railway Stops

The Author Analyzes the Effect of Stop Frequency on Schedules and on Walking Distances and Time Savings for Patrons—Recommendations Are Made for Minimum Stop Spacings and for Methods to Reduce the Number of Stops

By JOHN A. BEELER

Consulting Engineer, New York City

ON a railway there will usually be found two reasons for making stops, the first and essential one being to take on or discharge passengers or freight, and the second being to hold the car because of some operating conditions, such as the requirements of safety. Stops which fall in the latter classification are necessary in connection with the movement of any train over the tracks, and they may therefore be termed "positive stops." On steam railroads and interurban railways operating entirely on private right-of-way stops of this character need be but very few. On street railways, however, a number of positive stops are considered necessary, in general, because of (1) steam railroad crossings and drawbridges; (2) street railway crossings; (3) fire stations and dangerous highway crossings; (4) signals, where hand-thrown, and (5) terminals.

Train stops that are of importance to the public are those for receiving and discharging passengers. At first sight it might appear that cars should stop at any point for this purpose, but this has been found to be impracticable. The earliest steam trains and the horse cars followed the practice, but it was soon abandoned, and definite stopping places were substituted. With the steam railroads this innovation came early in the nineteenth century, but with street railways it was not until the advent of electric traction that any attention was given to the subject.

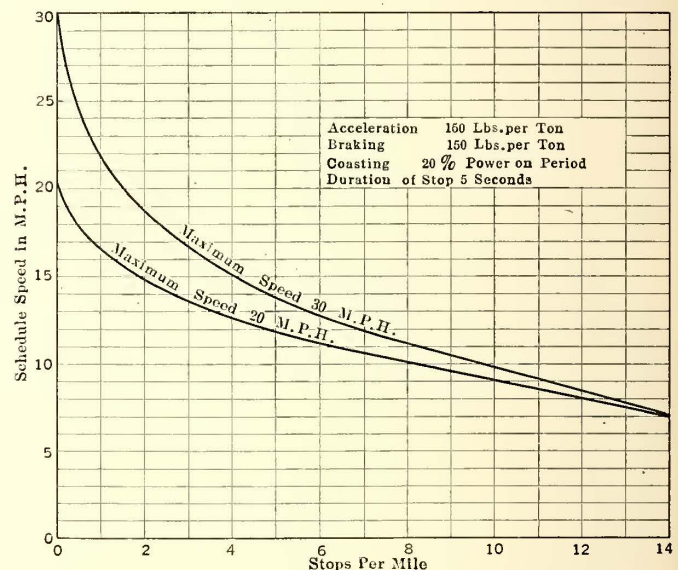
EFFECT OF STOPS ON SCHEDULE SPEED

The far-reaching effect of such stops, not only on schedules, but on the possibilities of service, are not understood by the average trainman. The number of stops has a very definite bearing on the schedules that may be maintained with a given equipment, and as the stops are more frequent the slower is the possible schedule.

As a concrete illustration, consider a car with an average running speed of 20 m.p.h. Without stops it will, of course, travel a distance of 1 mile in three minutes. Require it to make eight stops within the mile, and it will make but 10 m.p.h., involving a running time of six minutes. In the case of an interurban car with an average free running speed of 30 m.p.h. a mile may be made without stops in two minutes. Let the car make but four stops in a mile, and the schedule is reduced to 15 m.p.h., requiring four minutes to the mile. As an example of this effect of stops upon schedule speed, the accompanying curves show graphically the result with cars operating at maximum speeds of 20 m.p.h. and 30 m.p.h. respectively.

A great variation in the number of stops exists on different lines. No general standard practice seems to exist in the location of stopping places, this being espe-

cially true of city electric railway systems. In most cities throughout the country the distance between stops is determined by the length of blocks, and little or no consideration is given to the operating conditions or to the benefits to be derived from more rapid transit. The length of block in different communities, or sometimes in different sections of the same community, varies greatly. In New York, for instance, the blocks are twenty per mile on the north-and-south streets,



RAILWAY STOPS—EFFECT OF STOPS ON SCHEDULE SPEED

while on the cross streets in the same part of the city they are only 5.6 to the mile, or 960 ft. in length.

Since a considerable time is required for a car to start from rest and to get up to full speed, it is evident that when the blocks are short the car cannot attain its full speed between blocks. This tends to produce inefficient operation and slow schedules. The difficulty resulting from the "stop-at-every-block" policy has resulted in agitation everywhere throughout the country for the adoption of better methods of locating stopping places.

Unless the public is willing to sacrifice all the benefits ensuing from rapid transit, it is evident that not every intersecting street can be made a stopping place regardless of the length of the block.

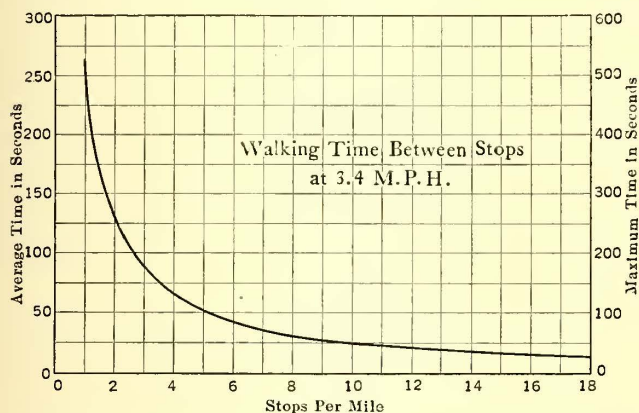
WALKING DISTANCES

For the patron, the immediate effect of a change in stopping places is a change in the distance he must walk from his destination in order to board the car. Obviously, the maximum distance a person has to walk on account of the location of stopping places is equivalent to one-half the space between two consecutive stops.

The average walking distance is but one-quarter of this space. To the walking distance must be added the walk from the destination to the railway route, which has to be made regardless of stop spacing. In some cases a change in the location of stopping places may only make a readjustment of the route to be walked rather than an increase in the distance to be covered.

If it is assumed that the average walking rate in residence districts, where there is no street congestion, is 3.4 m.p.h., the time required to walk the maximum and average distances due to the spacing of stopping points is as set forth graphically in the accompanying curve. From this it may be seen that, with stops spaced eight per mile, the maximum walk for a patron requires 1.1 minutes. With fourteen stops per mile 0.6 minute is required, or a difference of only about 0.5 minute from that required with the stops at intervals of eight per mile.

The increase in walking time as above outlined is, however, much less than the time that is saved through increased schedule speed. By way of illustration of



RAILWAY STOPS—AVERAGE WALKING TIME FOR PATRONS WITH VARYING NUMBER OF DESIGNATED STOPS PER MILE

this, Table I has been prepared. This shows the comparative time required for a passenger to be transported for a distance of 2 miles in city service under conditions respectively involving fourteen stops and eight stops per mile. The time necessary to walk the average distance at each end of the trip is also included on account of the respective spacing of the stopping points. The results show that the passenger actually saves 4.7 minutes in time by walking, on the average, an additional distance of 71 ft. at each end.

Similarly, Table II shows the time required for a 10-mile trip in an interurban car under conditions respectively involving ten stops and four stops per mile. The free running speed is 30 m.p.h. in each case. This shows that a saving in time of nearly twenty minutes is made on a one-way trip by making an average additional walk of less than 200 ft. at each end of the trip. In the event that the maximum walk is necessary for any patron, this is less than two-thirds of

the maximum walk required by the rapid transit lines in the great cities of the world.

NECESSITY FOR CONTROL OF STOPS

The necessity for a basis for controlling the frequency of stopping points may be illustrated in another way: It has already been shown that a car in city service making a maximum speed of 20 m.p.h. loses one-half of its schedule time when making eight stops per mile. This gives the car only forty-five seconds between stops. Likewise, an interurban car with a maximum speed of 30 m.p.h. is capable of making a schedule speed of only 15 m.p.h., when required to make four stops per mile, thus also losing one-half the time on account of stops, and giving the car only one minute between adjacent stops. Therefore, if the electric railways are going to give the public more service by means of faster schedules, the spacing of stopping points must be controlled.

As previously stated, there is no standard practice for locating stopping points, the length of block generally being the determining factor. In several American cities there has been adopted the so-called skip-stop plan, by which stops have been made at alternate streets. The most notable progress along this line in any American city has been made in Cleveland, Ohio. Under the direction of Peter Witt, former traffic commissioner, a standard has been adopted of an average of about five designated stops per mile. The plan in that city has proved that this spacing is very satisfactory, both to the public and to the company.

In some cities results have been obtained by operating cars during rush hours on the "limited-stop plan," cars being run from the downtown terminal for considerable distances without making stops to discharge passengers, although passengers will be picked up at any regular stopping point. In some other cities express service is given, the express cars stopping only at certain designated places. In Pittsburgh this has been extended so that some of the important trunk lines are given over to express service at all times.

In the largest cities of the world rapid transit is dependent largely on lines constructed on private right-of-way either above or below the street level. With this exclusive right-of-way it becomes possible to regulate the number of passenger stops to meet the real demands of the service, and the infrequency of stopping places is one of the most essential factors in the successful operation of such railways. The average distances between stopping places on elevated and subway lines in the different large cities are shown in Table III on page 260, the general average for all these lines being two and one-half stops per mile.

In each of the cases cited all local passenger stations are included. In some cities, however, there are express trains which do not stop at all of the stations, and in a few cases, such as New York City, a portion of the track is given over entirely to express service. In the

TABLE I.—PASSENGERS' TIME AS AFFECTED BY STOP SPACING

City service; 2-mile car trip.	
Number of stops per mile.....	14
Free running speed of car—m.p.h.....	20
Schedule speed making all stops.....	7
Minutes required to ride.....	17.1
Minutes to walk average distance each end of trip.....	0.7
Total minutes required.....	17.8
Minutes saved by passenger.....	4.7
Average walking distance at each end, in feet....	94

TABLE II.—PASSENGER TIME AS AFFECTED BY STOP SPACING

Interurban service; 10-mile car trip	
Number of stops per mile.....	10
Free running speed of car—m.p.h.....	30
Schedule speed making all stops.....	9.8
Minutes required to ride.....	61.2
Minutes required to walk average distance each end of trip.....	0.9
Total minutes required.....	62.1
Minutes saved by passenger.....	19.9
Average walking distance each end, in feet.....	132

TABLE III.—FREQUENCY OF STOPPING PLACES ON ELEVATED AND SUBWAY LINES

City	Distance Between Stops		Average Number of Stations Per Mile
	Feet	Miles	
New York	1,991	0.378	2.65
Chicago	1,820	0.345	2.90
Boston	2,600	0.493	2.03
London	3,100	0.586	1.70
Paris	1,632	0.309	3.24
Berlin	3,200	0.606	1.65
Average	2,112	0.400	2.50

table the figures represent the maximum number of local stops. The demand of the public for real rapid transit is well shown by the fact that these lines are much more popular than the surface lines operating over practically the same route. This demonstrates that the public does not consider it any great hardship to walk considerable distances, and even to climb stairs in addition, provided the service obtained is worth the effort.

STOPS ON SUBURBAN SERVICE

It is frequently difficult to distinguish the difference between interurban and suburban railways. Some are on highways, while others are built on private right-of-way. Often the suburban territory is difficult to distinguish from the city territory, and sometimes the stopping places are as frequent along public highways as on the city streets. A minimum number of stopping places is therefore obtained on high-speed lines built on private right-of-way. Such roads approach, to a great extent, steam railroad practice. The frequency of passenger stops on a number of representative interurban railways is shown in Table IV.

In the early days the importance of the stop question was more fully realized by the steam railroads than by electric lines. Such roads give service with local trains that is of the same character as that performed by the high-grade electric interurban lines. This is also true in suburban territory. The extensive business of this character handled by the steam railroads in the vicinity of Boston, for example, permits them to establish stations approximately 1 mile apart. All of these steam railroads give express service in addition to their local service, and a large number of the patrons commonly wait for the express trains on account of the shorter running time. Nevertheless, analysis makes it evident that the reduced running time of the express trains is attained by reducing the number of stops to a minimum and not by an increase in maximum train speed.

The latest and most formidable competitor of the street railway is the passenger automobile. This operates over the street at a high rate of speed and makes few or no intermediate stops. Thus it has a great advantage, and nearly everyone who can afford it prefers this method of transportation, largely because of its time-saving qualities. Nevertheless good street car service is the cheapest, safest and most comfortable method of transportation for urban and suburban communities, although it has not made the advance during recent years in this respect that could have been expected. As a starter in this direction, there is no one item more important than the reasonable elimination of stops.

REDUCTION AND LOCATION OF STOPS

Toward this end it may be said that the saving of a positive stop, as opposed to a passenger stop, is of much

TABLE IV.—FREQUENCY OF STOPPING PLACES ON INTERURBAN LINES

Line	Distance Average Between Stops		Average Number of Stops Per Mile
	Feet	Miles	
Portland & Lewiston Interurban Ry.	7,392	1.40	0.7
Boston & Worcester Ry.	1,742	0.33	3.0
Providence-Fall River Ry.	4,435	0.84	1.2
Buffalo, Lockport & Rochester Ry.	5,480	1.04	1.0
Cleveland, Alliance & Mahoning Valley Ry.	4,400	0.83	1.2
Twin City Rapid Transit Co.	4,805	0.91	1.1
Stark Electric Railway	2,716	0.51	1.9
Galveston-Houston Electric Ry.	19,008	3.60	0.3
Denver & Northwestern Electric Ry.	2,382	0.45	2.3
Denver & Intermountain R. R.	1,951	0.37	2.7
Grand Junction & Grand Valley Electric Ry.	3,484	0.66	1.5
Salt Lake & Utah Railway	10,085	1.91	0.5
Central California Traction Co.	4,600	0.87	1.2

greater value. In no way can the elimination of a positive stop be said to discommode the patron. On the average railway many positive stops can be eliminated without sacrificing anything in the way of safety, and in other cases the loss of time at the necessary positive stops can be reduced. These results may be accomplished as follows:

At steam railroad crossings the car should be stopped if required by law, but the flagman on duty can in most cases give the proceed signal and save considerable time. This will eliminate the necessity of conductors leaving their cars. Automatic stops can be used to set the brakes at drawbridges when the span is opened or when not properly closed. Also, electric switches can be employed at all important stopping points. Cars on the main line should always be given the right-of-way at crossings and junctions, while warning signs can be placed on highways at approaches to the tracks and at blind alleys and the like.

Signals might well be used at fire stations when an alarm is given, and automatic signals should be generally substituted for hand-operated signals on all important lines, more automatic signals being installed on single tracks. In some cases double track can be substituted for single track to good advantage merely because of the opportunity to eliminate positive stops.

With regard to the location of passenger stops it may be said in general that stopping points should be established at intersecting streets or crossroads, but not necessarily at every such intersecting street. So far as possible stopping points should be spaced at equal intervals and where they will best accommodate patrons. Where a fixed stop is necessary it should, if possible, be made a passenger stopping place also, thus eliminating one stop.

Stops should not be made on single track if in close proximity to double track or sidings where one car may delay another. Stops should be made only where other cars may be clear in passing and not on switches, curves or crossings.

In all cases the track space where passengers should stand ought to be plainly indicated at each stopping point. This location should be opposite the car entrance and not across the intersecting street, nor even 15 ft. away, because one second is lost for each 5 ft. that has to be walked by the passenger after the car stops.

Conditions in each city naturally prevent the establishment of any general rule for universal application. However, as a minimum basis for determining the spacing of passenger stops, it may be said that in thinly populated territories an average of eight stops per mile (spacing of 660 ft.) is a reasonable figure.

The minimum spacing for the congested business districts may be set at ten stops per mile (spacing of 528 ft.).

In the residential sections of cities and in suburban districts a figure ranging between eight stops and five stops per mile (spacing of 660 ft. to 1056 ft.) may be used, the greater spacing being adopted as frequently as practicable.

In suburban districts the closest spacing allowable where any semblance of interurban service is to be maintained is four stops per mile (spacing of 1320 ft.).

The spacings above have been recommended as reasonable for the various kinds of territory stated and are placed far enough apart to allow maintaining reasonable schedules. It is not believed that there is any necessity of using closer spacing of stopping places except under unusual conditions. With the adoption of such spacing of course the probability of making every stop is increased. However, the fact that the car will not stop at intermediate points is of greater value in making up time-tables than the possibility of passing a stopping place when traffic is not heavy, because the time-table department cannot count on any definite number of stops in the more congested portions but must make the running time or the lay-over sufficient to allow for at least a large portion of the stops being made on each trip. The elimination of unnecessary stopping places is probably the most important move that can be made toward improving schedules, whether for congested street traffic or interurban lines.

Another Increase for Massachusetts

Commission Allows Milford & Uxbridge Street Railway to Increase Fare Unit to Six Cents and Raise Workmen's Rate

A GENERAL increase in the fare unit from 5 to 6 cents, and the substitution of morning and evening workmen's strip tickets at twenty for \$1 for existing reduced rate tickets, were sanctioned by the Massachusetts Public Service Commission on Aug. 9 for the Milford & Uxbridge Street Railway. The company's petition was filed on May 5, 1917. The commission suspended the operation of the new schedule, proposed for June 4, until Aug. 10.

The main line of the Milford & Uxbridge is 20 miles long, extending from Framingham depot through Holliston, Milford and Hopedale to Uxbridge, with a branch from Milford to Medway, 7.5 miles, and from Milford to Hopkinton, 6.5 miles. Between Framingham and Milford the road is paralleled by the Boston & Albany Railroad, and other parts of the line compete directly with steam railroads. Milford and Framingham together have a population of about 30,000. The remainder of the territory is thinly settled.

In addition to the above owned lines, the company operates under lease the Medway & Dedham Street Railway, about 20 miles long, and provides cars, crews and power for the Grafton & Upton Railroad, 15 miles. No increases were proposed for the leased lines, on which the present 5-cent rate amounts to about 2 cents per mile.

The outstanding capitalization of the Milford & Uxbridge Street Railway on Jan. 1, 1917, was: common stock, \$440,000; preferred stock, \$100,000; bonds,

\$500,000, and notes payable, \$53,500; total \$1,093,500. The permanent property investment is about \$32,500 per mile, which the commission holds to be reasonable. About two-thirds of the floating indebtedness represents property improvements and additions or replacements.

Dividends on common stock for the last fifteen years have averaged about 3 per cent. Regular 6 per cent dividends have been paid on the preferred stock since 1912. This, however, does not fully indicate the return received by security holders. In 1907 the Milford Investment Company was organized and took over most of the company's floating debt, amounting between 1907 and 1910 to an average of about \$185,000. This was finally paid off by issues of preferred stock. During much of the time the interest paid to the investment company was 9 per cent; the remainder of the time, 7 per cent.

The net income of the company last year was \$28,811, substantially the same as for 1915, but considerably less than for 1910-1911, 1911-1912 and 1914-1915. For the first five months of 1917 the operating income of the owned lines fell short \$1,840 of expenses and fixed charges. For the same period of 1916 there was an excess of \$3,955. Moreover, during the last ten years power was sold to the central station in Milford at a profit of about \$7,500 a year but now this revenue is cut in half and will disappear in December. Steam railroad competition has been a severe handicap, and the company has been hit by the present high cost of materials.

The commission's inspection department found the physical property, as a whole, well maintained. In fixing the amount which ought to be set aside for depreciation, the company set the following percentages: Rails, 3 per cent; power stations and equipment, 4 per cent; rolling stock, 2.5 per cent; buildings, 2.5 per cent, these being applied to the book value of the several properties. The company stated that it never had been able to set aside a sufficient amount for depreciation. On Dec. 31, 1916, the accumulated total was only \$7,299, when it should have been \$255,000.

The company estimates that the new rates will yield \$45,042 added revenue a year, at the maximum, but that it may not exceed \$31,000. The former estimate is based on the assumption that riding will not decrease, while the latter is based on a 15 per cent decrease deduced from the experience of other roads making like unit increases. The commission says it is usually less, rather than more than 15 per cent. The increase, it is said, should be sufficient to provide annually for 6 per cent dividends and \$15,000 added depreciation.

Act to Control Trespassing Passed in Connecticut

For many years Connecticut has been among those States in the country that have not by law attempted to prevent the unnecessary waste of life due to trespassing upon railway right-of-way. The Connecticut Legislature has recently passed, however, and Governor Holcomb has just signed, a bill that should do much to eliminate the evil in that State. The bill is an amendment to Chapter 202 of the public acts of 1905. A fine or imprisonment, or both, are provided for violation of the provisions of the act.

Montreal Adopts Air-Operated Doors and Steps

The Montreal Tramways, Pioneer in Prepayment, Has Now Taken the Lead in Adopting Air-Operated Door and Step Control Throughout for All Service, to the Advantage of the Public, the Platform Men and the Railway



MONTREAL DOOR EQUIPMENT—VIEW OF REAR PLATFORM ON REMODELED CAR

THE decision of the Montreal Tramways to equip practically all of its active cars with pneumatic door and step control is a whole-hearted recognition of the fact that the earning power and comfort of a car can be greatly enhanced by the largest possible use of automatic equipment.

Although the pioneer in the use of prepayment since 1905, it is a curious fact that the Montreal Tramways did not find it necessary to go to the inclosed vestibule car until 1914, at which time it placed twenty-five motor cars and twenty-five trailers in operation on St. Catherine Street, the chief traffic artery of Montreal. Of course, when the long rear platform of the earlier cars was open, no door-operating mechanism was required since the passenger operated the swinging entrance and sliding exit body doors themselves. With the introduction, however, of closed-vestibule cars in center-entrance, front-exit train service, it became evident that the value of such cars would be greatly increased by a faster door and step mechanism.

The burden which manually operated equipment placed on the conductor may be judged from the fact that in a round trip of one hour and forty-five minutes a conductor on the St. Catherine Street line might have to open and close doors for a total of 232 stops. During the rush hours, furthermore, the regular headway of two minutes is cut to thirty seconds on the section between Bleury Street and Victoria Avenue. Under these circumstances a saving of two seconds per stop, due to air operation, can prove an important factor in reducing congestion and in speeding up the

schedule. Also, as one Montreal official put it: "When a conductor is opening or closing a door by hand he is failing to do something else, such as helping a passenger or collecting fare."

The new arrangement of rear entrance features was developed by Col. J. E. Hutcheson, general manager, with the assistance of A. Gaboury, superintendent, and D. E. Blair, superintendent of rolling stock. After a careful study of loading and unloading conditions, and taking into account the severe temperatures to which the occupants of the open platforms were exposed, a decision was reached as to what arrangements would best suit the situation. The mechanical department then proceeded to develop details, which seem to be of a simple and practical nature. Care was taken that the innovations had due publicity in advance, so that the public was both interested and pleased when the first cars were changed over. On completion of the first improved car, representatives of the City Council, as well as from the different papers of the city, were invited to a demonstration, which proved very satisfactory.

The company had remarkable success in securing wide publicity for the innovation, both with the men and the traveling public of Montreal. The clippings from the English and the French newspapers of Montreal, of which one of the latter is reproduced, show how cleverly an improvement in equipment can be used for the direct promotion of good public relations, as well as reminding the car men in an indirect way of what the company is continually doing for their welfare.

On March 28, 1917, the railway equipped car No. 1476 with the National Pneumatic Company's type OA-M $2\frac{5}{8}$ -in. x $4\frac{1}{2}$ -in. engines which were adjusted to permit the doors to open in 1.4 seconds and to close in 1.6 seconds. These periods cover the complete cycle from the first movement of the operating lever to the end of the door movement. The stroke of this engine is the same for all lengths of door as the size of the exhaust ports can be adjusted to control the speed of operation, thus greatly simplifying the adaptation of the same air engine to various styles of cars.

This pioneer car was paired with one of similar type, No. 1474, which had been equipped in August, 1915, with manual control to see whether such control was feasible for cars with 7-ft. platforms. However, the pneumatic equipment proved so satisfactory that the company decided to place the same engine on 590 modern cars and on the 100 new cars for the forthcoming six-motor, two-car train service. While the engines will be furnished by the National Pneumatic Company, tariff conditions made it desirable for the railway to manufacture some parts itself, particularly the step mechanism which has been modified to permit the clearance of a 12-in. depth of snow and ice.

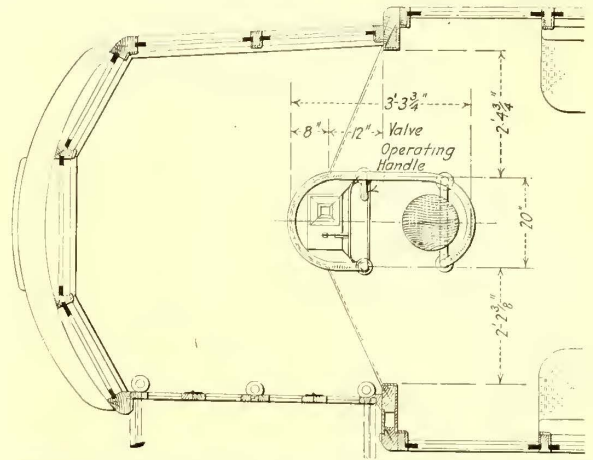
At this writing eight cars are already being operated with pneumatic door and step control, and parts are in hand for ninety-three more. Cars of the 1425-1524 series, as illustrated, which have 7-ft. platforms inclosed with folding doors, are being converted at a cost of about \$175 each. While the existing cars for train service have simple light signals to indicate the closing of the doors, the 100 new cars for train operation will carry the National Pneumatic Company's safety interlocking door control, which is interlocked with the control system.

DOOR AND STEP ARRANGEMENT

All Montreal cars are of the two-step type, and of these steps the upper one is stationary and the lower one folds. The vestibule doors are not swung against the bottom step, but against the edge of the platform, leaving the upper step partly exposed. The main reason for doing this was that carhouse contours would be cleared even with the doors opened, whereas if the doors were on the outside edge of the second step there would be a danger of damaging door or step should a

car inadvertently be pulled in with doors open. Again, on several types of cars, if the doors were to be outside of the steps it would be necessary to build out at the vestibule rail in order to get a door post.

In practice, nobody tries to get on the exposed step as it is narrow, and there are no outside grab-handles. Furthermore, the window nearest the bulkhead is



MONTREAL DOOR EQUIPMENT—PLAN OF PLATFORM SHOWING ARRANGEMENT OF FARE BOX AND CONDUCTOR'S SEAT

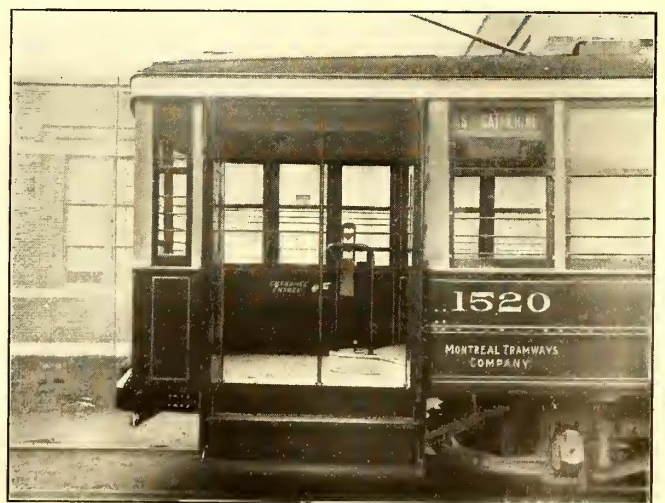
closed permanently so that reckless passengers cannot get an arm over the window sill.

The successive rises from the ground to the car floor are: to first step, 16 in.; to second step, $9\frac{1}{2}$ in.; to platform, $9\frac{1}{2}$ in., and platform to body of car, 6 in.

IMPROVING THE CONDUCTOR'S POSITION

Aside from providing the conductor with the convenience of pneumatic door and step control, the Montreal Tramways has gone still further. As shown in both drawing and halftones herewith, the conductor now stands on a railed peninsula which projects 18 in. outward from the bulkhead line. This peninsula is 6 in. above the platform floor and level with car floor, thus placing the conductor well above the head of his platform passengers and giving him better supervision over them. There is also ample aisle room on both sides of the peninsula for inward and outward passengers.

By this arrangement the conductor is free from all



MONTREAL DOOR EQUIPMENT—INTERIOR AND EXTERIOR VIEWS OF PLATFORM EQUIPMENT

jostling by entering or departing passengers, and is in a commanding position to see all that is going on. The opening in the railing at his side allows him to step down quickly to help a passenger up. He may also extend a chain barrier across the exit should that be necessary.

Both the push buttons and the door-operating handles are so placed so that the conductor can give the stopping signals and open the doors without turning around, the mere closing of the doors being in itself the starting signal. The conductor can collect fares while seated on his folding seat since the railing carries either a Coleman or Cleveland pillar-type non-counting fare box, a table for making change and a compartment

AMELIORATIONS AU SERVICE DE NOS TRAMWAYS

La compagnie adopte une invention qui sera fort appréciée du public.

La compagnie des tramways a invité des représentants de journaux à faire l'inspection d'une nouvelle amélioration qu'elle entend faire immédiatement à toutes ses voitures.

M. J.-E. Hutcheson, le gérant général, et M. A. Gaboury, le surintendant, reçurent les invités, parmi lesquels se trouvaient MM. Paul Mercier, ingénieur en chef de la ville et McLeod, ingénieur des chemins de fer.

Cette amélioration consiste dans la fermeture complète des plateformes

de vestibule ni à l'avant ni à l'arrière, et cela en toute saison.

Puis, vinrent ensuite les trois châssis fixés à l'avant de la voiture. Ensuite encore le vestibule complètement fermé fut installé, et c'était le commencement de l'évolution qui devait se terminer par le tramway-palais que nous avons aujourd'hui, muni de portes à l'avant et à l'arrière, chauffé à l'électricité et pourvu de sièges pour les employés.

La dernière amélioration apportée sera sans doute bien vue des conducteurs qui pourront travailler chaudement, confortablement surtout, pen-

MONTREAL DOOR EQUIPMENT—HIGHLY COMPLIMENTARY REPORT ON INSTALLATION BY LOCAL NEWSPAPER—READ IT FOR YOURSELF

below the table for transfers, punch and other supplies. The pillar-type fare boxes, of course, may eventually replace the portable style now common in Montreal.

THE NEW SIX-MOTOR TRAINS

A most interesting development in connection with the adoption of air-operated doors and steps is their early use on fifty six-motor (of 330 hp.), two-car trains now under construction. Each train will consist of a four-motor leader and a two-motor trailer, and will be operated on the hilly north and south lines, where four motors would not afford sufficient traction for two cars, the grades on these north and south lines being as high as 13 per cent. Flexibility, convenience and easier handling of the semi-trailers in and out of the car-house for rush-hour make-ready were other factors. The equipment specifications of these cars were published in the ELECTRIC RAILWAY JOURNAL for April 7, 1917, page 673.

The use of six motors for a train of two cars, of multiple unit control, of air brakes, of safety interlocking door control and of air operated doors and steps place Montreal in the front rank of American electric railways for reliability and safety in metropolitan railway operation.

During the last twenty-four months nearly 30,000,000 passengers have been carried on the electric railway lines of the Southern Public Utilities Company, Charlotte, N. C., without a single accident.

One-Man Cars for Massachusetts

Résumé of Two Cases Shows Experts of Public Service Commission Favor Their Use

THAT the operation of the one-man car is regarded as a measure of relief in Massachusetts is evidenced by two recent applications for the Public Service Commission's sanction for their use on "lean" lines. A petition of the Concord, Maynard & Hudson Street Railway for their use on the Acton branch has been granted by the commission, the stipulations being that "when the car is running the operator shall transact no business relative to the collection of fares or the issuance of transfers, and if the operator has occasion to leave his post, he shall remove and retain in his possession the reverse handle of the controller."

The type of car approved is similar to that used at Sedalia, Mo., and is built by the American Car Company, St. Louis. It has a seating capacity of thirty-four, and is equipped with automatic safety appliances. It is mounted on a single truck, and its length over bumpers is 30 ft. 1 in.

The petition filed with the commission on Aug. 3 by the Bay State Street Railway, seeks permission to operate nineteen one-man cars on fifteen different routes, in Revere, Salem, Danvers, Beverly, North Reading, Haverhill, Quincy, South Braintree, Randolph, Weymouth, Dedham, Hyde Park, Milton and Taunton. Several of the lines are beach resort routes, and for these it is proposed to operate the one-man cars in winter only. The company states that it has constructed two one-man cars with double-end control, of slightly different design. These have been inspected by members of the commission's inspection department. George W. Bishop, chief of the department, indorsed the request of the road, provided the same stipulation as that made in the above-mentioned decision be included in the commission's order. A public hearing on the petition was to be held on Aug. 15.

One of the cars, numbered 7000, was built by the American Car Company. It has cross seats accommodating twenty-eight persons and weighs about 15,300 lb. It has a single truck with wheelbase of 8 ft. and wheels 24 in. in diameter, and is equipped with two GE-258 motors and folding Pfingst fenders. The other car, numbered 7500, was originally built by the Jones Manufacturing Company, but has recently been rebuilt by the Bay State Company. It has longitudinal seats for twenty-six persons and weighs 21,540 lb. It has a single truck, with 6-ft. 6-in. wheelbase, and 33-in. wheels. It is equipped with two GE-67 motors. There are two trolleys and folding Pfingst fenders.

Both cars have two doors, one on the right side of each end, and each is arranged for prepayment service. The controller handle is of the "dead man" type. The cars have combination straight air and automatic emergency brakes and also hand brakes. The emergency features consist of an interconnection of the power, sand and automatic air brake with the opening of the forward door and the unlocking of the rear door. These emergency features are operated by air.

"Both of these cars appeared to be properly equipped and in condition to fulfill the requirements claimed of them," reported Inspector Arthur W. Hodges. He knew of no conditions which would prevent them being operated on the Bay State lines specified in the petition.

What a Publicity Bureau Could Do

The Need of Its Service in Helping the Public to Understand the Present Electric Railway Situation Is Emphasized—
The General Principles Which Should Guide Its Work

By IVY L. LEE

ENORMOUS and rapidly accelerating costs of materials and labor are threatening the very corporate existence of numerous electric railway companies. Their only hope is to convince the public, which regards the historic nickel fare almost as a constitutional right, that the electric railways have not only, in all justice, a right to greater revenues, but—more important—if revenues are not increased electric railway service and facilities must be generally cut and in some cases suspended and the public itself will be the sufferer.

In the last analysis the future of the electric railway service depends upon public opinion. Courts, commissions and legislatures, consciously or unconsciously, register the views of the public. This will continue to be so. The public *en masse* of course cannot be constructive, but it is equally sure that individuals representing that mass will not be constructive beyond a point which that public desires that its representatives should go.

If this view is correct, not much progress is made by efforts to persuade individual members of commissions or legislative bodies. Such individuals are like fountains, unable to lift their waters higher than the original reservoir from which they flow. They merely register the original level of public opinion.

If the electric railway problem is to be solved, therefore, the appeal must be primarily to the public. It should be quite frankly so. The appeal should not be made to the public as against any created organization or commission, but to the public in favor of a sound general viewpoint. When the individual legislators or commissioners realize that the public has this sound viewpoint, such individuals will give expression to it in specific and constructive acts.

It is essential, then, that the appeal of electric railways should be to the public, and that the purpose of the appeal should be to inculcate in the public mind a sound general attitude toward the electric railway situation.

II

Electric railway officers generally are agreed that everything feasible should be done to cultivate public good-will. Some of these officers are conducting their daily work with that thought in mind. Others have sought to interpret their enlightened viewpoint not only in deeds, but in speeches, consultations with trades bodies and private interviews. Yet the great mass of the people are apparently unmoved, and there is no real comprehension on the part of the public of the actual situation with which the electric railways are face to face.

The real question before the electric railway companies is: "*In what manner can revenues be raised suf-*

ficient to meet the expenditures which the public demands?"

It does not seem debatable that any plan of action which can accomplish these results legitimately will be approved by the public at large, no matter what criticism may be made by individuals here and there.

A large number of electric railway officers feel that not only do the people fail to understand the fare situation, but that they cannot be made to understand it. This seems to be a counsel of despair, for the chaotic condition in which the railways are now placed is due in large measure to the ignorant ideas which have been instilled in the public mind, and especially to generalizations which have been arrived at on account of certain exposures which have been made of practices which either merited or received public criticism. We are certainly never going to find our "way out" if we concede that darkness must of necessity encompass us.

III

It is absolutely necessary that the public should really be shown that there is something wrong with our system of fixed fares totally unrelated to fluctuating costs of providing service. When the public once really sees this and feels that this is unsound and threatens their transportation facilities, then we can depend upon legislatures and commissions to take hold of the situation and work out constructive details.

It would have been futile to have gone before the public with a propaganda on behalf of a system of regional reserve banks, if the public had not beforehand come to realize quite clearly that something was wrong with our banking system.

Whatever differences of viewpoint there may be on details, electric railway men are almost unanimous in their agreement that there are specific evils in the present situation—common to all companies in the United States—on which a central bureau could do most effective work. The pressing question of the moment is the emergency brought about by the rising tide of costs of materials, taxes and labor. To meet that, the roads are asking that the historic 5-cent fare be disregarded and that 6-cent fares be permitted.

But it would be of much more importance to establish a new principle in the electric railway business, namely, that no particular sum be established as a fixed rate, but that just as in gas, water or electricity service, rates and costs be established in a just relationship, based on the right of a fair return upon the value of property actually used or useful in the public service. For not until this principle is recognized will the interests of all, stockholders, investors and public, be conserved. In short, a fixed 6-cent fare is no more sound than a fixed 5-cent fare.

Again, the absolute inequity of the paving tax, in-

herited like the nickel fare, from the days of the horse car, is a subject on which a central bureau can do effective work.

Just at present there is a tendency on the part of commissions, in reflection of unintelligent public sentiment aroused by mistakes or misdeeds in previous street railway eras, to adopt primitive measures and permit drastic steps totally subversive of public interest.

There never is a time, indeed, when there are not general questions concerning which the public in all parts of the country need enlightenment and intelligent information.

The propositions for municipal ownership of the electric railways will require the best thought and most intelligent handling. A central bureau could do general work of the utmost value upon this.

But whatever the proposition that is to be laid before the public, it must be done through concrete statement and illustration—clearly, persistently, frankly and in good humor. Then the public will come to see that something is inherently wrong in the situation. Once the public sees that, we can depend upon Congress, state legislatures, municipalities and commissions to take hold of the problem, and, in co-operation with railway officers, work out its solution.

The conversion of the American people to a sound point of view concerning the electric railway problem is too great a task for any man or set of men. Also, there are many views as to what would constitute an absolutely sound point of view; and, of course, what will happen in the long run will be that the American people as a whole will have to grow into the possession of this sounder attitude.

But there are certain essentials of truth concerning which it is both necessary and possible that the people should be informed, clearly, continuously and persistently. It is equally necessary that the process of enlightenment should not be either directed or controlled by any man or set of men, but that it should be going on all the time, and that, wherever necessary, the most effective means possible should be available to give the work direction and impetus.

Anyone who has visited England knows how cold the houses there are. Fires are burning in some of the rooms, but the general condition is chilly. That is to-day the state of the popular atmosphere with reference to the electric railways in this country.

But there are English houses equipped with what they call "central heating plants." Such plants carry hot water or steam heat into the halls. Sometimes there are pipes into the rooms. But each room usually has its own fires; though, if desired, the steam or hot-water heat may also be turned on. If all the fires were burning, and all the radiators turned on, the house would be hot.

Now a central publicity bureau should serve as a power plant for a "central heating system" of ideas designed to develop sympathy and understanding by the public concerning the electric railway problems.

The "central heating plant" would not be doing all the work. Separate fires would be burning in the rooms of the different roads, and the heat could be turned on locally only when wanted. But the boilers would always be at work, and the halls would always be heated, diffus-

ing warmth continually into those rooms where there were no fires at all.

IV

Supposing a central publicity office to have been established to inform the public on the real plight of the electric railways facing rising costs with a fixed fare.

The first problem is how to get this situation before the public. Some headway is being made with public sentiment, but it is slow. I do not believe it can be fast, but I do believe it can be made increasingly effective.

Let this bureau serve as a central office. Under its direction there will be compiled various material, showing by facts and figures, simply stated, the evils of the situation. This material will be in typographical form designed to appeal to many different classes of the community. There should be leaflets, dodgers, matter for newspapers, for lyceum lecturers, for distribution on cars, etc.

In such a campaign it is vital not only to prepare good material which will attract attention and inculcate sound ideas, but to see to it that the material gets to the people.

In the distribution of material the existing organizations of the electric railways should, so far as possible, be utilized. There should be on each railway some designated individual to receive the matter prepared and distribute it over his line to officers and influential employees. Everybody should be made to understand clearly the sole intent and design, and employees should be asked to co-operate. Someone would be expected to see to it that this material got into the hands of the local press and influential citizens.

In addition, the central bureau should distribute certain material direct to a mailing list which could be developed—to include members of Congress, state legislators, mayors of cities, councilmen, presidents of colleges, economists, bankers, writers, lecturers, clergymen, etc. All material sent to this list should be in the name of an executive committee; all matter distributed by individual railways should be in their names. Everything sent out should have a responsible source.

At the headquarters and, wherever possible, by electric railway officers generally, relations should be cultivated with writers, newspaper correspondents and others of influence with a view to seeing to it that they are supplied with accurate data. The material collected by the various bureaus for electric railway economics could be drawn upon freely. In this way, writers of books, magazine articles, editorials, etc., could be provided with information.

It should be the function of the central bureau to keep in touch with the work of the various organizations which are studying electric railway problems, also institutions, such as the American Bar Association, which are urging uniformity of law. The purpose should be to harmonize and bring about co-operation between all interested agencies.

The bureau should be in constant correspondence with electric railway officers all over the United States, whose co-operation would be solicited in the collection and presentation of significant facts and data relating to the existing situation. Many companies and their

officers have compiled general matter which would be decidedly illuminating if it could be made clear to the public at large.

V

Certain general principles should be rigidly adhered to in this entire campaign:

1. The source of all printed matter circulated should be made known. In fact, every act should be taken in the full light of day; frankly as a matter of duty not only to investors, but also to the public. Not a letter should be written, not a dollar should be spent, not a line should be printed which the electric railways would not be glad to make known to anybody interested.

2. Expenditures should be restricted to payments for advertising, printing, postage and necessary salaries and expenses in connection with work actually performed.

3. There should be no personalities or criticisms of commissions, individual commissioners, or anybody in public life; similarly, there should be no attacks, direct or indirect, upon labor organizations or leaders.

4. It should be the policy to restrict whatever was published to data contained in official records. Certainly every fact stated should be carefully verified before publication, although statements of fact should not be colorless, but put forward in a manner to carry conviction.

VI

Manifestly, such a plan as that outlined could not start in full bloom. There should be no occasion for haste. The wisdom of each step taken should be carefully considered. If the plan as it progresses proves to be helpful, it will grow. Individual companies will in addition themselves work out ideas suitable for presentation to their local constituencies.

Each company should itself defray the expenses incidental to its individual work. In so far as the bureau is concerned, the scheme should be financed as it progresses. Expenses at first should be small. If results justify their growth, the money will be seen to have been well spent as the work continues.

Experience with such matters would indicate that a campaign conducted along the lines indicated should prove relatively inexpensive. If a few clear-cut ideas are put into real circulation, the automatic fermentation they will produce will keep the situation active. The public will catch the idea and take hold of it on its own account. It isn't the mass of publicity work that counts; it's the quality.

VII

Some of the merits of the foregoing plan may be suggested:

1. It does not assume to direct or restrict what any electric railway management or officer may do on his own account. The subject is too big, the task too great, for that. Every earnest effort anywhere should be encouraged.

2. It does assume to keep the fires burning everywhere on the essentials, and especially on the transcendent essential that the vital necessity of the business is adequate revenue.

3. It is adaptable to changing conditions. Under it

there may be co-operation in connection with publicity for increased fare, for labor arbitrations, etc.

4. It aims to co-ordinate, to energize and to work with every agency, every interest—and for the widest public advantage—which is concerned or active in the working out of this problem.

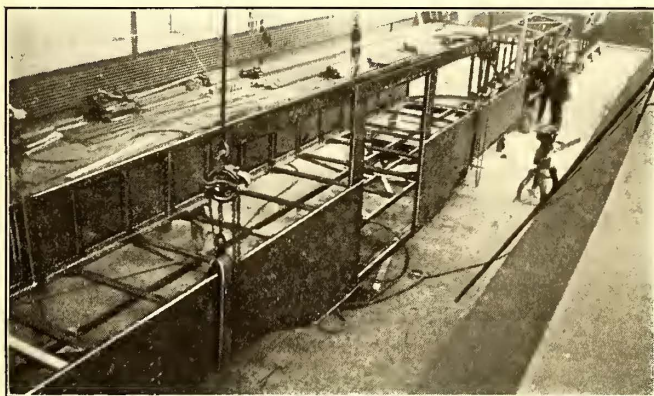
The present situation is undeniably bad; it cannot be remedied too soon. It will take time to get results, but that will be as true to-morrow as it is to-day. An energetic campaign ably conducted along the lines suggested should produce gratifying results at a cost which should be negligible in the light of the good accomplished.

Semi-Steel Trailers Built by Cleveland Railway

The Company Has Undertaken the Construction of Twenty-five Cars in Its New Harvard Avenue Repair Shops

RECENTLY the excellent facilities provided in the new Harvard Avenue shops of the Cleveland Railway tempted the railway officials to undertake the construction of twenty-five 49-ft. semi-steel trail cars, and from the mechanical standpoint this venture has been entirely successful. However, inasmuch as the entire order is not completed, it is not possible to compare cost figures.

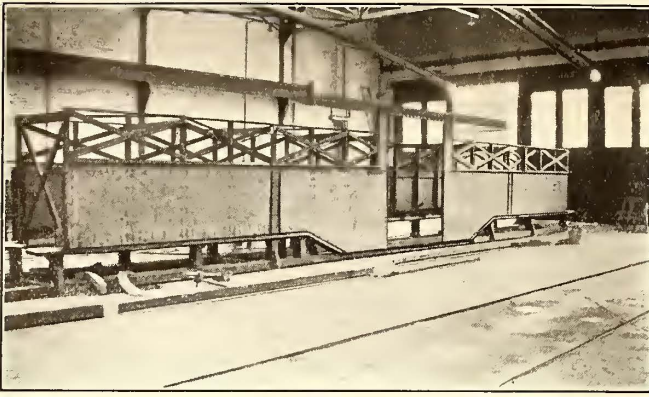
For the new cars the under frame is constructed with 4-in. channel center sills and crossings, diagonally braced at the bolsters with steel bars. The side of the car below the windows is constructed as a steel girder with



CLEVELAND SEMI-STEEL TRAILER—SIDE GIRDELS IN JIG SUBSEQUENT TO RIVETING AND READY FOR REMOVAL

a 4-in. x 4-in. x 5/16-in. angle as a lower member and a 3/8-in. x 3 1/2-in. bar as an upper member, a 1/8-in. steel plate being in between. The channel crossings rest on the horizontal leg of the 4-in. x 4-in. angle, and are secured thereto by large 3/16-in. gusset plates. The 3/8-in. x 3 1/2-in. bar is inside the side plates, which are flanged at the upper edge to give transverse stiffness. The posts are secured to the 1/8-in. side plate by 1/8-in. x 1 1/4-in. x 1 1/4-in. angles.

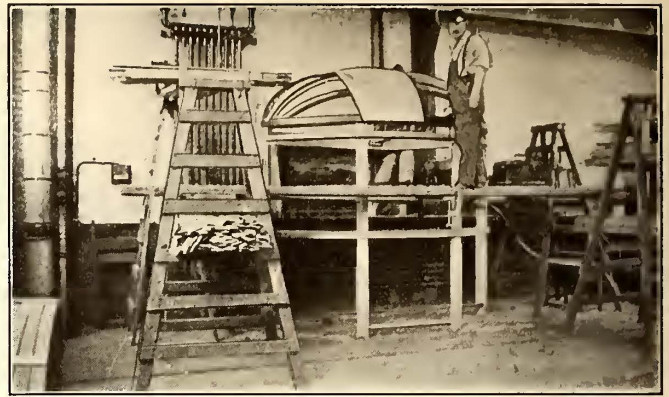
The roof of the car is of the railway company's standard contour plain arch type. It is built on steel carlines cut from No. 14 sheet steel. At the upper edge of the carline a 1-in. x 1-in. wood strip is bolted, to which the roof boards are nailed. At the lower edge of the carline another wood strip is bolted, to which the headlining is fastened.



CLEVELAND SEMI-STEEL TRAILER—SIDE GIRDERS BEING SWUNG INTO PLACE PRIOR TO RIVETING TO FLOOR FRAMING

The floor of the car is fastened to wood fillers, placed between the flanges of the 4-in. channel crossings. It is covered with the usual mat strips running lengthwise with the car. In addition to these, three strips of Kass Safety tread are placed in the aisle to prevent slipping of passengers' feet.

Brass sash are used, dropping into pockets between



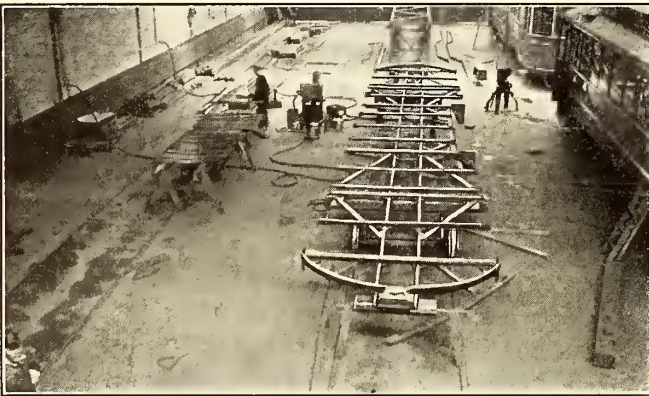
CLEVELAND SEMI-STEEL TRAILER—CONSTRUCTION OF VESTIBULE FRAMING IS SEPARATE UNIT

arranged to be lowered by small increments, Cleveland Trolley Supply Company's sash locks being used for this purpose. This arrangement will give additional ventilation. The interior finish of the car is dark cherry. The seats are upholstered with rattan, over wood frames. The posts are of ash, and miscellaneous framing is of Georgia pine.

Other equipment used on the cars include Consolidated signals, Cleveland fare box, Nichols-Lintern indicating tail lamps, Peter Smith heaters, Brill 67-F trucks, Tomlinson couplers, Westinghouse semi-automatic air brakes and Agasote headlining. The curtains are of printed duck, mounted on Curtain Supply Company's fixtures. Twenty-two-inch wheels are used, permitting a floor height of 29½ in. The car has seating capacity for sixty passengers.

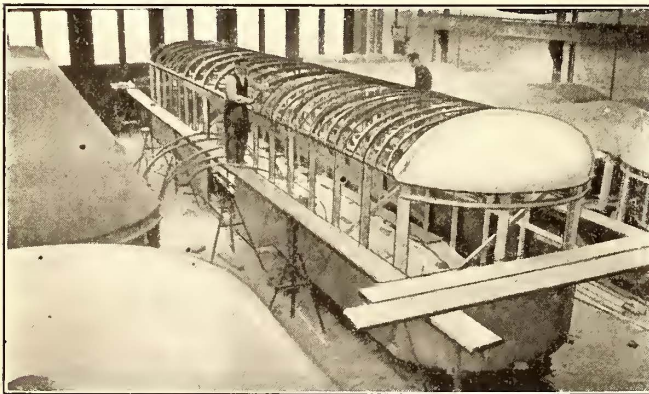
For the construction of the car bodies the engineering department at the shops furnished the detail drawings for the cars and supervised the initial stages of construction. After material for the work was gotten out, the center sills and crossings were assembled on dummy trucks. The side girders, which were built on a form, or jig, were then hoisted into place at the ends of the crossings and riveted thereto. The posts at each side and the vestibules were then inserted, having previously been assembled in units. The roof was built on the car and the vestibules installed as units.

Throughout the work the shop force was divided into different groups, each being responsible for its part of the work of construction. Weight and cost figures, which are not available at present, will be published at a later date.

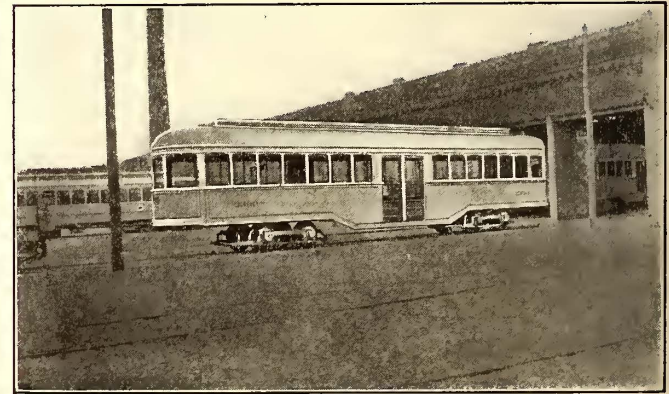


CLEVELAND SEMI-STEEL TRAILER—FLOOR FRAMING ASSEMBLED AND READY FOR ATTACHMENT OF SIDE GIRDERS

the longitudinal seat backs and the outer wall of the car. The doors are of wood and are arranged to slide into pockets at each side of the doorway, being operated by National Pneumatic door engines. The engine valves are controlled by means of levers and rods, connected to a handle under the money table of the fare box stand. The center window in each end of the car is



CLEVELAND SEMI-STEEL TRAILER—ROOF AND SIDE FRAMING OF CAR DURING INSTALLATION OF INTERMEDIATE CARLINES



CLEVELAND SEMI-STEEL TRAILER—VIEW OF COMPLETED CAR SHOWING ENTRANCE AND EXIT DOORS AT CENTER

Experts Testify to Increased Costs

Authoritative Evidence Presented New York Second District Commission to Show Burden of Higher Material and Labor Costs on Electric Railway Industry

IN amplification of the news account in last week's issue the ELECTRIC RAILWAY JOURNAL has secured from the record before the Public Service Commission for the Second District of New York the details of the general evidence presented in the pending fare cases of twenty-eight electric railways. This evidence, which was introduced at Albany by the committee on ways and means to obtain additional revenue of the New York Electric Railway Association, is an unusually authoritative statement, made under oath before a public tribunal, of the course of prices within recent years. The testimony should attract wide attention throughout the country, both because it was delivered by some of the leading figures in the supply field after careful preparation, and also because it is generally applicable throughout the country.

Practically every form of material and every class of labor has largely increased in cost in the last five years, and more especially in the last twelve months. It was the consensus of opinion of the witnesses that the end has not yet been reached and that further increases in costs in most lines seem probable. No witness testified that there would be any decrease in costs in the next year or two in his field.

ELECTRIC EQUIPMENT COSTS GO UP

Edmund P. Waller, assistant manager of the railway department of the General Electric Company, testified that beginning with the middle or the latter part of 1914 there had been a steady and continually more rapid increase in the price of the electrical equipment and apparatus manufactured by his company. The percentages of increase in the selling prices prevailing to-day as compared with those existing in the latter part of 1914 are about as follows:

	Per Cent Increase
Railway motors and car equipment.....	65-70
Air brakes	60-65
Locomotives	60-65
Rotary converters	45-50
Transformers	50-60
Switchboards	75-80
Motor generators.....	55-60
Turbines	100-120

Mr. Waller saw no prospect of any substantial reduction in prices for the near future. Roscoe Seybold, manager of the price section of the railway department and car department of the Westinghouse Electric & Manufacturing Company, presented testimony showing approximately the same increases in cost as that given by Mr. Waller.

OILS SHOW FIRST INCREASE IN TWENTY YEARS

Lauren J. Drake, Jr., vice-president of the Galena Signal Oil Company, testified that the prices per gallon and per pound of the various classes of oils and greases manufactured by his company had remained the same for more than twenty years and that no advance was made until April 20, 1917.

The chief method of selling oils to electric railways is on a mileage basis for cars and a kilowatt-hour basis for power houses. The witness testified that while the oils are invoiced to all electric lines at one price (f.o.b. Franklin), with freight to point of delivery added, their guarantees on cost of operation on a mileage basis or kilowatt output basis may vary, depending upon the kind of equipment in the particular service. The company furnishes a certain amount of oils to smaller companies upon a gallonage basis, without a guaranty clause.

The following tabulation, presented by Mr. Drake, shows a comparison of prices on electric railway oils and greases for a period of more than twenty years prior to April 20, 1917, with the present prices, which have been in effect since April 20, 1917:

Name	F.o.b. Franklin Prices for Twenty Years Prior to April 20, 1917,	F.o.b. Franklin Prices Since April 20, 1917,
	Cents	Cents
Galena power house valve oil, per gallon..	47	55
Galena power house engine oil, per gallon.	27	30
Galena turbine oil, per gallon.....	32	35
Galena electric car oil, per gallon.....	17	20
Galena air compressor oil, per gallon.....	23	27
Galena motor grease, per pound.....	7½	8½
Galena gear grease, per pound.....	4	5

HOW BRAKE EQUIPMENT HAS BEEN AFFECTED

W. G. Kaylor of the Westinghouse Traction Brake Company, testified that the list prices of his company had remained substantially the same for a number of years. He stated that "generally our contracts with our regular customers provide that the purchase of air brakes and equipment shall be at 25 per cent from list prices. Since April, 1917, a revision of our prices has been in effect, and our contract customers have been required to pay list prices less 5 per cent, instead of 25 per cent, resulting in an advance of 26.7 per cent on standard air-brake material. Our casual customers are now paying 105 per cent."

James S. Thompson, vice-president of the American Brake Shoe & Foundry Company, testified that about a year ago his company made increases in the selling prices of brake shoes for electric railways. At that time and for some years prior thereto the average price of his company's brake shoes for electric lines had not varied materially. In the latter portion of 1916 the prices were speedily accelerated, and to-day the average price of brakeshoes to electric railways generally throughout the country is an increase of 63 per cent over and above the prices current a year ago.

CAR COST DOUBLED SINCE OUTBREAK OF WAR

One of the most interesting witnesses was W. H. Heulings, Jr., vice-president in charge of sales of the J. G. Brill Company. Mr. Heulings testified that it was almost impossible to measure, by a comparison of the quotations for finished cars, the advance in the price of such equipment. He stated that the J. G. Brill Company

had never but once within his experience exactly duplicated an order for equipment. Sufficient changes were always made in the specifications to require an extensive revision in the plans and a consequent revision of price.

He stated, however, that in general it was safe to say that the cost of equipment was at least twice as great as the figure prevailing at the outbreak of the European War, and that the same situation existed with reference to the various parts necessary for current maintenance. Whereas formerly the cost of a car was made up roughly of a dollar of material to every dollar expended for labor, the advance in the price of steel, copper, lumber and other elements entering into the manufacture of cars has been so great that at the present time there is roughly \$2 of material for every \$1 of labor represented in the cost of equipment. This is true notwithstanding the large increase in labor costs.

MANUFACTURERS' COSTS HAVE JUMPED

Perhaps there has been an impression in some quarters that the large increases in costs have been due entirely to arbitrary exactions on the part of manufacturers. One of the most interesting phases of the testimony presented was the recital by the various witnesses as to how their costs had in turn increased. As evidence of the fact that higher prices have not meant larger profits, Mr. Heulings pointed out that the gross manufacturing profit of his company was less than 1½ per cent on the volume of business transacted, and that were it not for large government orders, utilizing the greater part of the shop capacity, a heavy loss would have been incurred.

By taking the testimony of the various witnesses relating to increased costs of raw materials used by them, some very interesting results may be disclosed. The following table shows the approximate percentage increase in price of the several articles since the latter part of 1914:

	Per Cent		Per Cent
Pig iron	310	Asbestos materials	600
Steel plates	700	Other insulation materials	100
Copper	100	Magnetic sheet steel.....	375
Steel castings	200	Pennsylvania crude oil....	95
Spelter	52	Whale oil	34
Coke	170	No. 1 lard oil.....	89
Mica	150		

RAILWAY LABOR COST TO GO STILL HIGHER

Prof. Roswell C. McCrea of Columbia University testified on behalf of the electric railways as an expert on labor. Basing his study upon the formal annual reports of the companies to the Public Service Commission and the investigations of the national and New York State governments as to wages and conditions of employment in other industries, he reached some very interesting conclusions. His study of the wages paid by the petitioning companies disclosed substantial increases in every case. Their weighted average wage (in cents per hour) for the more important classes of labor in each year from 1911 to 1915 inclusive compared as follows:

	1911	1912	1913	1914	1915	Per Cent Increase 1915 Over 1911
Conductors	21.7	23.3	25.9	25.7	27.1	24
Motormen	22.2	23.5	25.1	25.8	27.2	22
Roadmen or trackmen... ..	16.6	16.6	18.9	18.5	18.7	12

The witness further testified to the well-known fact that approximately 50 per cent of the operating expenses of an electric railway represent wages, and by far the larger part of this wage expenditure is represented by payments to conductors, motormen and trackmen. The higher cost of labor alone has increased the cost of operation—on the basis of the continuance of an identical standard, both as regards maintenance and the volume and the character of service—more than 15 per cent in the last five years.

Professor McCrea said that owing to the existence of contracts between the companies and the Amalgamated Association of Street & Electric Railway Employees the advance in wages has not been so rapid in the last year as has been the increase in the cost of supplies of every character. It was his opinion, however, that when these wage agreements expire there will be in many cases a sharp increase in wages. He pointed out that in numerous instances the hourly wage rates have not advanced so rapidly as wages for labor in other industries into which electric railway workers could easily gravitate. The railways were therefore more than justified, in the opinion of the witness, in making the advances in wages which have been granted during recent years, and the increasing cost of operation resulting therefrom was a proper charge and should be borne by the public. Against the high wage rates in other industries must be offset, of course, the greater steadiness of employment offered by the electric railway, but even with making due allowance for all such considerations, the Public Service Commission must face the fact that labor costs will probably be considerably increased in the next year or so.

In response to questions as to the outlook for lower wages in the immediate future, Professor McCrea stated that as far as could be seen there was no likelihood of such a development. The great destruction of men and materials in the European War; the large demand which will be made upon this country for goods of every character to facilitate the rehabilitation of the warring nations; the almost inevitable attempts which will be made by European countries to prevent emigration, and the new illiteracy test written into the immigration law will all combine to make labor scarce, and hence wage rates high.

Professor McCrea pointed out that increases in wage rates in the electric railway industry are justified in view of the rapid rise in living costs. While it is possible that living costs may materially decrease, as the result of activities of the federal government and of other influences, even a material reduction would not have any influence in effecting a reduction in the prevailing wage rates.

Several witnesses pointed out that the electric railway is peculiarly affected by the high cost both of labor and of materials. In the first place, the expenditures for labor of an electric railway represent a very much larger proportion of the total operating expenses than is the case with other public utilities. In the second place, the materials which have been subjected to the largest advances in price are those which are used by electric railways. The war has made tremendous demands for the same classes of materials, and the industry has been forced to compete in a famine market, in which the situation each day becomes more serious.

Traffic Recorder Helps Service

Simplified Method of Recording Receipts from Passengers and Their Points of Travel
Results in a Large Yearly Saving and Valuable
Traffic Records

By **GEORGE JACKSON**

General Manager North Jersey Rapid Transit Company, Hohokus, N. J.

THE North Jersey Rapid Transit Company line extends from Paterson, N. J., to Suffern, N. Y., a distance of 15 miles, passing through nine small towns with populations of 600 to 7000. It is built according to regular interurban electric railway specifications on its own right-of-way throughout and operates at a schedule speed of about 18 m.p.h.

The fares are based on about 2 cents per mile but are arranged in multiples of 5 cents. There are eighteen station stops, and the maximum fare is 25 cents, so that considerable overlapping of 5-cent fares is necessitated. About half of the traffic is through business to Paterson, and the remainder local business from town to town.

When the company started operation about seven years ago, it decided that some form of duplex ticket was the best method of collecting and auditing fares. The zone system of collecting fares was out of the question on account of the overlapping of zones and the great expense of proper inspection.

We adopted a form of duplex ticket arranged so that the origination and destination points as well as the amount of fare would be punched. These tickets were audited in connection with an adding and listing machine, each station having its number. The auditing of these tickets showed how much cash the conductor should turn in and showed the travel of each passenger. It also made the form against which the inspector's reports were checked.

About two years ago we negotiated with the Bonham Recorder Company for the use of its recorders, appreciating that this device would eliminate the expense of duplex tickets and at least half of the expense of office work and would put the whole responsibility of proper fare registration up to the conductor so that intermediate errors in auditing the fares would be eliminated, yet all the information that we had been getting before would still be obtained. We installed eight of these recorders in February, 1917, and after six months' trial we have found them a practical machine both in the matter of operation by the conductor and in facilitating office work. On an investment of \$2,800 we are saving \$1,275 a year, of which \$650 is in clerical expense alone.

The Bonham traffic recorder is a listing machine on which is placed a dial, and it is located in one end of the car. The recorder has a number of type wheels arranged so that by operating rods located along the side of the car, the origination and destination points and, automatically, the proper amount of fare are registered on a slip of paper about 4 in. wide. The number of cash fares and passes or tickets is also shown on this paper, and, where needed, the passenger fare-mileage is

shown. The back of the recorder has some hand-set wheels whereby the number of the car, trip, time or other data may be recorded on the paper by the conductor.

OPERATION OF THE RECORDER

The operation of this recorder is as follows:

Before the car comes to a station the origination pointer of the dial is set by a rod running along the side of the car overhead with hand grips placed at regular intervals. Should several passengers board the car at this station, the destination point of each passenger is recorded by turning another rod, which is located about 4 in. from the first-mentioned rod, and then pulling a register cord, which records the origina-

701.						
Conductor _____			Date _____			
Car No. _____		Run No. _____		Record No. _____		
RECORD OF PASSES						
	Signature	Pass No.	Station		Time	N or S
			From	To		
1						
2						
3						
4						

TRAFFIC RECORDER—FIG. 1—PASS RECORD

tion and destination and amount of fare in the recorder. Where the fare collected is a pass or ticket, a blank is shown in the cash column on the record. We take care of our record of passes by the use of Form 701 (Fig. 1), on which the pass-holder signs his name while the conductor adds the interstation identification of the ride.

With this method of collecting fares both passengers and inspectors see the full operation of the conductor while collecting fares. The conductor does not have access to the register and cannot see the printed record.

The records are taken from each car operated during the day after it has finished its run. In our case this occurs after 12 o'clock midnight. These records and the day sheet are audited during the next morning, the work being completed about 11 o'clock. In about three hours one clerk takes care of approximately 2500 fares, including the inspection of day sheets, the adding of the audit slips, the making up the daily traffic records as to the number of passengers, etc. Each record slip as it comes out of the recorder has the autograph of the conductor made in the manner similar to the auto-

On Going North	Suffern	Fox Lane	Mohwah	Spring St	Island Rd	Romsey	Allendale	Chestnut St.	Maldwick	Franklin Tpk.	Ho-ho-hus	Harrison Ave	Ridgewood	Grove St	Glenn Rock	Harristown Rd	Fairlawn	Broadway	Off	Broadway	Fairlawn	Harristown Rd	Glenn Rock	Grove St	Ridgewood	Harrison Ave	Ho-ho-hus	Franklin Tpk.	Maldwick	Chestnut St.	Allendale	Romsey	Island Rd	Spring St	Mohwah	Fox Lane	Suffern	On Going South	Total North and South	
\$17665																		2,963	Broadway	12,454	2,097	21,395	4,845	13,772	4,639	12,294	10,755	4,424	381	10,694	8,121	230	1,538	3,142	455	18,365	144,975			
\$1293																		73	Fairlawn	8,632	1,015	11,160	2,685	3,317	1,668	1,779	1,161	6,664	5,577	1,015	1,416	1,307	230	1,538	3,142	455	18,365	17,665		
\$1717																		233	Harristown Rd	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39
\$8402																		147	Glenn Rock	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39
\$2212																		147	Grove St	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39
																		147	Ridgewood	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39
																		147	Harrison Ave	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39
																		147	Ho-ho-hus	1,477	812	1,789	391	1,135	691	26	95	113	69	76	780	69	39	39	39	39	39	39	39	39

TRAFFIC RECORDER—FIG. 6—UPPER HALF OF TABLE MADE UP TO SHOW LOCI OF TRAVEL DURING 1913

cash turn-in, as the conductor does not have access to this record, but is supposed to turn in all his receipts except his own change money. The auditing department also writes in the trip number, which we designate by the time the car leaves each terminal and the number of passengers on each trip. All of these figures are then transferred to the day sheet, Fig. 2, and from the day sheet to the daily record, Fig. 4, on which the records of all conductors are shown in one summary.

One valuable feature of the Bonham traffic recorder is the facility of inspection. Fig. 5 is the slip given to the inspector, who may be a uniformed inspector or a secret service man. The printed records of interstation riding enable an inspector to check up any car through one point or different inspectors to check up the same car through different points without riding the car or otherwise showing themselves.

Since we have installed these recorders, we have obtained an increase in passenger rates of 1 cent on each zone or 5-cent ride. As we are now operating under this new schedule of fares, all the totals in the fourth column in the traffic record are corrected by simply adding 20 per cent. Later we expect to have the cash wheels changed so that the proper fare will be recorded after each registration.

RECORDS USED FOR TRAFFIC STATISTICS

From time to time we make use of these traffic records for the purpose of analyzing our interstation travel. This has been done in Fig. 6, which is the upper part of a table drafted to show the loci of travel during 1913. The number of passengers carried between the stations during the year is given on the first line in each square. The receipts are shown on the second line, and the rate of fare on the third line. The data in this table were obtained by averaging twelve weeks, one week from each month, and multiplying the result by fifty-two. Holidays were not included, the purpose of this particular table being to give average figures of the normal travel. Only about half of the table is shown in Fig. 6, as its purpose is to show the method of tabulating the results rather than the actual figures. Statistics of this kind, forming a continuous traffic count, are obviously useful in many ways. Thus, in one instance, where we were asked to put on extra service at the northerly end of the railroad, and in another, where we were asked for extra service on account of entertainments in one of the towns along the line, our records proved clearly that our regular service would carry everyone that would want to use the cars at any special time.

We also wished to know the amount of through-passenger traffic in relation to our total traffic, namely, the number of passengers and the revenue. From the record slips, we learned directly that our through passenger traffic was 42 per cent in number of passengers and 55 per cent in revenue. We also learned that during 1916 our local business paid 6.78 cents per passenger and our through traffic 12.06 cents per passenger, and that the average of all traffic was 9.06 cents per passenger. These figures indicated clearly to us the general desirability of concentrating on the promotion of through travel.

Identification hat checks are used by the conductors when they think it is necessary; otherwise no paper is used with the present system of fare collection.

New Philadelphia Lease Submitted to Councils

City Fixed Charges to Be Paid Before Dividends—No Dividend Guarantee, but Fare Determination by Commission if Rate Falls Below 4%—Board of Supervising Engineers

THE Twining rapid transit lease providing for the operation of the new city lines in Philadelphia and the lines of the Philadelphia Rapid Transit Company as a unified transportation system, was introduced into councils in the form of an ordinance on Aug. 17. The lease was approved by Mayor Smith on Aug. 13. In making an announcement to this effect, the Mayor said that a final conference had been held for several hours by Director Twining and representatives of the company, and that both city and company officials had agreed upon the terms. City Solicitor Connelly had also passed upon the lease and approved it.

BASIC PRINCIPLES UNDERLYING LEASE

- The lease is based upon the following principles:
 1. That the interest and sinking fund payments on the bonds issued by the city to pay for its transit lines must be paid out of the gross revenue of the unified system before any deductions are made for dividends to the company's stockholders.
 2. That although the city does not object to a reasonable dividend for the company's stockholders, it must make no guarantees.
 3. That the Public Service Commission is the body constituted by law to determine what are just and reasonable rates of fare. That the present rates of fare on the company's own lines should at the beginning be retained with a flat 5-cent fare on the city's lines, and free transfers between the city's lines and between the

city's lines and the company's surface lines; but that if these rates of fare should not be sufficient to enable the company to pay the city's interest and sinking fund charges and a reasonable dividend to the company's stockholders, the commission should be asked to establish just and reasonable rates of fare.

4. That the obligations of the company to furnish efficient service, not only on the city's lines but on its own lines, can best be enforced by the creation of a Board of Supervising Engineers with large powers over equipment, operation, extensions, accounting and reserve funds.

DETAILED POINTS OF PROPOSED CONTRACT

The principal provisions of the newly proposed contract between the city and the Philadelphia Rapid Transit Company follow:

a. The city is to build and mainly equip the lines that have already been authorized by Councils. The company is to supply in the main the power and transmission equipment. If the city desires, the company will also furnish tracks, third-rail, signals and rolling stock, provided it can secure the money for such equipment at not more than 6 per cent.

b. The company agrees to build all extensions of its own system recommended by the Board of Supervising Engineers and approved by the Public Service Commission.

c. Prior to the initial operation of the first section of the city's system, the company is to operate its own lines as at present, but subject to the regulatory power of the Board of Supervising Engineers.

d. The company is to pay as rental for the use of the city's lines an amount equal to the interest and sinking fund charges on the bonds issued by the city to construct the lines.

e. The following payments are to be made in the order named from the total revenue of the unified systems:

1. All expenses of operation and maintenance.
 2. Taxes of all kinds.
 3. Fixed charges and rentals of the company.
 4. Interest and sinking fund payments on securities of the company issued to obtain new capital for extensions to its own lines and equipment for the city's lines.
 5. Payments into the various reserve, depreciation and contingency funds necessary for the prudent businesslike operation of the unified system.
 6. Payments due the city under the 1907 contract.
 7. Payments into the city treasury of an amount equal to the interest and sinking fund charges on the city bonds issued to pay for the city's lines.
 8. A dividend to the stockholders of the company. As long as the present 3-cent exchange tickets are maintained, this dividend is limited to 5 per cent per annum. When exchange tickets are abolished by the company, or abolished or modified by the Public Service Commission, the company, if the gross earnings are sufficient, may pay a dividend not exceeding 6 per cent, cumulative from the date of the contract; the provisions of the 1907 contract allowing a cumulative 6 per cent dividend from Jan. 1, 1907, to date being waived.
 9. Payments to the Sinking Fund Commission established under the 1907 contract, equal in amount to 4 per cent upon such of the city's bonds as shall have been retired by the use of money previously paid into the sinking fund under Section 7, above. This item will not be payable until about thirty years hence, when the first bonds will be retired.
 10. Limited payments into an operating surplus fund.
 11. The remainder, if any, is to be divided 50 per cent to the city and 50 per cent to the company, as provided in the 1907 contract.
- The foregoing payments are to be cumulative in the order named.

f. At the beginning the fare will be 5 cents on the city's lines. On the company's lines the present fare will for the present be retained. There will be free transfers between (1) the city's lines, (2) the city's lines and the Market Street subway-elevated line, (3) the city's lines and the company's surface lines, except in what is designated the "delivery district."

g. Both parties to the contract recognize the right of the Public Service Commission to determine what is a just and reasonable rate of fare. Whenever the gross revenue for six months is not sufficient to pay all prior charges and a dividend of 4 per cent to the company, the city conceding the fairness of such a dividend, the city agrees to join in a petition to the commission for a determination of what is a proper rate of fare.

h. To regulate the service and generally supervise the operation of the unified system, a Board of Supervising Engineers will be established. The board will consist of three members, one appointed by the city, one by the company and the third jointly by the Mayor and the president of the company. The board will have the power:

1. To report to Councils on the advisability of extensions of the city's lines and extensions of the company's lines, and of its own initiative to petition the Public Service Commission to require the company to construct extensions of its own lines.
2. To supervise the plans for and the cost of transit facilities.
3. To establish rules and standards as to maintenance and service, regulate the routing of cars, establish stations and stopping points and determine the adequacy of equipment.
4. To recommend to the Public Service Commission changes in fares.
5. To decide upon the amount and classification of the depreciation and contingency reserve funds, and to act as trustee therefor.
6. To act as a board of arbitrators on any question arising between the city and the company under the contract.

i. The term of the lease will expire on July 1, 1957, which is the date fixed for the expiration of the 1907 contract.

j. As under the 1907 contract, the city may, on and after July 1, 1957, purchase all of the company's property by paying to the company the par value of its capital stock outstanding at the date of purchase. In addition to this right, between July 1, 1927, and July 1, 1957, the city may purchase the property of the company by paying a like amount, plus any shortage of dividends on the company capital stock now outstanding below 5 per cent for each year from the date of the lease to the date of purchase.

Bureau of Mines Issues Resuscitation Chart

As a part of its work in furthering the movement for accident reduction in all branches of industry the United States Bureau of Mines has issued for free distribution a chart on resuscitation from gas asphyxiation, drowning and electric shock for the purpose of inducing the adoption of the standard Schaefer or prone pressure method of artificial respiration. The chart is 11 in. x 15 in. in size, convenient for framing or use on bulletin boards. Copies of the chart may be obtained on application to the Director of the Bureau of Mines, Washington, D. C.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?

—*Pass It Along*

In This Issue: F. H. Hill Tells Why It Was Not Feasible
to Use a Central Concrete Mixing Plant in Elmira, N. Y.

A Central Concrete Mixing Plant and Why It Failed

BY FREDERIC H. HILL

General Manager Elmira Water, Light & Railroad Company,
Elmira, N. Y.

In connection with a large track and paving job which we recently had on hand, an attempt was made to mix concrete at a central plant and transport the mixture to the job, a distance of little more than $\frac{1}{2}$ mile over paved streets. The object of this plan was to minimize the labor of handling materials and also to avoid blocking the streets to the degree that is necessary when the usual methods are employed.

At our main generating station the coal is brought to the plant over a railroad trestle. The coal may be discharged from the cars either directly into a receiving hopper for distribution in the building, or through the trestle to the ground below where it is handled to and from the storage pile by means of a Brown-Hoist electric locomotive crane of 12-ton capacity and equipped with a clamshell bucket. Advantage was taken of this layout for the handling of sand and crushed stone for concrete and ballast. Arrangements were made whereby these materials were to be brought in hopper-bottom cars and discharged below the trestle where they could be reached by the crane. A Ransome motor-driven concrete mixer, having a capacity of $\frac{1}{2}$ cu. yd. to $\frac{3}{4}$ cu. yd. per batch, was mounted on an elevated platform and arranged to discharge into a receiving hopper having a capacity of about 5 cu. yd. This hopper was erected at such a height that its contents could be discharged through suitable valves into the dumping body of a motor truck. The mixer was fitted with a receiving hopper having a capacity of one batch. The equipment was conveniently arranged with the expectation that a foreman and seven men could operate the plant and mix as fast as a crew of twenty-five to thirty men with a portable mixer on the street.

Upon beginning operation difficulties were encountered which resulted in the abandonment of the scheme and a return to the use of a portable mixing plant on the street. The plans were to mix the concrete and discharge it into the hopper so that the motor truck would always find a load in readiness. It could then be quickly loaded and thereby be kept in continuous operation. It was found, however, that during the time necessary to mix 3 cu. yd. or 4 cu. yd. the first batch assumed an initial set, making it very difficult to get the material out of the hopper. The truck was loaded with considerable difficulty and sent to the street with its load. Here it was necessary to use picks in unloading. A sec-

ond trial was made by mixing and discharging directly into the truck, the interior of which had been greased. The same difficulty of unloading was encountered, only in lesser degree. Various other experiments were tried, including the use of bottom-dump wagons, adding hydrated lime to the mixture, etc., but all without success. In all cases the loads were discharged onto an asphalt pavement and shoveled into place, requiring considerable labor, and the resulting concrete was not up to requirements.

It was found that our equipment and methods lacked certain essentials which are necessary for the successful operation of a central mixing plant. The first essential is that of maximum possible speed in all operations. The hoists or elevators for handling materials must either in themselves be high-speed devices, or elevated storage bins must be provided for sand and gravel, so that low-speed machinery of large capacity can keep ahead of the mixing. We found that our mixer was operating at much too low a speed. This defect could have been remedied, but even with slow mixing the crane was unable to keep material ahead, and therefore a higher speed of mixing would not have solved the problem. The mixer should be geared to deliver a batch every one and one-half minutes. Preferably a mixer of at least 1 cu. yd. capacity should be used.

It is not practicable to store the mixture even for the brief time necessary to mix a wagon load, because it assumes an initial set almost immediately. The mixer should discharge directly into the distributing carts. Preferably these carts should have circular bottoms and be so arranged as to be completely inverted when discharging a load. Where the concrete is to be hauled a considerable distance special trucks should be provided so that about four 1-cu. yd. bodies could be transported per trip. With such an outfit loading could be done in about six minutes, and, while there would be some set before arriving at destination, the invertible feature of the bodies should permit of quick unloading. Arrangements should also be made so that loads could be discharged from the trucks directly into place, thus avoiding the necessity for rehandling.

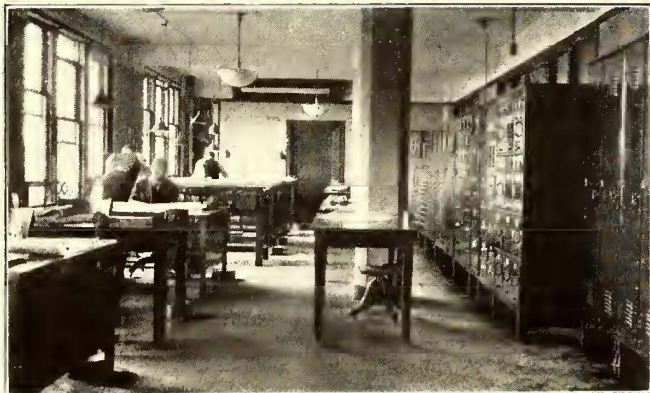
To meet all these requirements would necessitate so much special construction and equipment that a central plant does not appear attractive except for very extensive operations. We are of the opinion that for street railway track construction the portable mixer plant will as a rule work out the best. Careful study should be given to improved methods of handling the material on the street and it is possible that a portable material handling equipment in connection with the mixer could be worked out to advantage.

Applying System in the Office

Uniform Desk Arrangement and Dewey Decimal Filing System Part of Denver Tramway Efficiency Methods

Every desk in the office of the Denver Tramway Company engineering department is arranged so that there is a uniform place in each for certain things. Consequently in the absence of any man another can go to his desk and readily find any matter of company business. This applies to the chief engineer, Edward A. West, as well as to all of his assistants. He is firmly of the opinion, and the engineering department works on this basis, that no man can handle more than one subject at a time and that consequently there should be but one order of business on the desk before him at any time. This uniform arrangement of the desk and concentration upon one item at a time eliminates the frequent occurrence of a matter getting lost in "the pile," and facilitates the rapid movement of company business through the engineering department.

It thus becomes easily possible for any man to clear his desk before leaving at any time, since he has only one order of business before him and there is a place in



OLD FILES REBUILT TO UNIFORM DIMENSIONS

his desk assigned to this in case it must be held. As a result of this, every desk is entirely free of papers and the like when not actively in use.

In the chief engineer's office, where frequent reference to various maps is necessary, these are kept from cluttering the desk by having them mounted in a wing cabinet supported on one wall. The number of wings in this cabinet is governed by the number of maps which are in active use. If reference to any one of these is required it may be lifted from its support and laid on the desk for study. When returned, the cabinet is closed up, forming simply a piece of furniture with no prints or paper in evidence.

FILING SYSTEM EMPLOYED

Working along the line of systematization of all the engineering department's business, all individual files of the department which were previously distributed among the several division heads and the chief engineer are now concentrated in one general file which has been completely worked over and all filing done in accordance with the Dewey decimal system. The files previously in use were of various sizes and styles and constructed of both wood and steel. As the company did not care to purchase a complete new set of filing

equipment, the wooden files were rebuilt to conform in general dimensions with the modern steel files and all the cabinets were grouped together and painted a uniform green color, giving the appearance of a system purchased all at one time and originally built to standard dimensions. A view of the filing cabinets as they appear now is shown herewith. All filing in the department is done by a single clerk, who is alone responsible for the filing of all engineering department matter.

Paint and Varnish versus Enamel

Two Years' Experience with Eight Cars per Week Through the Paint Shop Favors Enamel

BY G. J. SMITH

Superintendent of Rolling Stock and Shops, Kansas City (Mo.)
Railways

At the time the receivers for this company were discharged its cars had been painted a dark Pullman green for a period of about sixteen years. The interior, including the headlining, had been finished in natural wood. The new management decided to change the color standard from a dark to a light color. The idea in mind was that a car of light color could be seen for a greater distance on the street, and also that the light color would make a better appearance and would cause the improvements to be noticed by the public. The new colors selected were used as follows:

The body below the belt rail and including the sashes was painted a deep orange; the side posts, letterboard and headlining, cream; the sash, a deep orange, the same as the body, and there was a small amount of Tuscan red trimming. The original plan was to repaint to the light color only such cars as required complete painting, and on cars which were in such physical condition as would permit of revarnishing, the plan was not to change the color until the cars came in for complete repainting. This plan would have required approximately seven years in which to change the color of all the cars.

At about this period we had been experimenting more or less with air-drying enamels, and as a further study of their use we took a car with the surface in good condition, except for the varnish, and instead of revarnishing the surface we decided to sandpaper it, to touch up such bad spots as had been caused by contact with other objects, and to give the car two coats of enamel directly over the old green surface. After fourteen months this car was brought to the shops and given a thorough cleaning and inspection. In physical condition and appearance it was found to be superior to a car that had been revarnished for the same period of time.

On the strength of this finding we decided to discontinue revarnishing over the dark colors and to change all the cars directly to the light color at once by enameling directly over the old green surface. The result has been entirely satisfactory. Cars which have now been in service two years or more require no additional painting. It is our judgment at present that cars renewed by this process will not require reshoppping for painting in a shorter period of time than two and one-half years.

The cost of enameling over the old paint with two coats of enamel is approximately \$2.50 more than the cost of revarnishing. This extra cost is made up of approximately \$1 for labor and \$1.50 for material.

Suggested Power-Saving Test

An Inexpensive Method of Conducting Tests to Determine Actual and Possible Energy Saving in Car Operation

THE engineers of the Sangamo Electric Company have worked out the following plan for securing reliable data regarding power-consumption economies, and they believe that this method will give more reliable results than would less systematic tests extending over greater periods. For test purposes it is recommended that a line representative of the average traffic conditions for the property, and normally using not less than twelve or fifteen regular cars, be selected.

GENERAL PRINCIPLES

On four of the regular cars watt-hour meters are installed in plain view of the motorman, and on four others meters are installed out of sight of the motorman. The first four are designed as "test" meters, and the second four as "reference" meters. The test meters are used to determine the decrease in energy consumption per car-mile due to instruction in efficient operation.

The reference meters are used as an index of traffic conditions and to determine the average energy consumption that would have occurred on the "test-metered" cars if instruction in efficient operation had not been given.

In order to eliminate the variable human element in operation, all motormen are rotated regularly through the "reference-metered" cars so that the measurements represent the actual average operating conditions for the line. Inasmuch as the men do not know that their

METER CARD			
Line <i>Main St</i>			
Motorman <i>J. Smith</i>			
Car No. <i>531</i> Date <i>5/10/17</i>			
Time	Meter Rdg.	Diff.	Remarks
3:30 AM	0401	27	
2:30 AM	0374	35	
1:30 AM	0339	36	
12:30 AM	0304	32	
11:30 AM	0277	Start	
			<i>Men Relief</i>
10:30 AM	0237	35	
9:30 AM	0202	36	
8:30 AM	0166	42	<i>Heavy & more at R. D.</i>
7:30 AM	0124	32	
6:30 AM	0092	29	
5:30 AM	0063	Start	
<i>(Not to be Filled in by Men)</i>			
Mileage	<i>29.5</i>	<i>3.31</i>	
	Kw-hr.	Kw-hr./Gm.	

SUGGESTED FORM OF METER CARD

operation is being checked, because the meters are hidden and read secretly, it is assumed that they will operate at present efficiency on these reference-metered cars, and will not practice economical operation. Any increase or decrease in energy consumption per car-mile for the reference-metered cars will, therefore, represent the increase or decrease in severity of traffic conditions, and can be used as a base from which to determine the actual saving obtained on the test-metered cars.

In the test it is desirable to use eight cars of the same type and equipment, if possible, but otherwise each individual reference-metered car should be compared with a test-metered car of the same type.

The test is divided into three periods, two of three days' duration each and one of four days' duration. In order that the initial test figures may not be determined under unusually severe conditions, it is advisable that the test be started on a Sunday and continued during the ten following days. The eight cars should be run on the same line, and, if possible, should average twelve or eighteen hours per day.

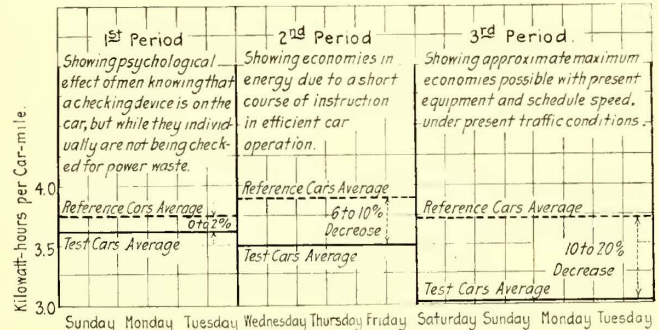
The first test is to determine the effect upon the men

of seeing a checking device on the car, but knowing that they individually are not being checked for energy waste. This is accomplished as follows: All of the men are rotated through both test and reference cars, each man getting at least one-half day each on a test car and on a reference car. The reference meters are read secretly every night at the carhouse. The mileage and energy consumption for the period are totaled and the average consumption per car-mile for the reference cars is determined.

The test cars are run through this first period with the meter dials masked. They are read nightly at the carhouse and the average energy consumption per car-mile for the period is determined as with the reference meters. The per cent difference between the test meters and the reference meters represents the psychological effect sought. Tests already made show that this psychological saving varies from almost insignificant figures to 2 per cent or 3 per cent.

DETERMINING THE RESULTS OF INSTRUCTION

The purpose of the second period of the test is to show the effect of a short course of instruction in efficient car operation. All of the men are rotated through both test and reference cars, each man getting at least



GRAPHICAL REPRESENTATION OF RESULTS OF POWER-SAVING TEST WITH WATT-HOUR METERS

a half day on each type of car. The reference meters are read, and the average energy consumption per car-mile for the period is determined as before. The masks are removed from the dials of the test meters, and the motorman reads the meters at the end of each round trip, putting down the results on a card like that reproduced herewith. These cards are handed in daily. The energy consumption per car-mile for the test cars is figured from these daily meter cards.

The difference between the results with the two types of cars represents the economies resulting from the instruction. Practice has shown that this saving varies from 6 to 10 per cent.

It should be noted that while the general average of all readings is reliable, too much weight must not be attached to the daily or trip energy readings of individual motormen, as during this short period they will have encountered different traffic conditions.

MAXIMUM ECONOMY POSSIBLE DUE TO INSTRUCTION

The third test period is utilized to determine the maximum economy possible through instruction in efficient operation with present equipment and scheduled speeds, and under present traffic conditions. All of the men are rotated through the reference cars, but only four or six picked men are used to operate the test cars

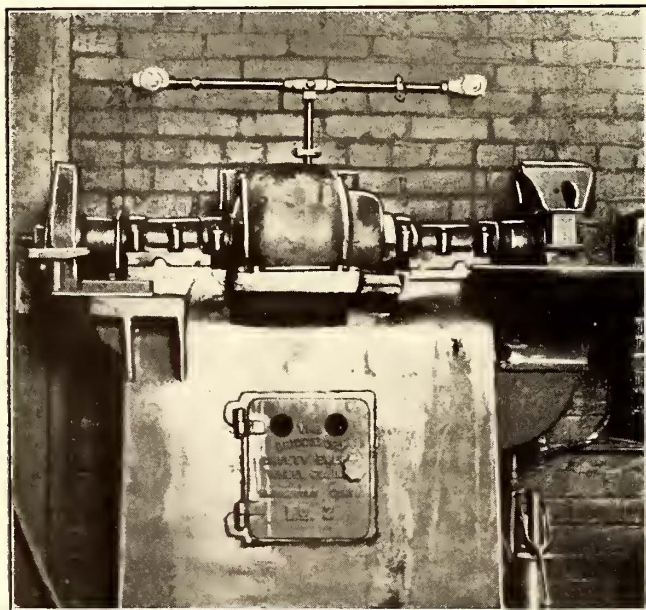
during this period. Of these, two or three are selected as good operators, while the others are of middling operating efficiency. These men are picked from personal observation rather than from records made with the meters. They are given thorough instruction, and operate each a test car at least two full days. They read the meters at the end of each trip and turn in daily meter cards.

The energy calculations are made for the reference meters as in the preceding two periods, and for the test meters as in the second period. The difference represents the maximum economy that can be expected under existing conditions, and experience has shown that this will amount to from 10 per cent to 20 per cent, depending upon the actual "slack" in the line.

A diagram has been reproduced to show average test results for the three periods. It will be noted that there is an increase in energy per car-mile for the reference cars through the second period, and a decrease in the third period. Such variations are due to varying demands on the service on different days. However, as both test cars and reference cars operate under these same varying conditions, this error is eliminated, and a decrease in energy consumption can be attributed solely to instruction and to the daily checking of the individual man's energy consumption.

Safety Lights Installed Over Grinding Machine

In the shops of the overhead department of the Cleveland Railway, a double-wheel, motor-driven grinder is installed in a room which is rather dark. To eliminate the possibility of anyone touching the wheels while the grinder is running, two red lights were installed above the grinder and connected in the motor-control circuit so that they would be lighted and, therefore, give warning whenever the machine was running. It is impossible for the motor to be running without these lights being turned on. Illumination for working with the machine is provided when needed by a lamp which hangs directly over the machine, the two warning lights being of very small wattage.



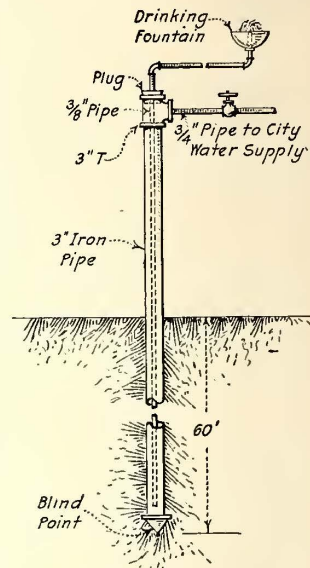
RED LIGHTS WARN OF DANGER WHEN GRINDER IS RUNNING

Shop's Drinking Water Problem Solved

BY T. C. RODERICK

Electrical Engineer Grand Rapids (Mich.) Railway

After we had found it necessary to issue an order against the shop men drinking water from a well near the shop on account of the presence of colon germs, it became necessary to provide them with a satisfactory substitute. The first attempt was a scheme for icing the city water which, aside from its temperature, is satisfactory owing to its treatment at a new filtration plant. The men complained, however, that this water was too cold. An attempt to moderate the degree of icing also proved unsuccessful, for the water was then too warm. Realizing that spring water or well water which has the temperature of the ground from which it is drawn is at the best temperature for human consumption, we devised the following scheme which has proved eminently satisfactory for supplying water free from germs at the ground temperature.



A 3-in. iron pipe with a blind point at one end was driven 60 ft. in the ground. At the top a T-fitting was installed and into this a $\frac{3}{4}$ -in. connection to the city water supply was tapped. A $\frac{3}{8}$ -in. pipe extending to the bottom of the 3-in. pipe was then inserted and supported from the plug at the top end of the T-fitting. This small pipe was connected to the drinking fountain a few feet away and inside the shop. Through these connections, the city water pressure keeps the 3-in. pipe filled and forces the water up through the small pipe inside, the larger pipe thus acting as a storage well for the city water. As the water is drawn off at the drinking fountain, it is taken from the bottom of this well, 60 ft. in the ground, and it has the temperature of the sand and gravel and cold water surrounding the 3-in. pipe.

Tests have been made showing that the temperature of the city water as it entered the pipe was 72 deg. while the temperature of that drawn out at the drinking fountain was 52 deg. On an extremely hot day recently, after the drinking fountain had been used heavily all the forenoon by trainmen and laborers as well as by the shop men, a test was made which showed the temperature of the water entering the pipe to be 80 deg., while that which was drawn at the drinking fountain was 56 deg.

The Bay State Street Railway, Boston, Mass., estimates for the year ending June 30, 1918, an expenditure for coal of \$1,512,000. This includes 35,000 tons at \$7.50 per ton and 125,000 at \$10 per ton. The company has paid the following prices for coal during the past four years: 1914, \$3.50; 1915, \$3.55; 1916, \$3.80; 1917, \$4.55.

Cost Data on Special Work Renewals—II

By M. BERNARD

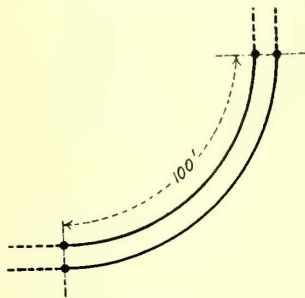
Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

This is the second plate of the series of Cost Data on Special Work renewals. An editorial on the series appears on page 256 of this issue. The first plate was published in the issue for July 21, page 108.

Fig. 3—Single Track Plain Curve (90 Deg.)

Length—100 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Sheet asphalt



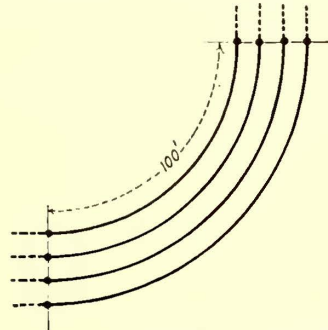
	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$143.00	\$175.00	\$200.00
Handling	80.00	95.00	110.00
Miscellaneous	30.00	35.00	45.00
Total (except materials) .	\$253.00	\$305.00	\$355.00
Cost per single track foot. .	2.53	3.05	3.55

Cost of replacement of sheet asphalt not included.

Fig. 4—Double Track Plain Curve (90 Deg.)

Length—200 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—7-in. girder rail—5-in. granite on concrete
Pavement outside of track—Sheet asphalt



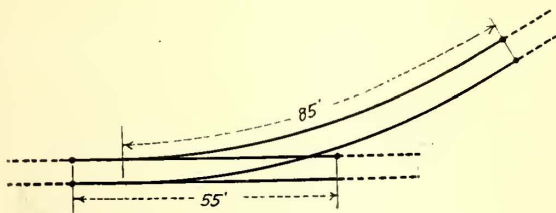
	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$295.00	\$370.00	\$415.00
Handling	165.00	200.00	230.00
Miscellaneous	65.00	75.00	90.00
Total (except materials) .	\$525.00	\$645.00	\$735.00
Cost per single track foot. .	2.63	3.23	3.68

Cost of replacement of sheet asphalt not included.

Fig. 5—Single Track Branch-off (30 Deg.)

Length—140 ft. single track

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

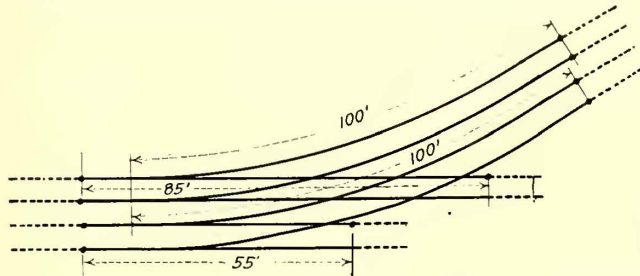


	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$240.00	\$290.00	\$350.00
Handling	70.00	80.00	90.00
Miscellaneous	35.00	40.00	45.00
Total (except materials) .	\$345.00	\$410.00	\$485.00
Cost per single track foot. .	2.47	2.93	3.46

Fig. 6—Double Track Branch-off (30 Deg.)

Length—340 ft. single track

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



	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$610.00	\$715.00	\$855.00
Handling	185.00	205.00	240.00
Miscellaneous	90.00	105.00	120.00
Total (except materials) .	\$885.00	\$1,025.00	\$1,215.00
Cost per single track foot. .	2.60	3.02	3.57

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation

is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Storage Batteries Used for Lighting Manholes

In underground work, difficulty is necessarily experienced because of the lack of light. This is particularly true of manhole work where the only natural light obtainable comes through the entrance to the manhole from the street, and the limited amount of space is such that practically in every position a man is bound to



PORTABLE OUTFIT FOR LIGHTING MANHOLES

obstruct his own light. Because of this fact a good electric light is essential and a portable light is often the most practical.

The electric portable lighting outfit shown in the illustration has been developed for this purpose. The set includes an Edison storage battery of five cells and two guarded 12-cp. lamps with reflectors and 11-ft. leads. One of these lamps can be used constantly for twenty hours on a completely charged battery and both of them will burn for ten hours.

The Edison storage battery is particularly adapted to this service because it can be allowed to stand idle indefinitely in any condition of charge or discharge without injury, and without care or attention. The complete outfit weighs 40 lb. The ampere-hour capacity is 37.5, and the normal charging rate for seven hours is 7.5 amp. at 9 volts.

Overhead Men Helped Sale

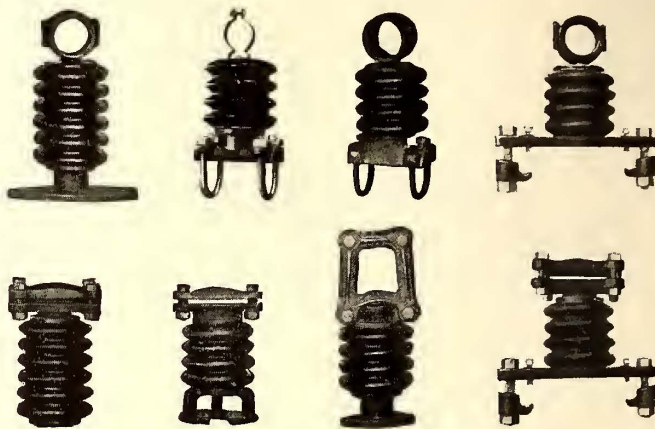
The accompanying engraving shows how the overhead men of the Wichita Railroad & Light Company, Wichita, Kan., "did their bit" by erecting display advertisements of the Liberty bonds, during the sale last June.



NEW USE FOR TROUBLE WAGON IN WICHITA, KAN.

Busbar Supports Having Interchangeable Features

Busbar supports which can be quickly changed into the different types required to meet the local conditions which arise during installation are shown in the accompanying illustration. These supports have been developed by the Delta-Star Electric Company, Chicago,



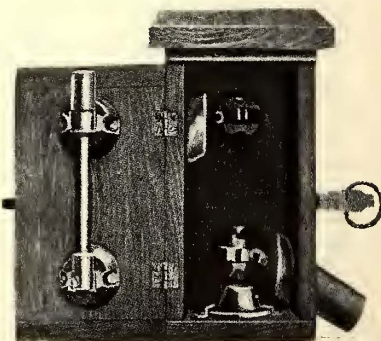
DIFFERENT TYPES OF ADJUSTABLE BUSBAR SUPPORTS

Ill., and since the parts are interchangeable and adjustable and it is possible to make such alterations as changing a flat base mounting to a pipe frame mounting. It is also a simple matter to accommodate a change in the size of busbars by removing the original fitting and installing a new one of a different type or size.

Outdoor Fuse Box for Protection of Distributing Transformers

For housing the fuses which protect outdoor distributing transformers, a fuse box is made which embodies several important safety features. As will be seen from the illustration complete separation of the part to be handled from all live contacts is accomplished automatically by opening the door.

The fuse tube is open at the bottom and is provided with a closed expulsion chamber at the top. Upon the blowing of the fuse the gases are expelled from the bottom of the tube through a porcelain bushing in the bottom of the box. The gases expelled from the fuse tube puncture a piece of paper clamped under the box. This puncture can be seen by the inspector from the ground, and there is no necessity for his climbing the pole. No tools other than a screwdriver are necessary for the installation of boxes. They are supported by a strap hanger-iron screw to the crossarm, and the line lead and transformer lead enter the fuse box through extra heavy bushings in the side of the box. The complete outfit is made by the Westinghouse Electric & Manufacturing Company.



SAFETY FUSE BOX FOR DISTRIBUTING TRANSFORMERS

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Strike Declared in San Francisco

Men Walk Out Without Presenting Demands—Discontent Spread by New Men—City to Parallel Market Street Tracks

On Aug. 11 about 100 platform men of the United Railroads of San Francisco went out on strike, no cause being stated. Many of them abandoned their cars on the street. More men continued to leave their posts until by nightfall on Aug. 14 nearly all the lines of the system were seriously crippled, some being discontinued altogether. The strikers asserted that they had enrolled 1500 out of the total of 1850 platform men. A parade of strikers took place, as well as various other demonstrations, such as derailling cars and urging men to quit their posts, but the cases of violence or serious damage have been few. The company has been breaking in about 600 new men to replace those that will be lost by draft, and it is believed the discontent was begun and spread by these new men.

The Auto-Bus Operators' Union is assisting the strikers. The secretary of that body announced his intention to give all former platform men who could drive automobiles an opportunity to go into business operating jitneys, while the others would be offered a course of intensive training. His boast was that the present total of 500 jitneys could be doubled in forty-eight hours and increased to 2000 within a short time. In reply to this the Police Commission has stated that only 130 more buses could obtain licenses.

Up to the night of Aug. 14 no grievances had been presented, nor had the company been informed as to what the strikers were seeking. They stated, however, they would soon petition to have the working day reduced from ten hours to eight hours, and the pay raised to \$3.50 a day, with time and a half for overtime. President Lilienthal, in an announcement to the public, expressed regret for the inconvenience caused, pointed out that in four years wages had been voluntarily raised three times, and cited the efforts the company had made in the form of insurance, personal loans and other fair and generous dealings with the men. He said in part:

"I know that those of our men recently employed came under certain outside influences and that at the present time such defection as is taking place is the result of physical intimidation. We must, of course, depend upon the public officers to preserve peace. But even if they do, the fear of violence, especially when applied to men of families, tends to frighten them off the cars." President Lilienthal also said that the men on strike were no longer in the employ of the company, and that they had left the service by what would seem to be their own voluntary act. The recent scale of voluntary wage increase was published in the ELECTRIC RAILWAY JOURNAL of July 21, page 117.

CITY TO COMPETE ON MARKET STREET

The Board of Supervisors on Aug. 13 voted to lay municipal tracks on Market Street, paralleling the United Railroads' tracks now in service. It was decided to give the municipal cars the exclusive right to operate through the Twin Peaks tunnel. Construction is to be commenced as soon as possible, and municipal cars are to be operating from the ferry through the tunnel by the first of next year. It is pointed out that the most profitable franchises of the United Railroads have but twelve years to run, and that the city will lay plans to develop its system so as to be in a position to take over the private lines advantageously at that time. The compromise plan of the United Railroads for handling traffic on Market Street and through the tunnel, which was turned down by the city, was noted in the issues of July 14 and Aug. 11.

Municipal Ownership Propaganda in Toledo

Plans are being perfected by the Central Labor Union and the Socialists at Toledo, Ohio, for a strong campaign in behalf of the proposed charter amendment providing for municipally-owned street railways. This will be submitted to the voters for approval at the primary election on Sept. 11. The campaign is to be started three weeks before the primaries, according to present plans.

The amendment would give power to the city to issue negotiable bonds and pledge the general credit of the city for the purchase of any public utility. In its terms it is general, but its specific purpose is to purchase the railway property of the Toledo Railways & Light Company. Should the amendment be approved, voters will be asked to authorize the city to issue \$3,000,000 in bonds at the November election as the initial payment for the property. Half of this amount would stand against the credit of the city and the remainder would be a lien against the property.

In the event that both the charter amendment and the bond issue were approved, an expert would be employed to make a valuation of the property. The city's budget contains an item of \$17,000 to pay an expert for this work.

Director of Law Harry Comminger, when asked in regard to this matter, expressed doubt as to whether such an amendment as this would be constitutional, although he said he had not made an investigation. President Johnson Thurston of the Street Railway Commission declined to express an opinion as to the probable effect of the municipal ownership program on the community plan which has been worked out by the commission and is now in the hands of Henry L. Doherty, chairman of the board of directors.

Strike Settled in Butte

A strike which was begun on the lines of the Butte (Mont.) Electric Railway on Aug. 3 tied up all traffic from that date to the evening of Aug. 9. The company made no effort to operate cars. Jitneys and vehicles of all kinds were pressed into service.

The men insisted that the company must accept their terms as to increased wages without compromise, and the company demanded that the increased wage scale be based upon the copper market. The company's counter proposition to the men allowed 45 cents an hour for first-year men; 50 cents an hour for second, third, fourth and fifth year, and 53½ cents after five years of service, with time and a half for overtime after twelve hours, based on the price of copper at 20 cents a pound and over. An amount of 2½ cents an hour would be deducted when copper was below 20 cents; 5 cents when copper was below 18 cents, and an amount sufficient to bring back the old scale when copper was below 15 cents. The union demanded the elimination of the five-year clause, with 53½ cents an hour for the first year and 56¼ cents an hour for the second year and after, irrespective of the price of copper, with time and a half for work over ten hours.

The strike was settled at a conference on Aug. 8 between officials of the railway and its employees in the office of Mayor W. H. Maloney. Car service was resumed at 6 p. m. on Aug. 9. The conference agreed on a scale of wages of 47½ cents, 50 cents and 53½ cents an hour for men whose employment extended over a period of one, two and more years. The agreement also provides for time and a half for all work over eleven hours. This is a flat scale of wages, fixed independently of the fluctuations of the copper market, in accordance with the men's demands. The men will resume their old numbers and priority.

B. R. T. Must Obey Order

Supreme Court Justice Directs Company to Put 250 New Cars in Service—Company Seeks Injunction

Under an opinion given on Aug. 12 by Supreme Court Justice Samuel H. Ordway, the Brooklyn (N. Y.) Rapid Transit Company must obey the order of the Public Service Commission to put 250 new cars on its surface lines. Previous references to this case were made in the *ELECTRIC RAILWAY JOURNAL* of July 14 and July 28. The order of the commission was entered on Feb. 8.

Commissioner Travis H. Whitney says that the present decision will have a far-reaching effect in strengthening the powers of the commission. He is quoted as follows:

"The commission was convinced that the company should buy cars and so ordered. After the war situation developed critically, the commission pointed out in an opinion that the company might reapply, stating any new facts resulting from war conditions. Instead of doing so, the company obtained an *ex parte* writ of certiorari which held up the order. The Supreme Court now says that the company must come to the commission if the situation has changed."

The Brooklyn Rapid Transit Company on Aug. 14 notified the commission that it would apply to the United States District Court in Brooklyn for a federal injunction restraining the commission's order. In regard to this William L. Ransom, chief counsel for the commission, said:

"The commission has repeatedly made known its willingness to deal fairly with the company on the basis of any new facts disclosed by due application. The company does not want that. It has made no application based on any conditions due to the war. It is, rather, bent on further delay."

At a hearing before Judge Veeder in the Brooklyn Federal Court on the day set counsel for the company, in asking for a temporary restraining order, asserted that they had been denied a constitutional right of review based on "primitive justice." They stated that the commission had no right to order the purchase of cars, because no evidence of the need of the cars had been submitted, and that the Legislature had unconstitutionally withheld the right of review in giving power to the commission to enforce decisions affecting the liberty and property of a private or corporate person.

Judge Veeder declined to issue a temporary order, but he announced that he would order the case for Aug. 21 before a specially constituted court in Brooklyn, consisting of one United States Circuit Court judge and two District Court judges. At this time the argument of the company for an injunction will be heard.

This court, the first of its kind in the State, is to be organized under the federal statute which provides for two District Court judges and one Circuit Court judge to hear any application for an injunction against a State commission or against the Interstate Commerce Commission.

Buffalo Arbitration Board Reports

The conductor whose discharge on June 1 brought about threat of a strike by the union men on the Buffalo, N. Y., lines of the International Railway, has been reinstated by the board of arbitration. The board's decision said that the conductor did violate the three-year agreement between the company and its men and the rules of the company by leaving his car without relief. Owing, however, to his previous good record during eight years of service, the board decided that he should be reinstated to his former position with full seniority rights. The threatened strike was noted in the *ELECTRIC RAILWAY JOURNAL* of July 28, and a résumé of the testimony before the arbitration board was given in the issue of Aug. 4.

Because of the success in the above-described case the union immediately demanded the reinstatement of another conductor who was discharged under similar circumstances. The case was referred to the same board of arbitration. After considering the case the board denied the union's request. The decision, which was unanimous, stated that this employee had repeatedly violated not only the agreement but also the rules to such an extent that nothing should be

done except to sustain the company's action in dismissing him from the service.

The members of the board of arbitration were Bert L. Jones, vice-president and general manager Niagara Gorge Railway, Buffalo, N. Y., for the company; John B. Kolb, a motorman, for the union, and Frank X. Schwab, a wholesale liquor dealer, as third member of the board.

Kansas City Strike Ends

Company Refuses to Agree to Closed Shop—Federal Courts Issued Restraining Orders

The strike situation on the lines of the Kansas City (Mo.) Railways was cleared up on Thursday, Aug. 16, after a suspension of service since Wednesday, Aug. 8. The beginning of the strike, instigated by former employees and having as its declared object the adoption of a "closed shop," was described in last week's issue.

On Thursday, Aug. 16, a committee of business men passed a proposal and secured a vote of acceptance from the strikers. The company signed it and announced that cars would be run Friday morning. As will be noticed later, the proposal was practically the same as that made by the company on the Sunday before and rejected by the men. The settlement provides for the return of men out since Aug. 1, accredited committees from the various classes of employees, arbitration and no discrimination against union men. The strikers, it is understood, lost their fight for a "closed shop." The company's proposal for individual contracts was refused.

The public in Kansas City varied with regard to supporting one side or the other in the strike. The local unions were very radical in their support of the strikers. The press in general played into the hands of the strikers by exploiting the complaints against wages and conditions, playing up extraneous matters and putting the soft pedal on the demand for complete unionization. This misled a large portion of the public. Many, however, did not at all sympathize with the strikers. The business men tried to be neutral, although they almost universally favored the company's side of the case.

PROGRESS OF THE STRIKE

Several hundred strikebreakers were brought to Kansas City on Saturday morning, Aug. 12, and four cars containing part of these were attacked by strike sympathizers, five of the latter and bystanders being injured. Early Saturday afternoon the mob attacked trucks bearing dishes and food for the strikebreakers and prevented food from reaching the men. In the evening the mob seized and burned a car that had stood under brakes near the carhouse. The mob then tried to set fire to the carhouse, but the fire department extinguished the blaze. About 10.30 p. m., after continuous rioting, the crowd prevailed on the strikebreakers to go to the Union Station, where they were loaded on cars and taken outside the city.

On Sunday night the company, after several conferences with city officials and strike leaders, proposed a settlement involving contracts of employment running to Sept. 1, 1921. The company would treat with duly accredited committees chosen by each class of employees, any non-adjustable case to be arbitrated. It was agreed that all employees who quit work on or subsequent to Aug. 7 should return to work, and that the men dismissed since Aug. 1 should be reinstated. The company, however, would not run a "closed shop," although union members would not be the object of discrimination. These proposals, it is said, were voted down by the men on the advice of the union leaders.

On Monday, Aug. 13, the strikers adopted the following resolution:

"The members of the new carmen's union, through their accredited representatives, notify the representatives of the street car company that we insist that upon a settlement of the difficulties and upon our return to work every employee who may now or hereafter be engaged by the Kansas City Railways shall become a member of the Amalgamated Association of Street & Electric Railway Employees of America, within thirty days."

Although the company had announced that cars would be operated on Monday, no effort was made to run them. The company was said to have more than 600 trainmen under pay at various carhouses, to work when the time came. These were trainmen who had remained loyal to the company, and trainmen formerly employed by this and other companies. The company issued a statement that in view of the disgraceful occurrences on Saturday night there would be no cars operated until police protection was furnished.

RESTRAINING ORDERS GRANTED AGAINST STRIKERS

A restraining order against striking employees, city officials and any and all other agencies, preventing them from interfering with the company in the operation of its cars and the control of its Missouri property, was granted by Judge Martin J. Wade of the Federal Court on Tuesday, Aug. 14. A similar order was issued by Judge Woodrough for the Kansas property. These temporary injunctions were secured in time to prevent the throwing of the company into receivership through a State court.

This receivership move came about through the action of the City Council in appointing on Monday night a committee with representatives from both houses. The first act of this committee on Tuesday was to file an application for receivership against the protest of a committee of business men. The officials of the company were ordered to appear at 2 p. m. Before then, however, the federal restraining orders had been granted, and the hour was changed until Friday morning, Aug. 17, after the hearings on the orders.

Both houses of the City Council passed on Monday night an ordinance providing for licensing conductors and motormen, the fee, \$1, to be paid once, license to be indeterminate as long as the trainman was employed in Kansas City. The ordinance has yet to be signed by the Mayor. Applicants would have to be twenty-one years of age, with at least twenty days' experience in operating in Kansas City. Special licenses were provided for in the case of new men, while receiving training for twenty days under licensed motormen and conductors. Fines of \$100 to \$500 were set for violations.

Tangled Situation in East Cleveland

In a referendum vote in East Cleveland on July 31, the franchise granted the Cleveland Railway by the City Council some time ago was defeated by a majority of 87. The vote was very small, and apparently there was little interest in the matter. Street Railway Commissioner Sanders said that the town had thrown away the best franchise that will ever be offered it. The present franchise on the Euclid Avenue line has three years to run, but the Hayden Avenue franchise expired some time ago.

The defeat of the franchise has caused a renewal of bickerings between the city and East Cleveland over the question of fares and service until a satisfactory arrangement can be made. Street Railway Commissioner Sanders, declaring that he is not taking steps to get even, stated that the suburb will now receive what is justly due it in service as defined in its franchise—one car every eight minutes, with a shuttle service on Hayden Avenue, where the franchise has expired. The fare on this short stretch of track between Euclid and St. Clair Avenues, he said, will be 3 cents, without transfers.

President J. J. Stanley of the company has made an announcement that work on relaying the tracks on Euclid Avenue will be begun within a few days and that the space between the tracks will be paved at the same time. This announcement was brought out by a statement of W. H. Kelly, president of the East Cleveland Chamber of Commerce, that the company would have to prove to the people that its contracts amount to something more than scraps of paper before they will approve any new ordinance. While the city paved its portion of Euclid Avenue last year, the company had not yet touched its space when the vote on the new franchise was recently taken.

In regard to the matter, President Stanley is quoted as follows:

"The railway has been generous to East Cleveland car riders by giving them better service than is required by the

existing Euclid Avenue franchise. Under this contract the company is required to give but ten-minute service. Instead, cars operate over the line every one and a half minutes in rush hours, and a three-minute schedule is maintained from Windemere west and a six-minute service from Windemere east outside of the rush hours. The next ordinance which is accepted by the Cleveland Railway will not be on the terms offered in the rejected measure. There is no reason why East Cleveland people should ride any cheaper than citizens of other suburbs."

East Cleveland officials assert that the old franchise provides for an eight-minute service on Euclid Avenue and that the cars must loop past the Union Station in the city. This would disrupt the plan of turning all cars at the public square. It is said that if the company is going to enforce one part of the contract, the East Cleveland officials will probably be able to compel it to observe all the terms of the contract. At least, this is the threat of Mayor Minshall. The East Cleveland officials had been willing to suspend part of the contract so that the company's plan of routing might be carried out.

Peace Agreement at Lima

The strike among employees of the Ohio Electric Railway at Lima, Ohio, which was begun on July 11, was settled on Aug. 13 by agreement between the company and the men. The settlement, it is said, was hastened by the determination of the authorities to prevent a recurrence of the disorder that accompanied the attempt to resume service on Aug. 9. The agreement provides for changes in wages and working conditions, but not for union recognition.

The long strike trouble, as was noted briefly in last week's issue, developed into a riot on the evening of Aug. 9 and resulted in the serious injury of several persons. Eight men are now in jail on charges in connection with the riot.

After this Governor Cox notified the company that no cars should be operated in Lima until further notice. This became necessary because of the State's inability to give the local officials aid from the national guard, on account of its mobilization for federal purposes. E. W. Hines, a banker who was appointed director of safety on Aug. 9 to fill the unexpired term of Col. E. A. Gale, now in federal service, increased the police force and notified strikers and sympathizers against interfering with the operation of the cars. He called attention to the statute which makes such interference a penitentiary offense.

Aug. 13 was fixed as the day to resume operation, and the police department was to endeavor to prevent all trouble. Instead of another outbreak on this date, as was really expected by the city officials, a settlement was reached between the striking motormen and conductors and the Ohio Electric Railway. Both sides made concessions, but the company refused to recognize the union. As far as possible it was agreed to abolish split runs, and cars will be operated in such a manner as to give the men nine and one-half hours' work for ten hours' pay. The wage scale provides 25 cents an hour for the first year, and an increase of 1 cent an hour for each additional year's experience up to five years. Then the men are to receive 30 cents and the same thereafter.

Illinois Traction Increases Wages of Section Men.—The Illinois Traction System, Peoria, Ill., has granted an increase of 25 cents a day to its section men, the wage now being \$2.50 per day. The increase affects the entire system.

Flag Printed on Stationery.—The Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., is printing on its stationery a colored representation of the American flag with the following words: "Our flag; a symbol of freedom, opportunity and civilization; long may it wave."

New Wage Scale for Charlotte.—Effective Aug. 1, the Southern Public Utilities Company, Charlotte, N. C., established a new wage scale for platform men, increasing the previous basis to the extent of 5.5 per cent. This is the second recent raise of this amount, a similar increase in the rate of pay for the motormen and conductors having been announced last fall.

Springfield (Mo.) Men Reopen Strike.—It is reported that a settlement of the three-week strike among employees of the Springfield (Mo.) Consolidated Railway was reached on Aug. 11, with an agreement regarding wages, retention of seniority rights and permissible union membership without full union recognition. The next day, it is said, the men repudiated their agreement and went out on strike again for full recognition of the union.

Trenton Asks for Electrolysis Agreement.—The city commission of Trenton, N. J., has asked the Trenton & Mercer County Traction Corporation, the New Jersey & Pennsylvania Traction Company and the Public Service Railway to enter into an agreement with the city for the mitigation of electrolysis evils in Trenton. The city asserts that it is put to considerable expense for replacing water services. One water main lasted only eight weeks.

To Arbitrate Key Route Labor Trouble.—Employees of the San Francisco-Oakland Terminal Railways on Aug. 6 voted, by a large majority, to strike unless the company granted them a wage increase. The grievance committee of the carmen's union, representing the employees, met with company officials on Aug. 8 and listened to a compromise offer made by the company. After a series of meetings both sides agreed to submit the matter to arbitration, and the procedure is now under way.

Labor Men Oppose St. Louis Settlement.—The proposed United Railways compromise, in which the city of St. Louis would become a partner with the electric railway corporation, was strongly condemned in a report made on Aug. 13 to the Central Trades & Labor Union by a specially appointed committee. The committee alleged that the plan would allow the company to dodge taxes and obtain franchises free, and recommended that the central trades oppose the measure that is now being considered by the Board of Aldermen.

Cincinnati Company Carries Grade Crossing Case to Highest Court.—An appeal to the United States Supreme Court will be taken by the Cincinnati Traction Company and the Cincinnati Street Railway in their case against the city of Cincinnati in relation to the Ludlow Avenue grade crossing elimination. The Ohio Supreme Court recently rendered a decision in which the city received a judgment for \$61,220. The companies claim that the State law and the municipal ordinance providing for grade crossing eliminations are unconstitutional.

Fare Reduction Refused to Outlying Annexed Village.—In its desire for territory and increased population, Cleveland some years ago took in Euclid Village and the territory between the eastern limits of East Cleveland and the village, a stretch of several miles. The Cleveland Railway had been charging a fare of 8 cents to that territory and collecting 1 cent for transfers. Recently the City Council passed an ordinance fixing the fare at 6 cents, with 1 cent for transfers, but the company has refused to accept it. It holds that 6 cents is not sufficient to pay the cost of operation.

Wages Increased at Bangor.—A voluntary increase in the wages of conductors and motormen was announced on Aug. 14 by the Bangor Railway & Electric Company, Bangor, Me. By the new scale first and second-year men are to be paid 29 cents an hour, third and fourth-year men 30 cents, with 31 cents the fifth year and afterwards. The increase amounts to 4 cents an hour for all grades and gives the men 7.5 cents an hour advance over the rates of Jan. 1, 1917. Car house and construction men also receive an increase. The road is operated by non-union labor. The payroll increase this year will be about \$25,000.

Court Rules Against State Forcing Men to Work.—The State case, brought in the name of the Washington Public Service Commission against the Tacoma Railway & Power Company, Tacoma, Wash., and 293 striking employees, was dismissed on Aug. 4 on an order received from Superior Judge Mitchell. The only pertinent issue determined was the sustaining of a demurrer filed by the strikers in regard to their being included as defendants. The court held they could not be forced to work in order to provide "the adequate service" sought by the State. The case was still on trial when the strike was settled by agreement be-

tween the company and men, as previously noted in these pages.

St. Louis Company to Buy Coal for Employees.—The United Railways, St. Louis, Mo., will purchase coal in large quantities and retail it at cost to its 5000 motormen, conductors and mechanics in an effort to cut the cost of living. This announcement was made in a general circular sent out to the men over the signature of President Richard McCulloch. Notices were also posted in the thirteen carhouses of the company. It is estimated by the officials that a saving of from 5 to 7 cents on a bushel of coal can be made by the employees. The coal is to be stored in the various carhouses and sent to the homes of the workmen by drays. Order blanks have been distributed to the foremen of the carhouses, and the operating employees will be requested to use them.

Canada Plans to Acquire Railroad Systems.—Plans of the government for nationalization of railroads in the Dominion of Canada on a larger scale were recently announced in Parliament by Sir Thomas White, finance minister. He declared that in addition to the government-owned Inter-Colonial Railway in Eastern Canada, it is proposed to acquire the entire Canadian Northern Railway system of more than 9000 miles, of which 6000 miles are situated in the Western wheat belt. The minister said the company has a common share capital of \$100,000,000, of which the government already owns \$40,000,000. It is proposed now to purchase the remaining \$60,000,000 of common stock from the private owners. The minister said also that the government contemplated the eventual acquisition of the Grand Trunk Pacific Railway.

British and American Railways Compared.—William R. Pomerene, attorney Columbus Railway, Power & Light Company, read a paper before the Kit-Kat Club in Columbus on April 5, entitled "Trams and Trolleys," comparing British and American practice and giving other interesting information in regard to electric railways. The paper has recently been reprinted in pamphlet form. The comparison made was in part as regards general conditions and in part in detail as to the wages paid, fares charged, etc., between Glasgow and Columbus. Mr. Pomerene also referred to the history of American electric railways, including the history of franchises, and pointed out that the original idea of a fixed fare to last for the greater part of a generation is bound to be unreasonable and unjust to one or the other of the contracting parties. No city, he says, would enter into a contract for twenty-five years to buy all of its coal at a fixed price per ton, nor would a coal operator be willing to furnish his bond to supply all the coal which might be asked within that period at a fixed price. He quoted a number of examples to show that in other lines of business a fixed price, such as many railway franchises provide for the charge for transportation, is likely to be unsatisfactory.

Program of Association Meeting

National Business Men's Convention

An emergency call has gone forth from the Chamber of Commerce of the United States to the business men of the country for a war convention to be held at Atlantic City on Sept. 17-21. It is expected to be the largest gathering of business men ever held. A principal topic of discussion will be the question of how business may render greater service in winning the war. This will include, for example, what may be done to control prices, and how greater efficiency in land and water transportation shall be developed. Moreover, there will be discussed the questions of how the nation shall provide for business enterprises not essential to the nation in war time, the special importance of food conservation to business men, industrial relations and employment problems, and foreign trade, banking and credit in war time. Of particular interest will be the subject of the readjustment after the war. This will include the question as to what will be the course of prices on raw materials and finished products after the war, how the nation shall plan for replacing its men in industry after they return from the war, and what new responsibilities in international relations may be expected after the war.

Financial and Corporate

Annual Report

Philadelphia Rapid Transit Company

The comparative income statement of the Philadelphia (Pa.) Rapid Transit Company for the fiscal years ended June 30, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Earnings:				
Gross passenger earnings	\$27,504,040	96.32	\$24,871,254	96.21
Receipts from other sources	1,049,574	3.68	968,088	3.79
Total earnings	\$28,553,614	100.00	\$25,839,344	100.00
Expenses:				
Maintenance and renewals:				
Maintenance	\$2,712,121	9.50	\$2,506,731	9.70
Reserve fund for renewals	1,570,921	5.50	1,369,170	5.30
Total appropriation	\$4,283,042	15.00	\$3,875,901	15.00
Operation of power plant	1,694,151	5.93	1,441,421	5.58
Operation of cars	7,129,739	24.97	6,447,078	24.95
General	1,498,826	5.25	1,343,326	5.20
Taxes	1,398,412	4.90	1,264,701	4.89
Total expenses	\$16,004,171	56.05	\$14,372,427	55.62
Net earnings from operation	\$12,549,443	43.95	\$11,466,916	44.38
Fixed charges:				
Interest	\$2,280,179	7.99	\$2,308,779	8.94
Rentals	7,365,393	25.79	7,365,433	28.51
Sinking fund, city contract	120,000	0.42	120,000	0.46
Total	\$9,765,573	34.20	\$9,794,212	37.91
Surplus	\$2,783,870	9.75	\$1,672,704	6.47

The gross earnings during the year ended June 30, 1917, showed a gain of \$2,714,270 or 10.5 per cent over those of the preceding year. This arose from an increase of 10.59 per cent in passenger earnings and 8.42 per cent in receipts from other sources.

The operating expenses, excluding taxes, showed an increase of \$1,498,031 or 11.4 per cent. Of this total \$986,353 was represented by larger appropriations for maintenance and renewals and to the company's wage fund, which is based on 22 per cent of the earnings. The taxes increased \$133,711 or 10.6 per cent. The net earnings from operation, however, gained \$1,082,527 or 9.4 per cent.

The fixed charges showed a net decrease of \$28,639, owing to the saving in interest charges on account of car trust certificates paid off and the retirement of other capital obligations through the operation of sinking funds during the year. The resultant surplus for 1917 was \$2,783,870 as compared to \$1,672,704 for the preceding year.

The last fiscal year saw the beginning of the payment of dividends upon the company's capital stock of about \$30,000,000. From the surplus earnings for the year ended June 30, 1916, there was paid on Oct. 11, 1916, a dividend of 2 per cent or \$599,011, and for the last fiscal year there were paid on Jan. 31, 1917, a dividend of 2.5 per cent or \$749,638, and on July 31, 1917, the same amount.

The capital account for "leases, franchises, construction, equipment, advances to leased lines, sinking funds, etc.," on June 30, 1917, amounted to \$113,096,797, an increase of \$115,650 for the year. This resulted from increases of \$386,599 for additions and betterments and \$378,540 for sinking fund payments and accretions, offset partly by sinking fund expenditures of \$349,000 and the writing off of a proportion of near-side cars against renewals at \$512,000, but helped by adjustments of \$394,158 for underlying company property for prior years.

The company's renewal fund as of June 30, 1917, amounted to \$2,525,000, of which \$1,523,321 is in cash and the balance in securities. This fund is maintained for the purpose of having cash and liquid assets available for the financing of renewal expenditures as made from the accumulated unexpended balance of the 15 per cent appropriation of earnings for maintenance-renewal reserve.

Rock Island Collateral to Be Sold

The principal and interest due on June 1, 1917, on the \$266,000 of collateral trust notes of the Rock Island Southern Railway, Rock Island, Ill., remain unpaid. The City Trust Company, Buffalo, N. Y., as trustee has given notice that it will soon sell at auction in Buffalo the collateral, consisting of \$532,000 first mortgage 5's, due Jan. 1, 1947.

The protective committee for these notes includes Arthur L. Chambers of A. L. Chambers & Company, investment securities, Buffalo; George F. Sowerby and Henry O. Smith, acting under agreement dated June 2, 1917, with the City Trust Company, Buffalo, as depository; Moot, Sprague, Brownell & Marcy, as attorneys, and S. Fay Carr, counsel.

The deposit agreement dated June 2, 1917, empowers the committee, in case it becomes the purchaser of the bonds, and provided the interest due on the notes on June 1, 1917, is fully paid, to grant an option on the \$532,000 bonds at not less than 50 per cent of their par value, plus such premium as the committee shall determine, until June 1, 1920, presumably to the controlling company, the Mississippi Valley Railway & Power Company, and to postpone the payment of interest on the bonds for a period not exceeding three years on such conditions as the committee may determine.

The coupons due July 1, 1917, on the first and refunding mortgage bonds of the Mississippi Valley Railway & Power Company are also in default. As noted elsewhere this week, the plan for funding six coupons thereon was recently authorized by the directors of the company to assist in financing the Rock Island Southern Railway.

Mississippi Valley Adjustment

Plan for Readjusting Finances Without Assessment—Bondholders to Fund Three Years' Interest

Under the plan of readjustment of the Rock Island Southern Railway, noted in this journal in 1915 and 1916, an issue of \$300,000 of prior lien 5 per cent bonds was created by the new holding company, the Mississippi Valley Railway & Power Company, for its corporate purposes and for the rebuilding and rehabilitation of the Rock Island Southern property. A portion of these bonds has been sold and a portion deposited as collateral to raise money for carrying out the plan of readjustment and the payment of interest upon Mississippi Valley Railway & Power Company bonds. The sum of at least \$150,000 must be provided for rehabilitation and rebuilding of the Rock Island Southern Railway property. In the present unsettled condition of the bond market, and under the present operating conditions of the Rock Island Southern Railway property, it has been deemed inadvisable to sell the balance of the prior lien bonds in the treasury to raise this rebuilding fund of \$150,000. Instead of selling such bonds, it has been deemed more wise to waive interest upon the bonds of the Mississippi Valley company, as well as the interest upon the Rock Island Southern bonds.

Agreements have been made with the holders of more than \$500,000 of Rock Island Southern bonds which are not on deposit under the plan of readjustment, and therefore not owned by the Mississippi Valley company, granting an extension of the time of payment of interest upon their bonds for three years, provided the Mississippi Valley company, as owner of the majority in amount of Rock Island Southern bonds, also withholds its interest. If interest is not paid by the Rock Island Southern upon its bonds, the Mississippi Valley company is without sufficient funds to pay the interest upon its own bonds. The plan adopted, therefore, is to request Mississippi Valley bondholders to exchange the coupons upon Mississippi Valley bonds for the three years beginning July 1, 1917, and receive therefor Mississippi Valley bonds, par for par.

Assenting bondholders of the Mississippi Valley company are accordingly asked to send their coupons maturing from July 1, 1917, to and including Jan. 1, 1920, to the company at Rock Island, or to the Central Trust & Savings Bank of Rock Island. There are outstanding about \$175,000 of the \$300,000 authorized prior lien 5s of 1915 of the Mississippi Valley

company, and the interest thereon is being paid promptly, while coupons due July 1, 1917, on about \$800,000 of outstanding first and refunding mortgage 5s remain unpaid. The \$532,000 of first mortgage 5 per cent gold bonds (dated 1908 and due Jan. 1, 1947) of the Rock Island Southern Railway, which were not acquired by the Mississippi Valley company and which will have three years' coupons funded, are pledged to secure an issue of \$266,000 of collateral notes of the Rock Island Southern Railway. This note issue is now being foreclosed, as noted elsewhere this week.

Explaining the situation, G. W. Quackenbush, assistant general manager, says:

"Funds are required for immediate disbursement for track betterments, new railroad ties, additional rolling stock, repairs to roundhouse, and other improvements to the property. Either an extension of tracks should be made into the business district of Rock Island to connect with the bridge line cars to and from Davenport, or a passenger depot should be built at the present terminal. New passenger cars are required or radical improvement to the present cars.

"The present net revenue of the Rock Island Southern Railway is approximately \$50,000 per year. An increase in passenger rates of 20 per cent passed into effect on June 22, 1917, and an increase in freight rates is pending. These increases will probably take care of the increased cost of operation due to higher prices for coal and other operating material, so that the net revenue of the property for the next three years should not be less than the present net revenue. The extension proposed to the center of the business district of Rock Island, together with the improvements in the physical condition of the road and equipment, should increase the revenue and decrease the expenses of operation."

Dispute Over Paving in Seattle

Judge Dismisses City's Suit Pending Decision by Public Service Commission in Similar Case

The application of the city of Seattle, Wash., for a writ of mandamus to force the Puget Sound Traction, Light & Power Company to pave the space between its tracks with the same material as was used by the city in paving the rest of the street was denied recently by Judge Kenneth Mackintosh, after he had held it under advisement since March 26. The decision was in memorandum form, and directed attention to the fact that a suit involving the same parties and the same subject matter was before another tribunal of co-ordinate jurisdiction—Public Service Commission. Until the Public Service Commission makes a definite decision, and a final hearing is had in the Supreme Court, Judge Mackintosh will not enter the proceeding to make any ruling in the case.

The application which was submitted by Corporation Counsel Hugh M. Caldwell alleged that the company's action was a violation of its franchise obligations. The answer of the company set up that it had before the Public Service Commission a petition in which it asked to be relieved of paving between tracks whenever the city of Seattle improved the street.

Judge Mackintosh explained that he had not disclaimed jurisdiction, and indicated that he would be willing to entertain another application should the Public Service Commission decline to pass upon the case. Judge Mackintosh's action in recognizing the jurisdiction of the Public Service Commission is in contrast with the attitude of the City Council in forbidding the company to operate one-man cars on certain lines despite the permission granted by the Public Service Commission to operate such cars on those lines.

Corporation Counsel Caldwell of Seattle has now petitioned the Public Service Commission to dismiss the case of the company, in which the latter asks relief from its street paving franchise obligation. It is expected the company will resist the dismissal. A similar petition to disregard franchise requirements by the company was dismissed by the commission several months ago. At that time the commission declined to assume jurisdiction over anything pertaining to street railway operation except rates and public safety.

Auburn & Syracuse Electric Railroad, Syracuse, N. Y.—Five-year 6 per cent gold notes to the amount of \$60,000 were paid off on Aug. 1 by the Auburn & Syracuse Electric Railroad at the office of the Trust & Deposit Company, Syracuse, N. Y.

Columbia & Montour Electric Railway, Bloomsburg, Pa.—Judge Evans in the Federal Court at Bloomsburg on Aug. 7 directed the bondholders of the Columbia & Montour Electric Railway to foreclose. The property consists of about 18 miles of line merged several years ago into the North Branch Transit Company, which also took over the Danville & Bloomsburg Electric line. A receiver has handled the affairs of the holding company for about a year. The equipment and rolling stock of the Danville & Bloomsburg line, it is said, have been used on the Columbia & Montour line. The generating plant of the former lies dismantled and abandoned.

Columbus Railway, Power & Light Company, Columbus, Ohio.—E. W. Clark & Company, Philadelphia, are offering an additional block of first refunding and extension sinking fund mortgage 5 per cent gold bonds of 1915 of the Columbus Railway, Power & Light Company. The total amount of this issue of mortgage bonds outstanding is \$4,500,000 at the present time.

Gary & Interurban Railroad, Gary, Ind.—The Federal Court at Valparaiso, Ind., has ordered a foreclosure sale of the following subsidiaries of the Gary & Interurban Railroad: The Valparaiso & Northern Railroad and the Gary Connecting Railways, to be sold on Sept. 18, upset prices \$40,000 and \$50,000 respectively. The Gary and the East Chicago divisions will also be sold on this date at an aggregate upset price of \$200,000, and the Laporte division for not less than \$75,000.

International Railway, Buffalo, N. Y.—Because of its inability to dispose of \$1,175,000 of 5 per cent refunding and improvement mortgage bonds at a price not less than 89 per cent of their face value, for the issuance of which the International Railway received authority on July 11, 1916, from the Public Service Commission for the Second District of New York, the company recently filed a petition to put these bonds on the market at not less than 85. The petition has been granted. The proceeds of the bond sale are to be used for the extension of the company's new Buffalo-Niagara Falls double-track line.

Mansfield Railway, Light & Power Company, Mansfield, Ohio.—Doherty interests, through the Mansfield Electric Light & Power Company, have secured control of the Mansfield Railway, Light & Power Company, which operates the street railway lines at Mansfield and the Mansfield-Shelby interurban line. This company also owns the lighting franchise in Mansfield. It is said that negotiations for this property have been under way for some time.

New Orleans Railway & Light Company, New Orleans, La.—Simon Borg & Company, New York, have lost the legal fight in the Federal Court in New Orleans to have a receiver appointed and permanent writ of injunction issued to prevent consolidation of the New Orleans City Railroad with the New Orleans Railway & Light Company. The banking company filed suit on May 22, 1916, and the court issued a temporary writ holding up the amalgamation until evidence could be presented. The New Orleans City Railroad has been operated under lease by the New Orleans Railway & Light Company.

Norton, Taunton & Attleboro Street Railway, Norton, Mass.—The Massachusetts Public Service Commission has approved the issuance of 1200 shares of new capital stock, at par, by the Norton, Taunton & Attleboro Street Railway. This corporation was organized to own and operate the Norton & Taunton Street Railway, purchased at receiver's sale, the amount of capital stock being approved by the commission as not exceeding the fair replacement cost of the property. The new stock issue is to be used to pay for improvements.

Ohio Service Company, Cambridge, Ohio.—The Ohio Service Company has applied to the Ohio Public Utilities Commission for authority to issue \$120,000 of three-year 6 per

cent convertible trust notes. The amount now outstanding is \$1,301,000.

Reading Transit & Light Company, Reading, Pa.—William P. Bonbright & Company, New York, have announced the sale, at 98½ and interest, of the new issue of \$2,300,000 of two-year 6 per cent secured gold notes of the Reading Transit & Light Company, dated Aug. 1, 1917. A previous note regarding this issue was published in the ELECTRIC RAILWAY JOURNAL of Aug. 11.

Tri-City Railway of Illinois, Rock Island, Ill.—At a recent special meeting of stockholders of the Tri-City Railway of Illinois it was unanimously voted to increase the capital stock by \$500,000 to a total of \$3,500,000.

West Virginia Traction & Electric Company, Wheeling, W. Va.—William P. Bonbright & Company, New York, have announced the sale, at a subscription price of 98½ and interest, yielding 6¾ per cent, of an issue of \$1,800,000 of two-year 6 per cent bond-secured gold notes of the West Virginia Traction & Electric Company, dated May 1, 1917, and due May 1, 1918, but callable at 100½ and interest on forty days' notice. Previous items regarding this underwriting were published in the ELECTRIC RAILWAY JOURNAL of May 5 and May 26.

Traffic and Transportation

Fare Increases Considered

Several Doherty Companies, Feeling Assured of Consent of Public Service Commissions, Will Probably Raise Fares

The greatly increased costs of operation, due to the war, have made it imperative for several of the properties operated by the Doherty Operating Company, New York, to consider increasing fares. R. F. Carbutt, in charge of the Doherty railway companies, is arranging with the managers of the traction companies to see what readjustment of fares can be made.

At a recent meeting of the executives at the New York office Mr. Carbutt reported that as changes in rates will probably be universal, there would be little opposition encountered on the part of the public utility commissions in the various states in which the Doherty traction companies do business. He said that as the increases to be asked for were directly based upon greatly advanced costs of operation which could easily be shown, the public service commissions would be convinced of the justice of the traction companies' demands. Already several rate changes have been made on Doherty properties, and arrangements are being made to adjust matters for all the traction companies.

The abolition of the sale of six tickets for 25 cents, a system which is in operation on some Doherty roads, will probably be the first step taken. In fact, one Doherty property has already abolished the six for a quarter idea. Not all the traction companies are decided as to what method to adopt in raising fares.

California Road Asks Rate Increase

Higher Costs and Large Portion of Business Taken by Automobiles Are the Reasons Given

The Petaluma & Santa Rosa Railway, Petaluma, Cal., which operates between Petaluma and Sebastopol and from Forestville to Santa Rosa and has steamers running between Petaluma and San Francisco, has filed with the Railroad Commission of California an application for authority to raise its passenger fares and freight rates. The company says that, while its net operating revenue for 1916 showed a return of 4.12 per cent on the value of its property as fixed by the Railroad Commission, if it had spent the sum needed for betterments the net return would not have been more than 3 per cent. It cites the fact that when the present rates were established it cost the company \$36,000 for labor and fuel to operate two steamers, while now the cost is \$60,000 a year, with prospect for further increases. The company says that it pays \$1.05 a barrel for fuel oil, but that its contract at this price will expire the first of next year and then it will be fortunate to secure fuel oil even at a 50 per cent increase. The company figures that the gross increase in revenue resulting from the changes requested will be about \$30,000. It avers that its present income is not sufficient to meet operating expenses and interest on outstanding obligations and to maintain properly its service and the property.

The fares and rates now sought to be changed, according to the company's statement, were established under competitive conditions so as to invite an increased population. The company has met its operating expenses and fixed charges by assessing \$10 a share on its stockholders and by rigid economy. Land along the property has increased in value since the road was constructed from \$75 and \$100 an acre to \$500 and \$1,000, but automobiles and the steadily increasing cost of labor and material have prevented the net revenue from keeping pace with this development. The company wants to spend \$250,000 within the next five years for additions, replacements and improvements.

Electric Railway Monthly Earnings

		AURORA, ELGIN & CHICAGO RAILROAD, AURORA, ILL.				
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Income
1m., June, '17		\$186,330	*\$137,513	\$48,817	\$35,800	\$13,016
1 " " '16		177,844	*113,729	64,115	36,053	28,061
6 " " '17		998,088	*741,590	256,498	214,594	41,903
6 " " '16		946,832	*641,567	305,265	218,509	86,756
		BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.				
1m., June, '17		\$65,662	*\$40,422	\$25,240	\$18,738	\$6,502
1 " " '16		64,368	*39,263	25,105	17,586	7,519
12 " " '17		862,877	*488,713	374,164	221,471	152,693
12 " " '16		800,890	*431,849	369,041	211,409	157,632
		CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.				
1m., June, '17		\$128,805	*\$81,223	\$47,582	\$29,628	\$17,954
1 " " '16		102,680	*63,375	39,305	29,992	9,313
12 " " '17		1,301,091	*907,416	393,675	357,675	36,000
12 " " '16		1,182,352	*748,054	434,298	357,341	76,957
		COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO				
1m., June, '17		\$311,975	*\$236,732	\$75,243	\$47,019	\$28,224
1 " " '16		280,350	*160,497	119,853	42,875	76,978
12 " " '17		3,747,491	*2,474,273	1,273,218	531,282	741,936
12 " " '16		3,307,057	*1,934,061	1,372,996	501,734	871,262
		COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.				
1m., June, '17		\$1,550,770	*\$955,369	\$595,401	\$427,519	\$167,882
1 " " '16		1,322,295	*742,346	579,949	419,968	159,981
12 " " '17		18,147,509	*10,580,010	7,567,499	5,111,143	2,456,356
12 " " '16		15,841,539	*8,445,477	7,396,062	4,847,814	2,548,248
		CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.				
1m., June, '17		\$244,435	*\$175,843	\$68,592	\$68,465	\$127
1 " " '16		242,379	*147,443	94,936	66,736	28,200
12 " " '17		2,975,271	*1,960,379	1,014,892	814,160	200,732
12 " " '16		2,759,843	*1,634,506	1,125,337	789,862	335,475
		EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.				
1m., June, '17		\$296,753	*\$198,621	\$98,132	\$64,598	\$33,534
1 " " '16		244,082	*142,965	101,117	62,714	38,403
12 " " '17		3,362,412	*2,106,159	1,256,253	767,220	489,033
12 " " '16		2,702,763	*1,612,650	1,090,113	752,601	337,512
		GRAND RAPIDS (MICH.) RAILWAY				
1m., June, '17		\$104,828	*\$72,133	\$32,695	\$18,972	\$13,723
1 " " '16		108,702	*72,645	36,057	13,036	23,021
12 " " '17		1,303,090	*865,153	437,937	211,141	226,796
12 " " '16		1,255,468	*834,096	421,372	166,667	254,705
		LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.				
1m., June, '17		\$75,669	*\$56,652	\$19,017	\$15,678	\$3,339
1 " " '16		72,030	*43,039	28,991	16,094	12,897
12 " " '17		846,133	*626,273	219,860	184,686	35,174
12 " " '16		763,749	*502,356	261,393	192,253	69,140
		NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.				
1m., June, '17		\$194,493	*\$126,143	\$68,350	\$40,321	\$28,029
1 " " '16		190,109	*123,400	66,709	42,512	24,197
12 " " '17		2,431,587	*1,529,333	902,254	496,976	405,278
12 " " '16		2,251,525	*1,393,930	857,595	515,237	342,358
		PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.				
1m., June, '17		\$490,652	*\$275,098	\$215,554	\$176,699	\$38,855
1 " " '16		473,664	*262,100	211,564	181,032	30,532
12 " " '17		5,664,193	*3,070,129	2,594,064	2,173,776	420,288
12 " " '16		5,456,967	*3,074,746	2,382,221	2,192,060	190,161

*Includes taxes.

Grade-Crossing Order Issued

Gates at Nearly 150 Crossings to Be Kept Down During Early Morning Hours by Order of New York Commission

The Public Service Commission for the First District of New York, on a motion made by Commissioner Charles S. Hervey, has issued an order directing the New York Central Railroad, the Long Island Railroad and the Staten Island Rapid Transit Railway to keep the gates at 143 grade crossings lowered from midnight until 5 a. m. as a measure of protection to vehicle traffic. The order specifies also that gates at two of the crossings on the Staten Island Railway, which is operated by the last-named road, be kept closed between 2 a. m. and 5 a. m.

A hearing held on the matter on June 6 was reviewed in the *ELECTRIC RAILWAY JOURNAL* for June 9, page 1072. Preliminary to that hearing an investigation had been made by the commission and data collected on the use made by vehicles and pedestrians of the principal crossings between the hours in question. The police department indorsed the plan and at the request of the commission made an additional investigation of all the 145 crossings, after which it recommended the list of crossings which should come under the commission's order.

The order takes effect on Aug. 22 and will remain in force for one year, unless abrogated in the meantime by the commission. All of the railroads involved are said to be in favor of the plan. In his opinion, Commissioner Hervey said that the crossing gates were not a sufficient safeguard to the public on account of negligent watchmen. The inspections disclosed that watchmen were frequently asleep during the early morning hours. Time clocks, to be punched at half-hour intervals, were tried out at certain crossings, but some gatemen found means of evading the scheme. Even thorough inspection by roundsmen had not proved altogether successful. The installation of signal semaphores to give a stop indication when the gates were up, had also been considered.

Bay State to Modify Special Rates

The Bay State Street Railway, Boston, has filed with the Public Service Commission of Massachusetts a schedule of changes to be made in reduced-rate workmen's commutation and excursion tickets. This was to be effective on Aug. 16, but the commission has suspended its operation until Oct. 1, pending a public hearing or investigation. Some of the tickets are to be withdrawn, and others formerly sold at twenty rides for \$1.40 are increased to \$1.92. Others formerly sold at ten rides for 50 cents are increased proportionately. Excursion tickets on the Quincy, Taunton and Brockton divisions are provisionally withdrawn in the new tariff. The commission in its suspending order stated that, in its opinion, the changes might seriously affect the rights and interests of the public.

Wreck on Shore Line

Nearly a Score Killed in Collision Caused by Failure of Car to Take Siding

A head-on collision between two interurban cars of the Shore Line Electric Railway, Norwich, Conn., occurred late in the afternoon of Aug. 13. The accident happened near North Branford, about 12 miles from New Haven. The cars, it is said, were running at about 35 miles an hour, and as a result of the impact nineteen persons were killed and between forty and fifty seriously injured.

Evidence given by the car men and by passengers places the blame for the accident upon the crew of the westbound car, which should have waited on a siding about a half mile from the spot where the accident occurred. No specific reason was stated as to why the car had not sidetracked to wait for the eastbound car. After the accident the crew of the westbound car are said to have stated that they were sleepy on account of working overtime. The motorman escaped serious injury by jumping when he saw the collision was inevitable.

Six-Cent Fare Denied

The Rhode Island Public Service Commission on Aug. 14 denied the petition of the Bay State Street Railway, Boston, Mass., to be allowed to charge a 6-cent fare on its lines in Rhode Island. The commission ordered the company to establish an additional 5-cent fare zone in Portsmouth which, it held, will give considerable relief and should be given a fair trial before the 6-cent fare is considered. This will increase the through fare from Newport to the Massachusetts State line from 15 cents to 20 cents and the rate per mile will be 1.35 cents.

In its decision the commission stated that, although it had in mind the needs of electric railways during the present period of high prices, not enough evidence had been produced to prove that a 1-cent increase in the fares in Newport would not be unreasonable. It was evident to the commission that the company is not earning a reasonable return from its lines between Newport and the Massachusetts State line. The present establishment of fare zones seems to result in a preference to the town of Portsmouth. It was to remedy this that another fare zone was ordered and also in order to increase the rate paid by the through passenger.

Fare Reduction Considered in Buffalo

An appraisal of the physical properties of the International Railway, within the city of Buffalo, N. Y., is now being made by the municipal authorities in connection with the city's efforts to have the Public Service Commission order a reduction in fare from 5 cents to 4 cents. George E. Pierce, city attorney and acting corporation counsel, attended hearings in Albany on the application of several railways for permission to increase their fares from 5 to 6 cents, and facts elicited there before the Public Service Commission for the Second District are to be used by the city in its action. The International Railway, through Thomas Penney, vice-president and general counsel, has questioned the authority of the commission in the matter of making rates and this question must be settled before hearings are held on the city's application. The municipal authorities contend that the earnings of the company are sufficient to warrant a reduction in the rate of fare charged on its Buffalo city lines.

Skip Stop Introduced in Toledo

Scheme Is Being Tried Out on One Line—Outlook for Success Favorable

The Toledo Railways & Light Company, Toledo, Ohio, began skip-stop operation on Aug. 13 on its Cherry-Union Depot line in that city. The company had talked for several years of introducing the skip stop in Toledo, but no definite action was taken, due mainly to numerous objections which were made. During the last month several conferences were held with the city officials and a plan was agreed upon by which this form of express service was started on the Cherry Street line. This line is the busiest and one of the longest in the city. The schedule under the old arrangement provided for a one-way trip of forty-four minutes. The time of the run is reduced to thirty-six minutes under the skip-stop plan. It is thought possible by the company that this saving of time can be increased. The distance between stops under the old system was 510 ft. outbound, while under skip-stop operation it is 670 ft. Inbound cars stop 775 ft. apart now, instead of 550 ft. as formerly.

Previous to the introduction of the new system the company ran a set of posters informing the public of its intention to introduce the skip-stop. This was followed by two other posters, which pointed out the benefits of the plan. A final announcement called attention to the effective date of the change and also instructed patrons to look for white circles on poles at stop corners. Advertisements describing the new service were also run in the local papers.

Only a few objections to the plan as started have thus far been received. If the system proves a success upon the initial line it is the intention of the company to start it on the remainder of the system wherever practicable.

Electric Heaters for Calgary Cars.—Arrangements are being made to install electric heaters in the cars of the Calgary (Alta.) Municipal Railway for use during early-morning and evening hours in the spring and fall. The coal stoves will be retained and both systems will be used in the extreme cold weather.

Free-Transportation Privilege Withdrawn.—The Quincy (Ill.) Railway, a part of the Illinois Traction System, has rescinded its order, made some time ago, which allowed men in the government service free transportation. The great increase in the number of uniformed men in the district was said to be the reason for the action.

Trade in Ticket Books Made Unlawful.—A bill passed recently by the California State Legislature makes it unlawful to sell a railway ticket or commutation book to a second person not entitled to its use. The law states that any one who resells any instrument for passage on a common carrier shall be guilty of a misdemeanor.

Illuminated Car Numerals in Indianapolis.—Monitor-deck and side signs on the Virginia Avenue cars of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., have been dispensed with and in the future the cars will be designated by illuminated numerals only. If the new system is successful on the south side line, cars of the entire Indianapolis railway system will be so numbered eventually.

Portland Employees Have Outing.—The employees and officials of the Portland Railway, Light & Power Company, Portland, Ore., with their families, on Aug. 8 enjoyed their annual picnic at Estacada. The general offices of the company were closed and every employee who could be spared participated in the day's outing. The employees' band and orchestra provided music. Athletic contests filled the program for a greater part of the day.

Injuries Caused from Short Circuit.—A blowout at the switchboard in the power station of the Toledo Railways & Light Company, Toledo, Ohio, on the morning of Aug. 13, caused a suspension of service for one and one-half hours. A score of manufacturing plants, dependent for power, also were closed down. Two men who were cleaning the board were badly burned, and several others received minor injuries. The damage is placed at \$3,000.

New Company Publication in Wheeling.—*Traction News* is the name of a little four-page leaflet being published weekly by the West Virginia Traction & Electric Company, Wheeling, W. Va. An article which appeared in the first issue states that "its purpose is to establish a closer relationship between the management, the employees and the traveling public" and invites patrons to make use of its columns by sending in suggestions freely.

Car Posters Warn Against Pickpockets.—Large posters printed in red ink have been placed in all the city cars of the International Railway, Buffalo, N. Y., urging passengers to "Beware of Pickpockets." Within the last month several hundred passengers have reported the loss of various sums of money, and the police have arrested a number of professional pickpockets but there have been no convictions. The thieves usually infest crowded cars in the downtown section during rush hours.

Better Service Planned in Bellingham.—At a recent meeting of the City Council of Bellingham, Wash., the Puget Sound Traction, Light & Power Company proposed service improvements to be made in that city. The company plans to inaugurate within thirty days a schedule which will give more frequent service between 6 a. m. and midnight. The new schedule will be delayed until the completion of six more light cars of the type now operating in the city, which will replace heavy cars in the regular service. The latter will be used only as trippers and on occasions when the traffic is unusually heavy.

Fare Tariff Revised and Service Reduced.—The Railroad Commission of California has authorized the Los Angeles & San Diego Beach Railway, San Diego, Cal., to revise its fare schedule so that monthly commutation tickets are increased in price, school tickets are put on a different basis, family commutation tickets are abolished and other changes are made. The company is also permitted to reduce its service to seven daily trains. The reason for these changes is the loss of traffic, due principally to the competition of

private'y owned automobiles. Jitneys have not been an important factor in the competition.

Economics of Service Explained.—In an editorial which appears in the August issue of the magazine published by the Southern Public Utilities Company, Charlotte, N. C., the reasons for the desire of a public service company to give continuity of service are set forth. It is pointed out that when a company fails to furnish service it not only loses revenue, due to the cessation of income from customers, but its interest charges, cost of labor, depreciation, etc., continue, together with the inconvenience and extra expense incurred in restoring service as quickly as possible. Obviously the annoyance to patrons is the smaller item.

Seattle Opposes Elimination of Tickets.—The city of Seattle has filed a protest with the Public Service Commission of Washington against the application of the Puget Sound Traction, Light & Power Company to discontinue selling 4-cent tickets. This application was to be effective on Aug. 12 and was noted in the *ELECTRIC RAILWAY JOURNAL* for July 28, page 164. The city's protest alleges that to discontinue the sale of twenty-five tickets for \$1 would be a violation of the company's franchise obligations and that this is not authorized by the public service commission law. It requests that the action by the company be suspended until a hearing can be held in the case.

Company Fined for Ignoring Schedule.—The Virginia Railway & Power Company, Richmond, recently was fined \$100 on each of two charges in police court for failing to maintain the proper schedule on two of its city lines. The penalty inflicted was the maximum allowed by law. Figures were submitted to show that the company had run too few cars during certain eight-hour periods. The company took appeal, contending that although it had violated the terms of its franchise it was meeting the public demand and, taken as a whole, was exceeding its schedule requirements. This was due to the fact that it operated more cars than required during rush hours and operated on some lines beyond the limits required.

More Revenue Needed in Salt Lake City.—The Utah Light & Traction Company, Salt Lake City, has filed a modified rate schedule with the Public Utilities Commission asking for permission to discontinue the sale of 4-cent tickets, to charge 1 cent for transfers and to raise the fare 5 cents on the Sandy-Midvale and Bountiful-Centerville lines. In a recent statement General Manager H. F. Dicke said that during the past three and one-half years only 4 per cent has been earned on the value of the property and that a fair return has been earned in only one year of the past eight and one-half. Competition from low-priced automobiles is given as one reason for the decline in revenue besides the general increase in operating expenses.

Compromise Jitney Ordinance in Spokane.—A compromise which, it is believed, will be satisfactory to pro-jitney and anti-jitney factions in Spokane, Wash., will be offered in a new city ordinance to be submitted by Commissioner Fassett. The commissioner's proposal is to allow the jitneys to operate over electric railway routes only for two-thirds of their complete trip. In other words, more than one-third of the trip must be made over streets having no railway service. Commissioner Fassett's scheme is considered by Spokane officials to be the first feasible plan for solving the present problem. Sentiment in the Council at present leans toward keeping the jitneys off the car lines, at least partially, and it is believed this proposal will be well received.

Increase in L. I. R. R. Mileage Rates Held Up.—The Public Service Commission for the First District of New York has refused permission to the Long Island Railroad to put into effect an increase in its mileage rates from \$10 to \$11.25 for a 500-mile book, pending the decision of the commission upon a number of increases proposed by the company and now under consideration. The mileage-book rates have been increased outside the city of New York, upon approval by the Second District Commission, and the company attempted to put into effect an increase in New York City, assuming that this commission had exclusive jurisdiction to fix a uniform rate for the whole system. It is to this course that the First District commission order applies. The company also does not think it practicable to apply the new rate only to lines in the Second District.

Information Booth for Idle "Sammies."—A free information booth which has been maintained by the San Diego (Cal.) Electric Railway has been proving a great convenience to the soldiers and sailors who have recently been stationed in the vicinity of San Diego as well as to visitors who are unfamiliar with points of interest about the city. To make it of more assistance to the men it has been requested that those in charge of special entertainments mail a card with full particulars to the company's publicity department. This information is then transmitted to the agent at the company's ticket office in the Union building and the agent in charge of the information booth.

Commission Will Represent Public Before I. C. C.—The Public Service Commission for the First District of New York announces that hereafter it will participate actively, through its counsel, in proceedings before the Interstate Commerce Commission which involve freight and passenger rates vitally affecting the public interest of the city of New York. Many cases greatly affecting freight rates, and thus the cost of commodities largely used in New York City, are heard each year by the Interstate commission at Washington, merely as an issue between shippers and railroads, without representation of the public point of view and the public interests. The New York commission, therefore, hereafter will undertake to fulfill the duty of expertly representing the public interests of the people and shippers of the city.

Court Rules Against Jitney Bonding Company.—Under a ruling of the Supreme Court on Aug. 7, jitney operators in the State of Washington cannot supply their own surety bonds through a mutual insurance organization, except on terms prescribed by the State Insurance Commission. This decision eliminates the Mutual Insurance Company of Seattle unless the company posts \$250,000 in assets with the State insurance department, which was the amount fixed as security required for a mutual jitney bonding company in that State. The company petitioned the Supreme Court for a writ directing Commissioner Fishback to license it on the liability security requirements for general mutual insurance business. The Supreme Court, in denying the writ, held that it cannot control the insurance commissioner's statutory discretion in demanding what he considers security ample to insure protection.

City Council Asks Inspection of Niagara Gorge Route.—The City Council of Niagara Falls, Ont., has asked the Dominion Railway Board of the Province of Ontario to inspect the roadbed and tracks of the Park and River division of the International Railway, Buffalo, N. Y., operating between the Upper Bridge at Niagara Falls, Ont., and Queenston, Ont., along the lower gorge of the Niagara River. This division of the International Railway forms a part of the Great Gorge Route belt line trip, the other part being the line of the Niagara Gorge Railway on the American side between Lewiston and Niagara Falls, N. Y. The action of the Canadian City Council has been taken on account of the serious accident which recently occurred on the latter line on the American side, as noted in the *ELECTRIC RAILWAY JOURNAL* of July 7. In this accident, because of track undermining, a car dropped into the gorge near the Whirlpool Rapids.

Ambitious Plan for Jitney Corporation.—The General Motor Transportation Company of Oakland, Cal., has filed with the Railroad Commission of that State an application for authority to issue \$250,000 capital stock, of which \$500 has been subscribed, to engage in a general jitney business for passengers and freight. The intention of the company as stated to the commission is to operate a passenger stage line from Oakland, through San José, to Palo Alto on the east side of San Francisco Bay and from Oakland to San José, through Palo Alto, using the transbay ferry and running down the west side of the bay. The company specifies its intention to haul fruits, vegetables and general merchandise and to do general cartage, the purpose being primarily to serve the farmers. No rates are stated, but the company expects these to vary, depending upon demand and the cost of operation. It wants to sell its stock at \$90 a share, the par being \$100. The company wishes to sell at the present time \$50,000 of the total authorized stock issue of \$250,000.

Personal Mention

C. D. Rogers has been appointed president of the Bristol & Norfolk Street Railway, Randolph, Mass., to succeed H. F. French.

H. K. Tennant has been appointed comptroller of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, P. Q.

W. F. Bellinger has been made chief load dispatcher of the system of the Georgia Railway & Power Company, Atlanta, Ga.

Lyman K. Brown, treasurer of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., has resigned on account of ill health.

Howard H. George, formerly of the engineering staff of the Public Service Railway, Newark, N. J., has been promoted to the rank of major, engineers, Officers' Reserve Corps.

Robert E. Jones, claim adjuster for the Bay State Street Railway, Boston, Mass., has been promoted to fill the vacancy made by the resignation of John Kelley as chief district claim agent.

Harry L. Bolinder has been made claim adjuster for the Bay State Street Railway, Boston, Mass., to succeed Robert E. Jones. Mr. Bolinder was heretofore secretary to John T. Conway, general superintendent of the company.

R. D. Long, manager and purchasing agent for the Muskogee (Okla.) Electric Traction Company, has been appointed general manager of the Shawnee-Tecumseh Traction Company to succeed O. W. Weddle, resigned.

George Drury, district claim agent for the Bay State Street Railway at Lowell, Mass., has entered government service as first-class yeoman. Walter Hickey, starter at Lowell, has been transferred to the claim department.

F. G. Grimshaw, assistant engineer of electrical equipment for the Philadelphia terminal division of the Pennsylvania Railroad, has been promoted to the position of superintendent of motor power for the New Jersey division at New York.

R. M. Boykin, engineer for the North Coast Power Company of Portland, Ore., has been elected vice-president and appointed general manager of the company, following the resignation of H. L. Harries, who is at the military training camp at Presidio.

Lionel S. Marks, professor of mechanical engineering at Harvard and Massachusetts Institute of Technology, has been assigned by the national advisory committee on aeronautics to take charge of investigations relating to airplane engine design now being made by the Bureau of Standards.

F. P. Will, who resigned on June 1 as superintendent of the Burlingame (Cal.) Electric Railway to become general agent and warehouse manager for the Modesto & Empire Traction Company, Modesto, Cal., has been appointed city freight solicitor of the latter road to succeed W. T. Vary, resigned. The office of general agent has been abolished.

F. P. Gutelius, vice-president of the Schenectady (N. Y.) Railway and the Delaware & Hudson Company, with headquarters at Albany, N. Y., has taken over the duties of general manager of the latter road with the title of vice-president and general manager during the absence of General Manager James T. Loree, who entered military service on July 31.

J. F. Usener, formerly chief engineer of power stations of the Houston (Tex.) Electric Company, has been appointed chief engineer of the Galveston-Houston Electric Railway, to succeed Charles Learmouth, who has been transferred by the Stone & Webster Management Association to El Paso as chief engineer of the El Paso property. Mr. Usener has been connected with the Houston Electric Company ever since it was electrified. He will now have charge of the plants at League City, La Marque, South Houston and Sampson Street.

William Siebert, superintendent of surface transportation for the Brooklyn (N. Y.) Rapid Transit Company, was entertained recently at a dinner given by members of the transportation department, the occasion being his thirtieth anniversary in the service. Colonel T. S. Williams, president of the company, in behalf of Mr. Siebert's associates, presented him with a silver loving cup.

Francis L. O'Bryan, formerly electrical engineer of the Boston & Worcester Street Railway, Boston, Mass., has joined the staff of the Edison Electric Illuminating Company of that city. Mr. O'Bryan is well known in the electric railway field of New England for his original work in the development of the motor-driven semaphore-type signals in use on the Boston & Worcester. He will be engaged in the purchasing department of the Edison company.

George A. Harris, general auditor of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., the Adirondack Light & Traction Company and the Edison Electric Light & Power Company of Amsterdam, N. Y., has been appointed auditor and treasurer of the three companies to succeed Lyman K. Brown, who has resigned as treasurer. This promotion is in recognition of his services with the above companies in the treasury and auditing departments for twenty-five years. Mr. Harris is also secretary and treasurer of the East Creek Electric Light & Power Company of St. Johnsville, N. Y., and four other companies allied with the Fonda, Johnstown & Gloversville Railroad.

G. M. Cameron, who has been master mechanic and engineer of buildings for the New York State Railways, Rochester Lines, during the last nine years, has located in Cleveland, Ohio, to become associated with David W. Morrow in general engineering work, with electric railway building design and construction as a specialty. While Mr. Cameron was connected with the New York State Railways he designed and constructed a number of railway buildings, power houses, substations, central station buildings, etc. He was graduated from Ohio State University in 1904 with the degrees of mechanical and electrical engineer. Soon afterward he entered the service of the Jeffrey Manufacturing Company of Columbus, in the mine locomotive department, and resigned one year later to accept a position with the Electric Controller & Supply Company in Cleveland. In 1906 he was appointed draftsman, as applied to power plant and equipment design, for the Cleveland Electric Railway and two years later became chief draftsman and engineer of buildings of the Rochester Railway. He was appointed master mechanic of that company in January, 1910.

Frank I. Hardy, who, as reported last week, has been appointed general superintendent of the Northern Ohio Traction & Light Company at Akron, Ohio, has been general

manager of the Chicago, South Bend & North Indiana Railway, South Bend, Ind., for the last year. Mr. Hardy has been actively engaged in steam and electric railway work for the last twenty years, serving successively in different capacities the Southern Pacific Railroad, the New York Central & Hudson River Railroad, the Union Traction Company of Indiana and the Fort Wayne & Northern Indiana Traction Company. He was employed by the last-named company in 1905 as division superintendent and later became superintendent of transportation.

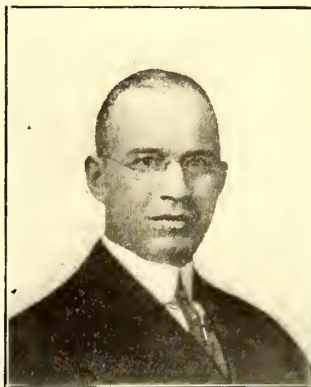
In July, 1911, Mr. Hardy was appointed superintendent of transportation for the Chicago, South Bend & Northern Indiana Railway, with entire charge of operation and traffic matters. Five years later he was promoted to the position of general manager of the company, the position he has just relinquished, to succeed C. D. Emmons, who became vice-president and general manager of the Boston & Worcester Street Railway, Boston, Mass.



F. I. HARDY

C. A. Goodnow, assistant to the president of the Chicago, Milwaukee & St. Paul Railway, has been elected vice-president of the company. Mr. Goodnow is widely known for his work while in charge of the St. Paul electrification, the Seattle division of which is now under way. He was born at Baldwinsville, Mass., in 1853 and entered railway service at the age of fifteen as a telegraph operator for the Vermont & Massachusetts Railroad. He became superintendent of construction of the Chicago, Milwaukee & St. Paul in 1886 and later became general superintendent of the road. From 1902 till 1913 he held executive positions with several other steam roads and since that time has been assistant to the president of the Chicago, Milwaukee & St. Paul.

R. B. Stearns, vice-president of the Milwaukee Electric Railway & Light Company, has been elected senior vice-president in charge of operation of the Bay State Street



R. B. STEARNS

Railway, Boston, Mass. In commenting upon this appointment President P. F. Sullivan made the following statement: "New conditions have placed such a heavy burden upon the officials of our company that it has been necessary to divide some of the work. Mr. Stearns has been asked to come with us because of the conspicuously successful work he has done in the West. In Milwaukee he had charge of a property with 450 miles of track, doing a business in excess of \$6,000,000 a year. During his six years with that com-

pany he won not only the loyalty of his employees but the friendship of the public. Under his management practically all the cars were rebuilt and standardized maintenance was adopted, two new car stations were designed and finished, many miles of new track were laid, and other improvements of service made. His dealings with the employees were particularly successful. He inaugurated the Employees' Mutual Benefit Association and the Employees' Mutual Building, Savings & Loan Association, and carried through other plans which developed the co-operative spirit and produced desirable results for both employees and company." President Mortimer of the Milwaukee company, in announcing Mr. Stearns' resignation, said: "When Mr. Stearns made known to me the nature of the position with the Bay State Street Railway I could only advise him to accept it as an act of simple justice to himself. He will be in direct charge of the operation of all the departments of the company, and while his work in Massachusetts will probably be no more difficult than his work here, his responsibilities will certainly be greater. No man having direct charge of any street railway can ever be a hero in the eyes of the public; the only hero is one who attacks. Mr. Stearns here has had the most difficult of tasks and despite it all he was never known to lose his temper or answer attacks in kind." After graduation from Purdue University in 1889, Mr. Stearns' first activities were in Chicago in connection with the Columbian Exposition, the Drainage and Hennepin Canals and the elevated railroads. At one time he was chief engineer of the Northwestern Elevated Railroad and later general manager of the Chicago & Milwaukee Electric Railroad. He became assistant general manager of the Milwaukee company in 1911 and vice-president a few months later.

Obituary

Dr. Levi T. Durbin, company physician for the Denver (Co.) Tramway, recently died suddenly at the age of fifty-nine. He was one of the veterans in the Tramway service, having been in its employ for twenty-six years. Mr. Durbin was born in Wooster, Ohio. He was graduated from the University of Denver School of Medicine in 1884. Later he became an instructor at that institution and had been connected with the Denver Tramway since 1891.

Construction News

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

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

FRANCHISES

Phoenix, Ariz.—The Phoenix Street Railway has received from the City Commission a three-year extension of time on its franchise to double track West Washington Street to the capitol and to pave a portion of that street and other streets of the city.

Long Beach, Cal.—The Pacific Electric Railway has asked the Railroad Commission of California for permission to remove its tracks from East Ocean Avenue from First Place eastward. A hearing on this question will be conducted by the commission on Sept. 17.

Atlanta, Ga.—The Georgia Railway & Power Company has asked the Board of County Commissioners for a franchise to double-track its line on Peachtree Road from "Dead Man's Curve" to Buckhead.

Alton, Ill.—Franchises have been drawn up and presented to the Councils of the various towns along the proposed right-of-way of the new interurban line of the Alton & Edwardsville Railroad between Alton and Edwardsville. The right-of-way has practically all been secured. H. H. Ferguson, Alton, is interested. [Aug. 11, '17.]

***Galesburg, Ill.**—The Public Utilities Commission of Illinois has issued an order granting a certificate of convenience and necessity to the Galesburg, Rockford & Northern Railroad to construct a line from Galesburg to Rockford, via Kewanee, Dixon and Oregon. The commission also authorized the company to issue \$26,700 in capital stock and bonds in the sum of \$50,000, and also to purchase the Dixon, Rock Falls & Southwestern Railway, operating between Hoopole, Yorktown and Tampico.

Oak Park, Ill.—The Chicago & West Towns Railroad has received a twenty-five-year franchise from the Oak Park village board. New lines in Division Street and in Harlem Avenue from Division to Twelfth Street are provided for.

Cheektowaga, N. Y.—The International Railway has asked the City Council for a franchise to construct a double-track extension in Cheektowaga.

Easton, Pa.—The Northampton Traction Company has received permission from the Public Service Commission of Pennsylvania to construct an extension to College Hill. Eventually the company expects to construct an extension from College Hill to the western section of the city.

TRACK AND ROADWAY

Montgomery Light & Traction Company, Montgomery, Ala.—This company plans to double-track its line from Montgomery to Pickett Springs, a distance of 6 miles.

Pacific Electric Railway, Los Angeles, Cal.—Extensive trackage improvements have been begun by the Pacific Electric Railway in Long Beach, which will amount to about \$25,000.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—It is reported that the Western Pacific Railroad and the Oakland, Antioch & Eastern Railway have entered into an agreement whereby the former road will finance the latter in the construction of a branch line to tap Suisun and the Vaca Valley. It is understood that the branch will extend from a point on the Oakland, Antioch & Eastern main line near Montezuma to Suisun, where connections will be made with the Vaca Valley and Suisun branch of the Northern Electric Railway. The project, it is said, will involve an expenditure of about \$500,000.

Cienfuegos, Palmira & Cruces Electric Railway & Power Company, Cienfuegos, S. C., Cuba.—A report from this company states that it will construct an extension from Palmira to Cruces, about 10 miles.

Miami (Fla.) Traction Company.—An extension will be built by the Miami Traction Company to Buena Vista.

***Pocatello, Idaho.**—An attempt is being made to finance an electric railway in Pocatello. Richard Douglass, Gate City Motor Company, is reported interested.

Chicago, North Shore & Milwaukee Railroad Company, Highwood, Ill.—This company is placing temporary tracks on County Street, Waukegan, between Clayton and Madison Streets, which is said to be preparatory to the building of a new loop for cars passing up Genesee Street to Clayton Street, west on Clayton to County Street, south on County to Washington and thence east to Genesee Street.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Board of Public Works of Indianapolis has confirmed five resolutions providing for the vacating and widening of parts of Brookside Avenue to make possible the construction of a double-track line to the plant of the Premier Motor Corporation. The proposed line will extend from Brookside Avenue and Eighteenth Street to Twentieth Street and in Twentieth Street from Brookside Avenue to Olney Street.

Wichita Railroad & Light Company, Wichita, Kan.—This company will construct new track in Wichita where paving is to be done.

United Railways & Electric Company, Baltimore, Md.—Automatic signals of the Nachod type have been installed by the United Railways & Electric Company on its Halthorpe line, about 2¾ miles.

Springfield (Mass.) Street Railway.—It is understood that plans are under way for a through passenger trolley route from Springfield to Worcester via Palmer, Ware and West Brookfield. This is to be brought about by the taking over of the Ware & Brookfield Company's branch between Ware and Gilbertville by the Springfield Street Railway and the operation over it of the cars of this company, which now operate only between Palmer and Ware. A connection is being built at West Brookfield between the track of the Worcester & Warren line and that of the Ware & Brookfield line. When this is completed cars can run between Spencer and Ware without change. At Ware a connection is to be made between the tracks of the Ware & Brookfield line and the Springfield line. The new arrangement also contemplates a trolley freight service to Gilbertville.

Worcester (Mass.) Consolidated Street Railway.—Plans have been filed by the Worcester Consolidated Street Railway with the Public Service Commission of Massachusetts for the proposed extension of its tracks in East Worcester and Albany Streets, as approved by the Board of Aldermen, to be used in connection with its freight business entering and leaving the proposed trolley freight stations to be erected between Albany and Shrewsbury Streets.

Grand Rapids (Mich.) Railway.—Work has been begun by this company reconstructing its Grandville Avenue line on Ellsworth Avenue from Fulton Street to King Street.

***Las Cruces, N. M.**—H. M. Gray of Las Cruces and associates are promoting the construction of an interurban electric railway from Las Cruces to El Paso, 44 miles. The proposed line will extend through the irrigated portion of the Rio Grande valley, which is thickly populated. It is said that financial arrangements for the construction of the line have been made and that the work will be begun as soon as the survey is finished and the right-of-way obtained.

Piedmont & Northern Railway, Charlotte, N. C.—This company is building an extension to Camp Wadsworth.

Southern Public Utilities Company, Charlotte, N. C.—Bids have been asked by the Southern Public Utilities Company for the construction of two extensions, each 1 mile long, into Camp Greene, near Charlotte.

Oklahoma (Okla.) Railway.—Right-of-way has been secured by the Oklahoma Railway within the city limits of Guthrie. The ground acquired by the company will be used for trackage and a direct line in and out of the city and for terminal building purposes. The line now running to the park will be abandoned by the interurban line, but city street car service will be inaugurated in its place. Work will be begun immediately on the building of track over the acquired land to a juncture with the interurban south of the city. The new line will shorten the time between Guthrie and south stations.

Port Arthur (Ont.) Civic Railway.—Plans are being prepared by the city engineer for the erection of two new bridges over the McIntyre River, one for each track.

Johnstown (Pa.) Traction Company.—Plans are being contemplated by the Johnstown Traction Company for the construction of extensions in the Seventh and Seventeenth Wards and in Woodvale.

Philadelphia, Pa.—Sealed proposals will be received by the Department of City Transit, Philadelphia, William S. Twining, director, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 524—Steel frame work and railings, concrete floors and parapets, side enclosures, roofs, drain gutters and spouts for ten station platforms and connecting passages or foot bridges between station platforms and station buildings at Allegheny Avenue, Tioga Street, Torresdale Avenue, Ruan-Church Streets and Orthodox-Margaret Streets.

Philadelphia & West Chester Traction Company, Upper Darby, Pa.—This company will construct an extension of its Collingdale line to the Sharon Hill section.

Columbia Railway, Gas & Electric Company, Columbia, S. C.—A double-track line from the limits of Columbia to Camp Jackson has been completed by the Columbia Railway, Gas & Electric Company and operation will be begun at once.

Northern Texas Traction Company, Fort Worth, Tex.—A double-track extension of the Arlington Heights line will be built by the Northern Texas Traction Company to Camp Bowie. The United States army training camp established near Fort Worth.

Port Arthur (Tex.) Traction Company.—It is reported that the Port Arthur Traction Company will construct an additional line in Port Arthur, paralleling its present main line through the city at a distance of 6 blocks.

Salt Lake, Garfield & Western Railway, Salt Lake City, Utah.—Work on the electrification of the Salt Lake, Garfield & Western Railway and the extension of its lines to Garfield is now under way. It is stated that a contract has been entered into between the company and the Utah Light & Traction Company providing for the use of the street car tracks by Saltair trains. The road is being engineered and equipment designed by H. A. Strauss of Chicago.

Monongahela Valley Traction Company, Fairmont, W. Va.—Plans are being made by this company for the construction of an extension from Bridgeport to Rosemont. Flemington, Galloway, Wendell and Simpson to reach the coal mining towns.

SHOPS AND BUILDINGS

Southern Pacific Company, San Francisco, Cal.—This company contemplates the construction of a one-story brick passenger station at Victoria, at a cost of about \$25,000.

Sioux City (Iowa) Service Company.—This company will construct an 80-ft. x 244-ft. addition to its carhouse at Greenville at a cost of about \$12,000.

United Railways & Electric Company, Baltimore, Md.—This company plans the construction of a new waiting station at Overlea.

Youngstown & Suburban Electric Railway, Youngstown, Ohio.—It is reported that this company contemplates the construction of a new station and power station at Columbiana.

Tulsa (Okla.) Street Railway.—This company plans to construct an addition to its carhouse in Tulsa to take care of new equipment expected this fall.

Tacoma (Wash.) Municipal Railway.—L. A. Nicholson, city engineer, has been instructed by the City Council to prepare plans and specifications for the construction of a new carhouse for the Tacoma Municipal Railway on the tideflats.

POWER HOUSES AND SUBSTATIONS

Fort Smith Light & Traction Company, Fort Smith, Ark.—The erection of a new power house to cost about \$250,000, either on the site of the present power house on the Arkansas River or on Poteau River in Le Flore County, is under consideration by the Fort Smith Light & Traction Company. The present plans provide for a plant of 5000 hp.

capacity. The present plant has an output of 4200 hp., which it is proposed to enlarge and improve so that the two plants will have a generating capacity of 10,000 hp.

Georgia Railway & Power Company, Atlanta, Ga.—A petition has been presented to the Railroad Commission of Georgia by the Georgia Railway & Power Company for permission to issue \$2,500,000 in bonds, the proceeds to be used for the installation of the sixth unit in the Tallulah Falls power station, the construction of a new reservoir on the Tallulah River, above Rabun Lake, to be known as the Burton reservoir, and the construction of a new power station, 2 miles below the Tallulah Falls plant, near the junction of the Tallulah and Chattooga Rivers, at the point where they form the Tuglo River.

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—According to recent reports the Chicago, Milwaukee & St. Paul Railway Company will begin work the latter part of August on the construction of a \$25,000 substation on the tideflats, in connection with the electrification of its lines in Tacoma and in the State of Washington.

Chicago & Joliet Electric Railway, Joliet, Ill.—On account of the necessity to take current from the Public Service Company's new steam plant at Joliet, at the generating pressure of 12,000 volts instead of at 2300 volts as at present, this company is installing transformers and lightning protection for this service at Joliet. An underground cable connection between the railway substation and the Public Service Company's new substation under construction at the corner of Jackson and Ottawa Streets will also be provided. In planning for the changes necessary, it was decided to construct and equip an entirely new railway substation at Joliet and to install an automatic substation at Dellwood Park between Joliet and Lockport. The latter station will enable the company to release 5000 lb. of aluminum cable, and the sale of this and the equipment in the present Joliet substation, at the prevailing prices, will pay a large part of the cost of the new equipment. The new Joliet substation will be located at the northwest corner of St. Louis and Osgood Streets, adjoining the carhouse and shops of the company. Two General Electric Company 750-kw. synchronous converters and six 260-kva., 13,200/445-volt transformers with the necessary switchboard equipment for the Joliet station, and one 300-kw. converter together with three 100-kva. transformers and automatic control equipment for the Dellwood station have been purchased. It is expected to have these stations in operation by Jan. 1, 1918. In order to release the aluminum cable at once, a 250-kw. motor-generator set for temporary use has been installed at Dellwood Park.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—One of the provisions which are being made by the St. Joseph Railway, Light, Heat & Power Company to increase the steaming capacity of the boilers for the coming winter, is to install larger stokers. Two of the 440-hp., 21 x 10 tube, B. & W. boilers are equipped with five-retort Tayler stokers. An extra retort is being added to each of these stokers, which will increase the steaming capacity approximately 20 per cent. The Tayler "power dump" feature is being provided as well as additional draft capacity. Two of the 440-hp. boilers are equipped with Green chain stokers, containing approximately 90 sq. ft. of grate area each. These stokers are to be replaced by wider and longer ones of the same make, containing 136 sq. ft. of grate area. This change will add approximately 50 per cent to the steaming capacity of the two boilers.

International Railway, Buffalo, N. Y.—A new substation about 75 ft. x 90 ft. will be built by the International Railway on North Division Street.

Toledo Railways & Light Company, Toledo, Ohio.—Henry L. Doherty & Company report that about 500 men are at work on the construction of the great power plant of the Toledo Railways & Light Company on the Maumee River, near the center of the city. It is expected that the first unit will be in operation by Dec. 1.

Tacoma (Wash.) Municipal Railway.—L. A. Nicholson, city engineer, has been instructed by the City Council to prepare plans and specifications immediately for the construction of a concrete substation for the Tacoma Municipal Railway on the tideflats.

Manufactures and Markets

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

Manufacturers and Purchasers Should Be Honest with Each Other

"Wolf" Cry of Purchasers as Trying to Manufacturers as Inconsistent Alibis of Latter Are to Railway Men

In the condition of disregard for each others' interests existing between some manufacturers and some railways, it seems quite evident to the outside interested observer that both parties are at fault. In trying to overcome the long-delivery condition of the market, the railway men have formed a habit of telegraphing their orders for materials, sending them by special delivery, marking them rush, and in other ways conveying the impression of very urgent need. This has become such common practice that the manufacturers are treating such markings as matter of fact, with the result that the railway company really in trouble is much in the same predicament as the man who cried "wolf"—it may get no special attention on a wired order. The purchasers should realize, knowing as they now do the general condition of the market and the difficulty the manufacturers face in getting materials, that not every order can be treated as truly a rush order, and that the surest way of guarding against shortage of material is to anticipate their needs and place the order far enough in advance to assure delivery before their supply is exhausted. In other words, the manufacturer should not be expected to continually disrupt the routine through his plant in order to cover someone's neglect to order material until he was out of it or nearly so. Some purchasing agents are helping in this situation because of their knowledge of the market, by disregarding requests of various department heads to wire in an order for such and such material, and then sending the order by mail in the usual way.

IRREGULARITIES IN DELIVERIES SHOULD BE AVOIDED

On the other hand, the manufacturers should be consistent when offering explanation of failure to make delivery as promised. Incidents are related by the purchasing agents which strike them as either disgusting or humorous, depending on the circumstances and their frame of mind. In one instance, when the purchasing agent was trying to find out the reason for non-receipt of material as promised, the manufacturer replied that it was absolutely impossible to get cars. However, the fact that this same manufacturer had shipped twelve carloads of the same material to the same purchaser on an order placed later at a much higher price, naturally caused the purchasing agent to think that there were considerations other than the car shortage question entering into the alibi.

Another purchasing agent on several different occasions has experienced the embarrassment, upon cancellation of orders, of receiving a reply from the manufacturer that the material had been shipped a few days previously. This occurred after previous report had been made shortly before cancellation that it would be impossible to ship for thirty or sixty days, and the purchasing agent had accordingly scoured the country to supply his needs from another source. This, he said, had occurred too frequently to warrant belief that there was no juggling of the order of shipments. Another interesting case was one in which the purchasing agent had received a letter dated July 31, saying that the manufacturer would be unable to ship the order promised for delivery July 1 until the middle of August, and then only part of it with the remainder to be shipped the last of August. A few days after this the railway company took on a government contract which required the use of this material. The purchasing agent accordingly wired the

manufacturer to this effect, and the latter replied that the order had been shipped complete early in July.

The manufacturers are endeavoring certainly to avoid such errors as these, but perhaps calling attention to them in these columns will serve as a reminder to tighten up on these details of the customary follow-up.

War Conditions Help Standardization

Many Railways Forced to Use Standardized Products, No Other Being Obtainable—Cost of Special Apparatus Prohibitive

Many railways that have found it imperative to build additional mileage on account of cantonments or extensions required by franchises have applied to the steel mills to be included on future rollings of standard rail sections such as are used by the steam railroads. The railways have been forced to follow this procedure, as deliveries on special sections are quoted from twelve to fifteen months, with no guarantee that the amount desired will be forthcoming at the end of that time. A good many railways, of course, cannot avail themselves of this opportunity because the most of their mileage is laid on paved streets in the cities where girder rail is required. Interurban railways find that it is much cheaper to purchase 100-lb. standard section as used on steam roads than lighter sections which are practically impossible to obtain except in second-hand markets.

GOOD DELIVERIES ONLY ON STANDARDIZED PRODUCTS

In many cases standardized products are the only ones obtainable at present, and those few engineers who formerly have insisted upon special products are accepting the inevitable as the only possible means to an end. In speaking of standardization a well-known engineer in the railway and central station industry recently said: "Our industry, like others, is burdened with a few 'over-educated' engineers who cannot see any good in standardization. They must design their own turbines, boilers, condensers and meters, and even the push buttons for the wardrobe closets do not escape. These 'brainstormers' of engineering bless the manufacturer with contracts filled with conditions and changes in specifications that take at least 50 per cent more time to fulfill and obtain a product that is as a rule inferior to the standard. It is pretty safe to assume that the builders know more about their own business than the average outsider."

While visiting a plant in New England which makes a considerable amount of railway castings, forgings, etc., the writer arrived at the plant while the manager was discussing with one of the salesmen an order which had just been received. The order was for a very small number of special castings which this company had been able to make for a large customer, but on which there was no profit. Although the order was a small one, the company hated to disappoint the large customer and the order was accepted. In speaking of this order the manager said: "If we should return such orders to the companies from which they were received with a check for \$50 we would still be money ahead."

Heroic efforts are being made by the United States government to speed up production, and without standardization this would be an impossibility. The prosperity of many industries is due directly to standardization. Manufacturers have not only been able to produce apparatus and accessories in large quantities and at greatly reduced prices compared with those prevalent before standardization was introduced, but are also in a position to make fairly good deliveries on those products.

Forced Reconstruction Work Helps Steel Tie Sales

Pavement Improvements or Extensions Responsible for Much Work—Inquiries Good, but Most Sales for Forced Work

The number of miles of reconstructed and extended track is less this year than ever before, according to a well-known sales manager of rail products. Ninety per cent of the business is forced reconstruction on pavement improvements or extensions on account of franchises. Practically no work has been voluntarily done in paved street work. Although sales in 1916 showed a 100 per cent increase over the previous year, this year's sales for six months have amounted to more than that secured during all of the year 1916. Most of this business was secured in the Central West.

The demand for steel ties and crossing foundations has been greatly increased by companies that are putting in concrete construction for the first time. The use of steel ties has so reduced the depth and width of the foundation slab that the cost of the excavation and of the concrete is cut in half. This has virtually made the steel tie a war-time tie. Labor is not only conserved but materials as well, and the effect of saving space in shipments has its effect on conserving cars in shipping. To build 1 mile of track requires 880 steel ties, and 1000 of these ties can easily be loaded on two standard steam freight cars. On the other hand, 2640 wooden ties are required for a mile of track, for which six to eight cars must be provided.

RAILWAYS USING STANDARD RAIL SECTIONS

The company in question has had more business pending than was obtained altogether. If conditions were normal the business transacted would be more than double what it is at present. High prices and inability to obtain labor has caused the postponement of work in many cities. Those in which war industries are being carried on have had the greatest labor shortage. At one city on the Great Lakes the engineer in charge of the track work was an old experienced man and had purchased his material months in advance so that the work would not be delayed by the high prices and poor delivery situation. The work which he had planned, however, cannot be completed because labor is so scarce and can be obtained only at a prohibitive figure. Many companies find that they are unable to get rails for new work and have been forced to substitute standard section rail used by the steam railroads. Of the latter many railways are laying the 100-lb. Dudley, as used on the New York Central, and the 100-lb. A. R. A., or any other sections that can be obtained. Many roads which use a special section will now find that they are at a very great disadvantage because the standard sections that are now available cannot be used on their property. As much of the business has been transacted in the Middle West little trouble has been occasioned on account of car shortage. Embargoes, however, have held up shipments to the East very badly. On one shipment to the State of Connecticut made early in December the company reported late in January that the shipment had not been received, and on being traced it was found just outside of the shipper's yard.

RAW MATERIAL, PRICES AND DELIVERIES

Contracts covering raw material are in effect and, with the exception of one or two small items used in steel tie and crossing foundation work, practically no trouble has been encountered in obtaining them. The prices of steel ties and crossing foundations have increased 20 per cent, and the only reason the increases have not been considerably greater is that the company was fully protected by long-time contracts. No difficulty is being experienced in making prompt deliveries at the present time. As a rule frog and switch manufacturers require six months for delivery of crossing foundations. The only product on which this company has been unable to get prompt deliveries is malleable-iron clips. Deliveries on the dates promised have been made but the stock on hand has gradually been reduced. The high prices of special track work, manganese, steel crossings, etc., has greatly increased sales of steel ties and crossing structures.

Steel Shortage May Influence Wooden Car Purchases

Considerable difficulty is being experienced by some of the car manufacturers in obtaining steel plates for use in building electric railway steel cars. One manufacturer has actually had to go back to several of its customers and tell them that if they could by any means or influence get the steel, that the cars would be promptly built. In at least one case the customer made a very determined effort to get the necessary material from some source, but, at latest reports, had been unsuccessful in obtaining a promise of anywhere near satisfactory delivery.

While this condition prevails in the steel market, the manufacturer referred to had plenty of lumber in its own stock, with which first-class wooden cars could be built. This condition brings up the consideration that it may be necessary for those companies which require additional equipment promptly to forego some of the operating economies possible with the lighter weight steel car, for the sake of getting delivery on a slightly heavier wooden car which may be earning considerable revenue during the many months that it will be necessary to wait for a steel car.

Report on the Coal Situation

In its report for Aug. 11 the United States Geological Survey states that during the three weeks ended July 28, the "lost time" reported by the bituminous coal mines represented between one-fourth and one-fifth of the production of the country. The causes were approximately as follows: Car shortage, 16 per cent; labor trouble or shortage, 4½ per cent; mine disability, 4 per cent. More than 800 mines in twelve States are now furnishing weekly statements.

The chief topic of interest in oil, paint and varnish circles is the recent increase in raw and boiled linseed oils which have advanced 10 to 12 cents a gallon in the last two weeks. Poor progress of the growing seed crop as shown by reports from the Department of Agriculture and a sharp advance in oils of all kinds are said to be responsible for the increase.

NEW YORK METAL MARKET PRICES

	Aug. 3	Aug. 17
Prime Lake, cents per lb.....	29	28
Electrolytic, cents per lb.....	29	28
Copper wire base, cents per lb.....	36	36
Lead, cents per lb.....	10 7/8	10 7/8
Nickel, cents per lb.....	50	50
Spelter, cents per lb.....	8 3/4	8 3/4
Tin, Straits, cents per lb.....	63 3/4	62 1/4
Aluminum, 98 to 99 per cent, cents per lb.....	56	56

OLD METAL PRICES

	Aug. 3	Aug. 17
Heavy copper, cents per lb.....	23 1/2	24 1/2
Light copper, cents per lb.....	20 1/2	21 1/2
Red brass, cents per lb.....	19	19 1/2
Yellow brass, cents per lb.....	15 1/2	16
Lead, heavy, cents per lb.....	8 1/2	8 1/2
Zinc, cents per lb.....	6	6
Steel car axles, Chicago, per net ton.....	\$45.00	\$41.00
Old car wheels, Chicago, per gross ton.....	\$31.50	\$31.50
Steel rails (scrap), Chicago, per gross ton.....	\$43.00	\$39.00
Steel rails (relaying), Chicago, per gross ton.....	\$60.00	\$55.00
Machine shop turnings, Chicago, per net ton.....	\$16.50	\$17.00

CURRENT PRICES FOR MATERIALS

	Aug. 3	Aug. 17
Rubber-covered wire base, New York, cents per lb.	36 1/2	34 1/2
No. 0000 feeder cable (bare), New York, cents per lb.	36 1/2	36 1/2
No. 0000 feeder cable (stranded), New York, cents per lb.	33 3/4	33 3/4
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh.....	\$38.00	\$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton....	\$40.00	\$40.00
Wire nails, Pittsburgh, per 100 lb.....	\$4.00	\$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb..	\$7.00	\$7.00
Steel bars, Pittsburgh, per 100 lb.....	\$4.50	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$8.35	\$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.85	\$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$4.65	\$4.65
Cement (carload lots), New York, per bbl.....	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.....	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.....	\$2.60	\$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.13	\$1.24
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.14	\$1.25
White lead (110 lb. keg), New York, cents per lb.	12 3/4	12 3/4
Turpentine (hbl. lots), New York, cents per gal..	42 1/2	42 3/4

ROLLING STOCK

Cataluna Railways, Barcelona, Spain, are in the market for forty cars.

Pensacola (Fla.) Electric Company is reported to have purchased four large interurban cars for its Bay Shore line.

Sand Springs (Okla.) Interurban Railway lost one motor car and six trailers in a fire which partially destroyed the company's carhouse. The loss is estimated at \$25,000.

Henry L. Doherty Company, New York, N. Y., is reported to be considering the purchase of a large number of cars for its St. Joseph, Mo., Toledo, Ohio, and other properties.

Clinton, Davenport & Muscatine Railway, Davenport, Iowa, has been considering the use of one-man cars for some time and expects to be in the market for some equipment of this type in the near future.

Northwestern Pennsylvania Railway, Meadville, Pa., has specified the following details for two trailer box freight and for two double-end package freight cars being constructed by the Wason Manufacturing Company.

Double-End Package Freight	Trailer Box Freight
Number of cars ordered.....2	.....2
Date of order.....June	.....June
Date of delivery.....September	.....September
Builder.....Wason Mfg Co.	.....Wason Mfg. Co.
Type.....Double-end, package freight	.....Trailer box freight
Carrying capacity.....30 tons	.....30 tons
Weight (total).....50,000 lb.	.....40,000 lb.
Bolster centers, length.....29 ft.	.....29 ft.
Over bumpers.....45 ft. 11 1/2 in.	.....36 ft.
Over vestibule.....44 ft. 11 1/2 in.	.....34 ft. 4 in.
Width over all.....8 ft. 8 1/2 in.	.....8 ft. 6 in.
Rail to trolley base.....12 ft. 10 in.	.....12 ft. 10 in.
Body.....Steel underframe—wood body	.....Steel underframe—wood body
Interior trim.....Sheathed with spruce	.....None
Headlining.....None	.....None
Roof.....Arch	.....Arch
Trucks.....Peckham	.....Wason diamond frame with used GE-57 motors

TRADE NOTES

Shepard Electric Crane & Hoist Company, Chicago, Ill., has opened an export department at 30 Church Street, New York City.

Davis-Bournonville Company, New York, N. Y., has moved its Detroit office from 88 Adams Avenue W. to 427 Grand River Avenue.

Edward H. Hill, secretary and treasurer of the McQuay-Norris Manufacturing Company, St. Louis, Mo., died Aug. 11 after an illness of several weeks.

George B. North has been appointed general sales manager of the Hazard Manufacturing Company, Wilkes-Barre, Pa., and will be located at 533 Canal Street, New York City.

L. S. Henley, formerly electrical engineer for the Cornwall Ore Banks Company, has accepted a position with the Westinghouse Electric & Manufacturing Company, Philadelphia, Pa.

Henry D. Lindsley and Thomas T. Desmond announce the organization of their business as investment bankers and engineers under the name of Lindsley, Desmond & Company, with offices at 31 Nassau Street, New York City.

Theodore Swann, who has been sales manager of the Alabama Power Company for the last three years, has resigned to become president and general manager of the Southern Manganese Corporation.

George Cutter Company, South Bend, Ind., announces the appointment of R. W. Ten Broeck and A. B. Sonneborn as sales representatives for the state of Michigan, with offices at 426 Ford Building, Detroit.

Safety Car Devices Company, St. Louis, Mo., advises that the Monroe, La., safety car described in the Aug. 11 issue of the ELECTRIC RAILWAY JOURNAL is equipped with its well-known air-operated Safety combination instead of manually-operated doors and steps, as mentioned in the article.

Roy L. Baker has resigned as power sales engineer of the Commonwealth Edison Company, Chicago, Ill., to become manager of the steam and electrical department of the Railway & Mine Supply Company, 332 South Michigan Avenue, Chicago, Ill.

Adrian D. Joyce, general manager of sales and distribution of the Sherwin-Williams Company, has been appointed by

the Federal War Industries Board to membership on a special committee for the standardization of paints and varnishes in connection with war purchases. On the committee with Mr. Joyce are six other prominent paint manufacturers of the country.

Ohio Brass Company, Mansfield, Ohio, reports the following changes in its organization: J. E. Slimp, who has represented the company for a number of years, first in the South with headquarters in Atlanta and later in New England with headquarters in Boston, has been transferred to an important position in the home office at Mansfield, Ohio. L. A. Wilson has been appointed to represent the company in New England. He will make Boston his headquarters. Mr. Wilson has a wide acquaintance in the New England territory where he has traveled for a number of years in the interests of the lamp department of the General Electric Company.

National Board of Fire Underwriters, New York, N. Y., headquarters at 76 William Street, has issued a poster about 11 in. x 14 1/2 in., containing seven suggestions on how to prevent fires. The card is illustrated with border sketches and is issued with the indorsement of the Council of National Defense. It is headed "A Patriotic Duty of Every American Is to Prevent Fire." Some 60,000 of these cards are being mailed to the leading manufacturers throughout the country with a booklet of directions for the prevention of fire, under the title of "Safeguarding Industry." Copies will be sent to any manufacturer on request, without expense to him.

Peter M. Kling, consulting engineer Laconia Car Company, has severed his active connection with that organization. He says in his letter of resignation that having devoted thirty-four years of the best part of his life to the car industry, he felt that he was now entitled to enjoy a much-needed rest. Mr. Kling has long been prominent in the car building industry, and his experience dates back to the days of animal traction. When superintendent of the Brownell Car Company, he was largely responsible for the Brownell "accelerator," easy-access car. Later he was successively vice-president and general manager of the St. Louis Car Company, general manager of the John Stephenson Company, and manager of the passenger car department of the Pressed Steel Car Company. In 1912 he assisted the mechanical department of the Brooklyn Rapid Transit Company in developing its new type of cars while engineer of car construction for that company.

NEW ADVERTISING LITERATURE

Edison Storage Battery Company, Orange, N. J.: Bulletin 819 on Edison electric portable lighting outfits.

Sterling Motor Truck Company, Milwaukee, Wis.: A new publication, "Driver Dan, the Sterling Man," of interest to truck users.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 221, listing offerings in rails, locomotives, cars, cranes, pipe, piling and tanks.

Spray Engineering Company, Boston, Mass.: A bulletin describing its Spraco pneumatic painting equipment. This is a further development of the Spraco paint gun which was recently developed.

Leonard Bundy Electric Company, Cleveland, Ohio: A bulletin descriptive of its safety-type knife switches, panelboards, cabinets, etc. It is also distributing a bulletin descriptive of knife switches only.

Society for Electrical Development, Inc., New York, N. Y.: A bulletin, "Aims and Achievements." This is a brief summary of what the society is accomplishing for its members and for the entire electrical industry. This bulletin describes just what this society is, how it has grown, what its work includes, its members, its officers and committees.

Ohio Brass Company, Mansfield, Ohio: Pamphlet descriptive of the O-B cam tip for overhead line material, with views of trolley frogs, crossovers, section insulators, etc., fitted with these cam tips, also illustration showing method of attaching wire to these clips. The pamphlet is entitled "Saving Time on the Line."