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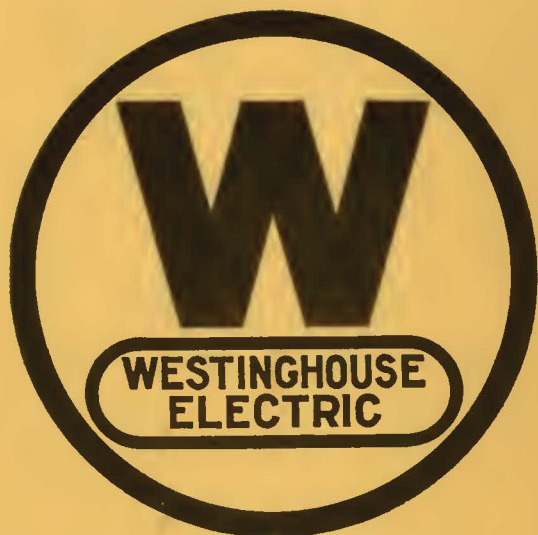
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Read This Quotation From A Prominent Elec- tric Railway Operator:

“I further believe that Street Railways should purchase their material rather than manufacture it, unless there is some special reason for doing so. In most instances, where companies think that they can manufacture for less than they can buy, I believe that a proper cost accounting system would show them to be in error, and this applies particularly to the smaller companies.”

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Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.



Westinghouse

Electric Railway Journal

HENRY W. BLAKE and HAROLD V. BOZELL, Editors

HENRY H. NORRIS, Managing Editor

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MAXIMUM SAFETY!

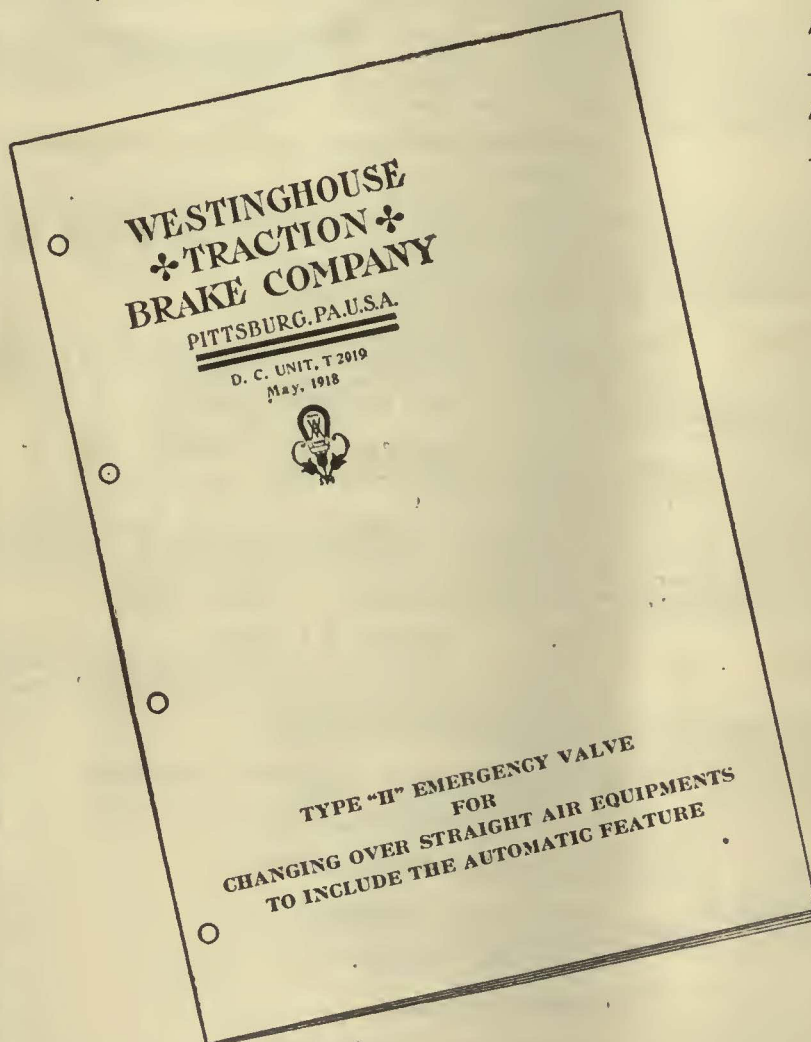


This Leaflet Tells You How

How to secure maximum safety in car operation by changing over your existing Straight Air Brake equipments to include the more advanced Automatic Emergency Feature is the subject of Descriptive Catalog T-2019, which is yours for the asking.

This change-over is accomplished easily and quickly, with slight expense, merely by adding the Westinghouse "H" Emergency Valve. The flexibility of the straight air equipment is not impaired and there is no change whatever in the brake valve or its manipulation.

The "H" Emergency Valve offers an economical solution of an important braking problem. Descriptive Catalog T-2019 tells you why.



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WESTINGHOUSE TRACTION BRAKES

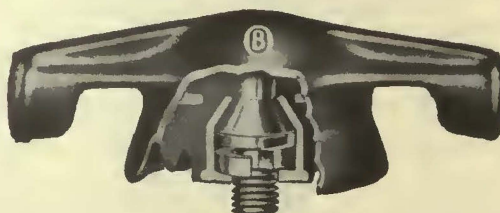
O-B Lock Trolley Hangers— A tighter, smoother line of longer life

Every ear fits up tightly to every O-B Lock Hanger. The drawings below show how ear and hanger become a rigid unit—weather-tight and time-proof. All the threads are protected. There is no vibration between ear and hanger.

The good features of the cap-and-cone and of the round top suspension are combined in the O-B Lock Hanger. It has the aligning feature of the first, it is as easy to install as the latter.

O-B Lock Hanger is a self contained unit, protected by O-B Sherardizing, insulated with Dirigo Composition.

Prompt Shipment.

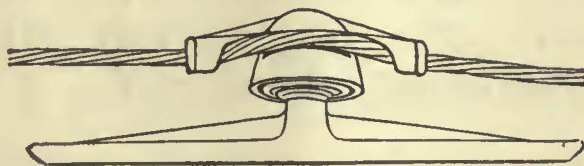


O-B Type F Lock Hanger

When the ear is tightened it pulls the stud down against the heavy spring. The hanger is self-contained, with no loose parts.

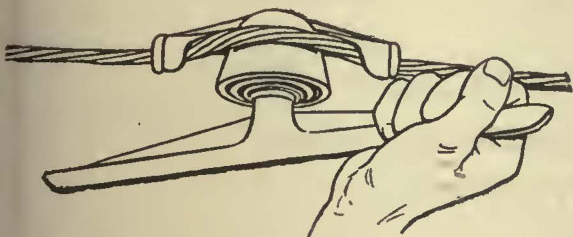
This is the way O-B Lock Hanger works—

Usually the ear is out of line with the trolley wire when it first makes contact with the hanger:



With Ordinary Hanger—

The ear must be backed off.

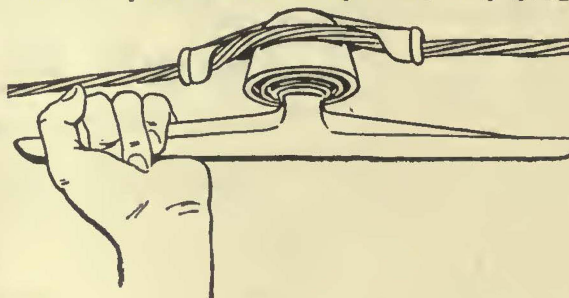


which leaves a loose joint between ear and hanger:

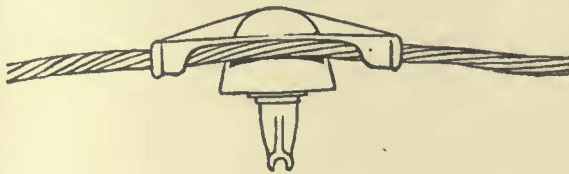


With O-B Lock Hanger—

After first contact, the ear is rotated still further: The stud is pulled down and compresses a heavy spring.



The result is a tight, solid joint between lock hanger and ear when the latter comes in line with the wire:



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CLEVELAND

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FOUR
Repeat
Orders
so far
this year

Toronto is the second one
(Next week another)

Watched costs—then bought

8 More DIFFERENTIAL CARS

Toronto's Story

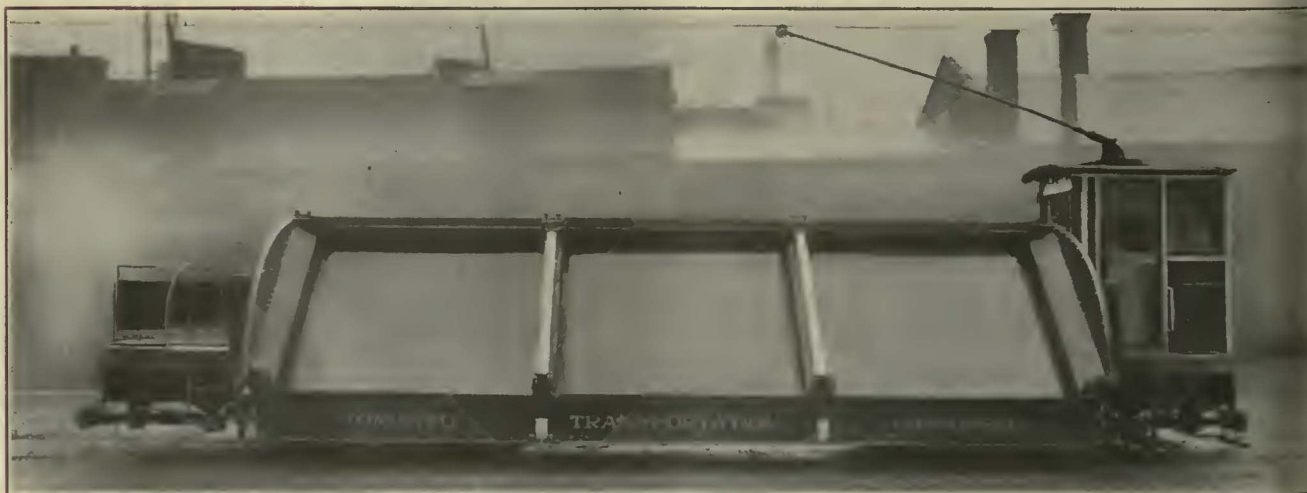
1921 — 3 *Differential Cars*

1922 — 8 *Differential Cars*

It took only three months for the engineers of the Toronto Transportation Commission to find out that they could place materials with Differential Cars at even less than one quarter of the cost by other methods. Then they ordered eight more for their program of track construction and maintenance.

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Findlay, Ohio



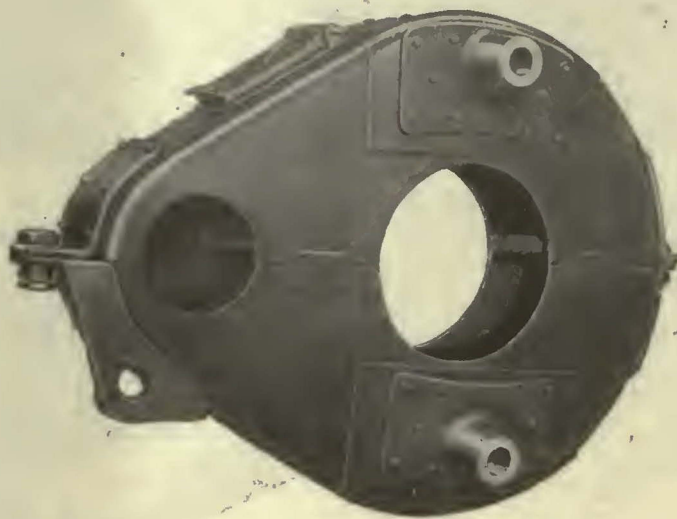
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and send for respec-
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The best way to judge a case is to try it. Ask any judge. The Keystone Steel Gear Case is a light case, riveted and spot-welded to stand the gaff of the roughest roadbeds. It's oil-tight and dirt-proof. These qualifications can be expected of this gear case.

Made for use with all types of motors. Send for data sheets.

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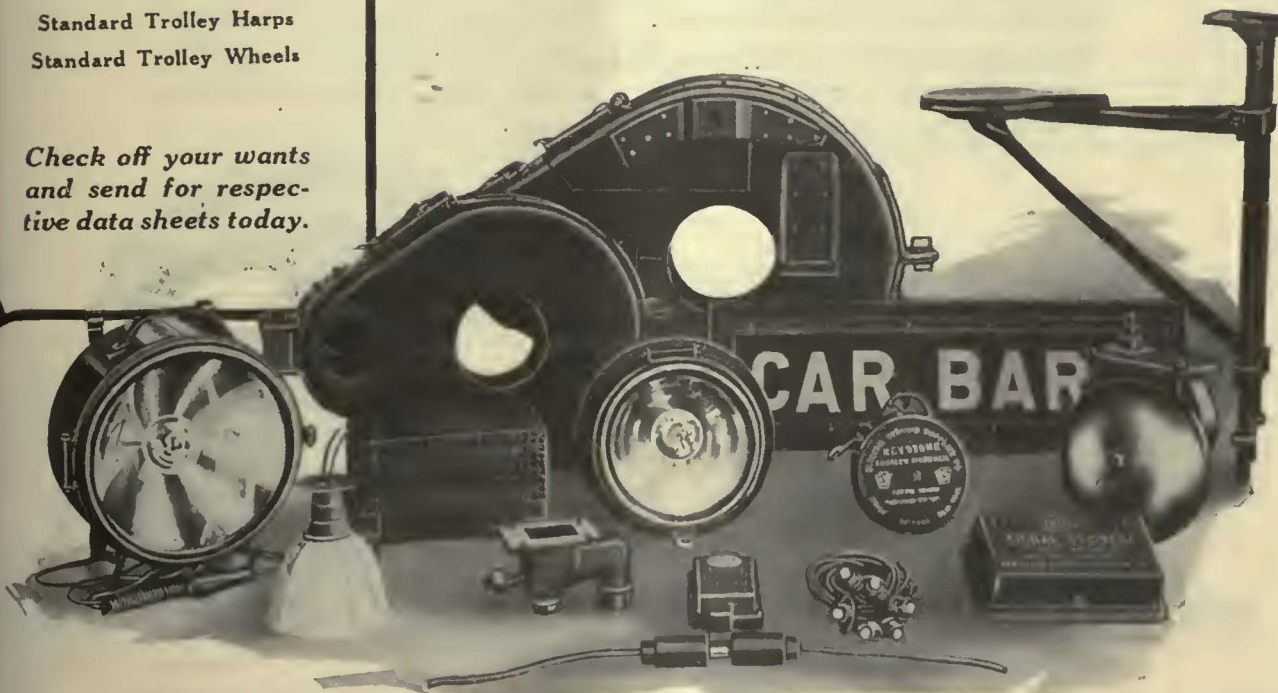
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*that trolley rope
needs no attention with*

MILLER TROLLEY SHOES

(Patented)

They Cling to the Wire

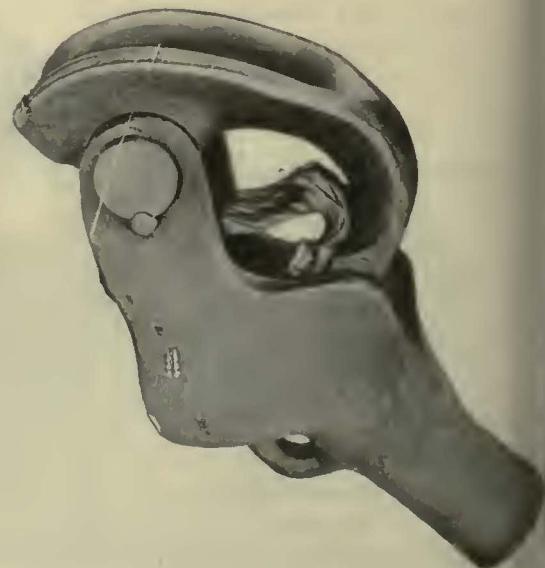
The one-man car operator cannot get his car over the road if he has to keep going to the rear to replace a dewired trolley. He can't be blamed for torn-down spans.

Eliminate these troublesome features of one-man car service by using Miller Trolley Shoes. They do away with jumping and arcing—and they are lower in maintenance cost.

One-Man Car Service

can be made a source of satisfaction and economy with Miller Trolley Shoes. They meet every requirement for increased efficiency.

Miller Trolley Shoe Company
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Snappy Service Coming

On Those Frankford Philadelphia Cars

Three 4-ft. doors on each side mean least number of steps for the passengers.

National Pneumatic door control means *quick* opening and closing of doors.

National Pneumatic electric contact tripping shoe means *safe* opening and closing, the closing doors reversing at once if they touch a passenger.

National Pneumatic push-button control placed at car ends permits guard to control *two* cars at once; and there are outside buttons for station guards, too.

Finally, pilot lamps tell both motorman and guards that the doors are closed *right*.

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Motorman's Light Signals

Door and Step Control
Safety Interlocking Door Control

Multiple Unit Door Control

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Toronto, Ont.

National Pneumatic Company, Inc.
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Edison Bldg., Chicago
Works: Rahway, N. J.

2491 METERS AT ALL STREET CARS WILL ECONOMY FOR POWER SAVING



ECONOMY Meter with Power-Saving and Car Inspection Dials

Economy Power-Saving Railway Meters, by recording the kilowatt-hours consumed, show both the motorman and the management the individual "power bills." Thus they get down to the very fundamentals of energy checking and saving. In addition individual car energy records afford data of high engineering value and a convenient basis on which to inspect car equipment.

*The Service Rendered
Purchased Two Years
Present Order-*

As a factor in its campaign for the highest efficiencies in giving good street car service in a large metropolitan district, the Philadelphia Rapid Transit Company has just placed a very large order for Sangamo ECONOMY Railway meters sufficient in number to equip all its street railway cars.

This notable purchase is made after nearly two years' use of 310 similar ECONOMY Meters purchased in 1920 and used to completely equip the cars of its Callowhill Division. The energy saving induced and the car inspection and maintenance savings made on this division as well as the operating reliability and low maintenance cost of the meters have fully justified the present installation of Economy Meters on the entire street railway system of Philadelphia.

Standard on nearly 100 roads
Saving $\frac{1}{3}$ to $\frac{1}{2}$ cent per car mile

PHILADELPHIA BE EQUIPPED WITH METERS and CAR INSPECTION

*By 310 Meters
ago Justified the
Note the Reasons*

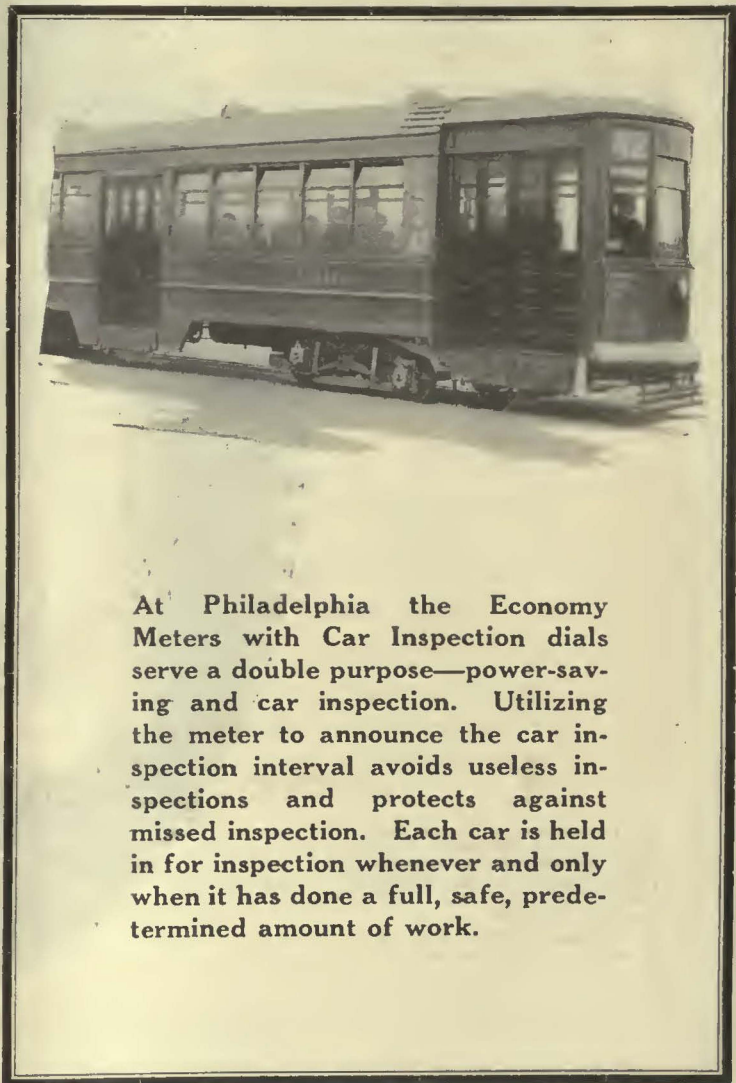
First, the meter induced car energy savings which more than equalled the operating and capital charges against the meters at the end of 12 months.

Second, in addition to energy savings, the inspection of rolling stock on the kilowatt-hour basis not only proved the correctness of this principle but effected substantial economies in inspection cost.

Finally, the combined effect of the two foregoing benefits was further evidenced by a greatly reduced number of car equipment failures.

Philadelphia will operate with an Economy Meter on every street car and will inspect all cars on the kilowatt-hour basis henceforth.

Let us prepare an estimate for your conditions.



At Philadelphia the Economy Meters with Car Inspection dials serve a double purpose—power-saving and car inspection. Utilizing the meter to announce the car inspection interval avoids useless inspections and protects against missed inspection. Each car is held in for inspection whenever and only when it has done a full, safe, predetermined amount of work.

Economy Electric Devices Company

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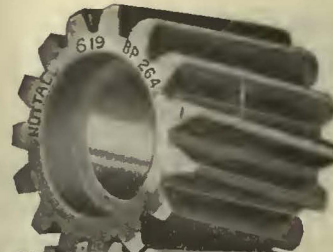
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Ground Pinion Bores

assure a correct fit
on armature shaft
and prevent injury
to the shaft taper.



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An Operator Reports:—
"The Helical Gears in-
stalled on this property
are giving excellent serv-
ice and bearing wear has
not been greater, if as
much as it was with spur
gears."

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New York

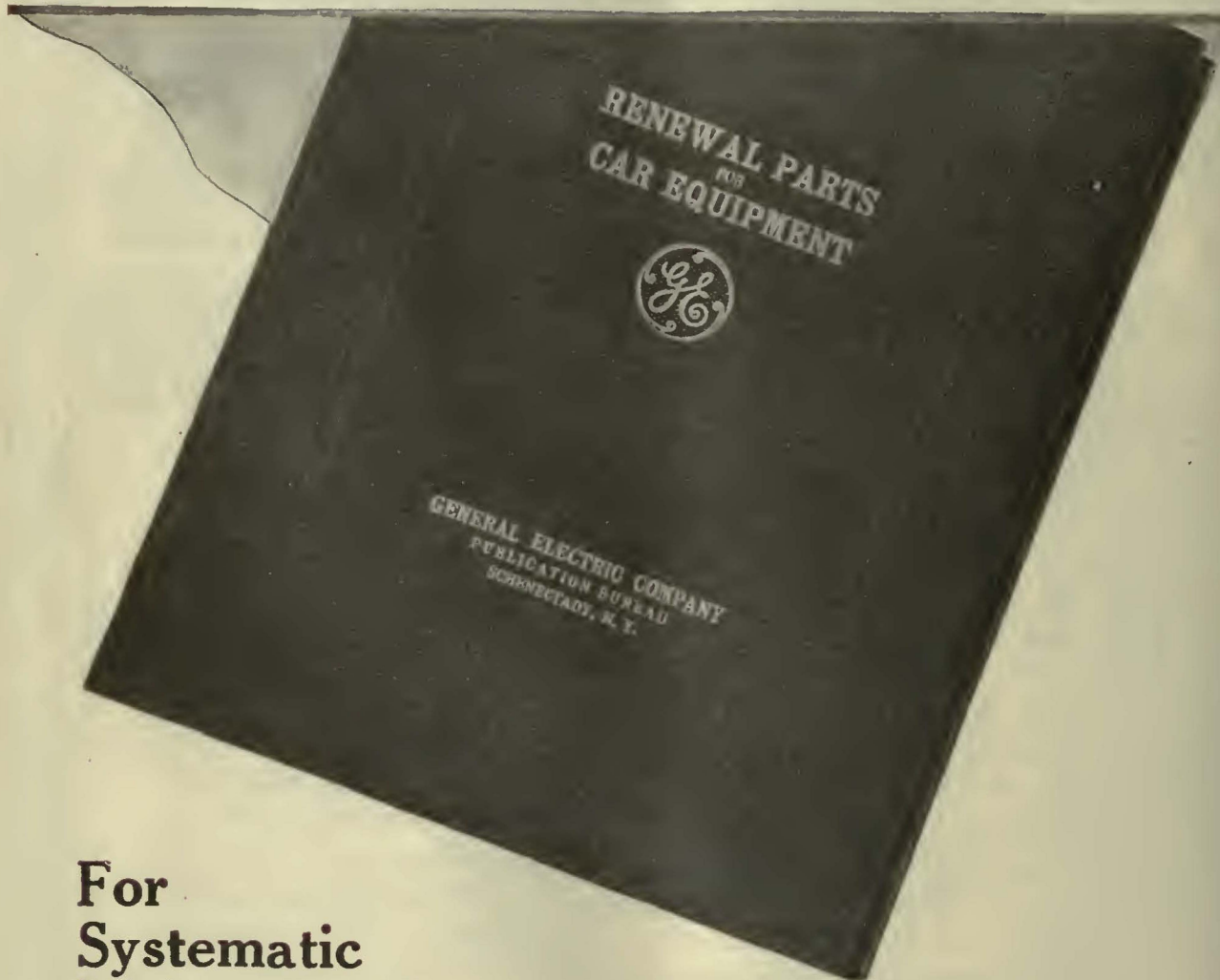
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Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Volume 59

New York, Saturday, March 25, 1922

Number 12

The New York Valuations

ON THE resumption of the valuation hearings by the New York Transit Commission on March 20, the companies, in starting to present their side of the case, their opinion and evidence, very properly protested against the commission accepting the recommendations of its own valuation bureau. It will be recalled that on Feb. 20, when these hearings opened with the bureau's testimony—and then adjourned to be reopened March 20—four sets of figures were presented and one of these recommended, *i.e.*, that based on estimated original cost. Comment as to the significance of this valuation and recommendation was made in these columns in the issue of Feb. 25. Suffice it to repeat that these figures are testimony only—proper and necessary as a part of the complete picture—but they are testimony only. A fifth figure is yet to be presented, based on the future earning capacity of each of the roads upon the basis of the 5-cent fare and present conditions of management. It is of no use to enter upon an academic discussion of the basis or theory of valuation—the rule is pretty clear by this time. *Smith vs. Ames* is still controlling. The United States Supreme Court has named as some of the things to consider:

The original cost of construction,

The amount expended in permanent improvements,

The amount and market value of its bonds and stock,

The present as compared with the original cost of construction,

The probable earning capacity of the property under particular rates prescribed by statutes.

It is to be expected, therefore, that the commission in determining value will consider Mr. Madden's figures merely as evidence. It would be a peculiar and anomalous position for the city or state to take, after the companies have been struggling along under increased prices of operation for a number of years on the theory held by the city that it is not responsible for increased cost, but that the whole burden must be borne by the companies, that appraisals should be based primarily on prices of many years ago. A basis adapted for operating expenses ought to be a good basis for costs or value in any appraisal of physical property.

Some of the companies in their arguments are presenting figures for consideration on a basis which is somewhat analogous to "historical cost." In some cases these figures are the lump sum capital expenditures made in order to produce the present systems. There is much to support historical cost as a very weighty piece of evidence, and the fact that many of these expenditures were made with the full knowledge and official sanction of the public's commissions then in power should tend to give them more weight than ordinarily in determining fair values. These values exceed those recommended by Mr. Madden, but in general are less than Mr. Madden's estimate of reproduction cost on the basis of present day prices.

Other figures yet to be presented are those on the

estimated future earning basis with a 5-cent fare, and some of the companies claim that these will show a much higher figure. The reason for this is that under their original franchises, granted to individual companies, the ride possible for a single 5-cent fare was comparatively short, and it has been only through consolidations during the last thirty years that the ride possible for the 5-cent fare has been lengthened in many cases. Any such basis of valuation also should presuppose intelligent co-operation in the way of traffic regulation, etc., by the city authorities, at least to the extent that such co-operation is being afforded in other large cities in the country. As the commission's consulting engineer, Mr. Turner, has pointed out, the operating expenses per car-mile of all the surface lines in Manhattan Borough are close to 60 cents. This is much too high and due very largely to the low speed of the cars, which is less than 7 revenue car-miles per car-hour. With an increase in this figure of from 40 to 50 per cent, the appraisal figures on the basis of a 5-cent fare ought to be considerably higher than those on the so-called "original cost."

When the evidence is all in, the commission must then tackle what the Supreme Court of the United States calls the "embarrassing question" of reaching a conclusion as to "fair value." Actually, and properly, the controlling factor, if it follows leading commission decisions in fact, rather than in theory, will be that value which will make it possible for the railways to continue in successful operation, to furnish satisfactory service to the public at a fair price. This is the "value" for them to determine.

What Are the Requirements of the Best Kind of Electric Railway?

AN ANSWER to this question must be given by three arbitrators as a result of hearings now being conducted in Toronto to determine the amount to be paid by the city of Toronto to the railway company there as recompense for the property which the city took over last September. This measure for determining the value of a railway system is a unique one. Usually the method followed in the United States is reproduction value on some basis of unit cost prices. There is no constitutional provision in either Canada or England corresponding to the one in this country by which private property cannot be taken without compensation, but the Toronto case is not affected by that fact.

The words quoted in part above defining the basis of settlement in the Toronto franchise read in full as follows:

In arriving at such value, the arbitrators are to consider and award only the value of the said several particulars to the city at the time of arbitration, having regard to the requirements of a railway of the best kind and system then in operation and applicable to the said city.

These words form part of the contract under which the company thirty-one years ago agreed to sell its property to the city, and there seems to be no reason

why the question should not come up in the United States in similar circumstances.

Obviously, the purpose of the original contract was that the property should be valued on a service standard; that is to say, the cars and rails were not to be taken over either at their second-hand value or at their original cost, but at an intermediate price, depending on their usefulness. But in the determination of this value, was the equipment to be compared with that of a high-grade electric railway of about the same size elsewhere, or do the words mean that the Toronto equipment taken over is to be compared with an ideal property, with all its physical property brand new? If the former is the case, it is natural to assume that the older equipment of the Toronto company or the greater part of it must be valued at a fairly high service standard, because a very large proportion of the equipment of every large electric railway company, even of "the best" electric railway companies, is obsolescent if not actually obsolete. On the other hand, if the words mean that everything has to be judged on the basis of what absolutely new or practically new equipment would do, the present Toronto equipment would have a much less value.

It is easy to see that other queries might easily arise in the settlement of this question. For instance, if the second theory should prevail, whose opinion should be selected as to what is the best type of cars and rails to use in a city the size of Toronto? On this point the opinions of experts even for the same property would differ widely.

Altogether the conclusions of the arbitrators on the meaning of these words promise to be of interest, even if there is no similar question in other pending valuations for which they could serve as a precedent.

Development of the One-Man Car Is Going Forward

A YEAR or so ago, if any one had read a paper proposing a design of one-man cars different from the so-called standard safety car, there would have been a vigorous defense of the standard design and serious objection raised to any change. At that time, there were many who realized that if the one-man car was to be used under certain traffic conditions, a change in the so-called standard would be desirable, but any suggestion along the line met with decided opposition—even ridicule. The editors of this paper were urged to give less space to views on changes in one-man car design and were criticised when they pointed out that while the standard form had many advantages the field of the one-man car might be greatly extended by a car with double doors and a little more generous dimensioning.

During the past twelve months or so there has been a notable change in this attitude. First, there was the development of the double-door one-man car in Madison, an account of which was published in this paper a year ago this month. Then came the double-door car in Baltimore, a full account of which was made public last September. Then came the two types of safety cars developed for use on the Chicago Surface Lines; then the turnstile cars, described by Mr. Sweet at the New York State convention and in use in Syracuse and Utica; and most recently the Connecticut Company double-truck cars described in the Feb. 18 issue of this

paper. The order here cited is simply that in which information about these cars was made public, not necessarily the order in which the cars actually were developed. At first, these variations from a standard type of car aroused the same kind of opposition which was mentioned earlier in this editorial, but there must now be a feeling that variations are inevitable. The paper by H. H. Adams at the Illinois convention last week elicited at that meeting no comment but commendation of this effort to design a car to suit a particular set of needs.

There is a proverb that hope springs eternal in the human breast, and when the Birney car was developed and its use spread to many cities operating under various conditions of traffic, there was undoubtedly some ground for the belief that a universal car had finally been evolved or at least a car which would be suitable for perhaps 60 to 70 per cent of all surface city traffic. This meant a realization of the long held ideal that cars could be built for stock and, so to say, could be produced in quantity and sold "off the shelf" like so many standard bolts or cans of vegetables. Naturally this would or should, bring about a material reduction in manufacturing costs over the special car. Hence there was the strong effort to establish standardization along the lines of this car and the consequent disappointment when variations began. Incidentally, some railway men felt that the promised saving in cost, due to the original design, had not been fully realized.

Actually, the cause for these variations was not the Birney car was not adapted to a great many conditions. The cause was, rather, that it was almost, not quite, an impossible task to design any one car which would be best adapted for all conditions of electric railway service, including various lengths of passenger riding, varying extents of passenger interchange, different rates of acceleration desired, habits of people, etc.

Mr. Birney's great contribution to the industry was not the design of a car about 28 ft. long, 8 ft. wide and seating thirty-two passengers. Instead, it was first the establishment on a large scale of the important fact that with a suitable car, equipped with the proper time saving and other appliances, a single operator was able to perform the functions of both motorman and conductor under widely varying conditions of traffic. In the second place, he turned the tide against the low heavy car and convinced the industry of the economy of light weight, of the resulting skip-stop effect of light small load and of the traffic advantages of short headway.

Much as the fact is to be regretted from the standpoint of cost, the hope of a standard car for all conditions must be given up by those who held it. This does not prevent, however, much progress along the lines of standardization. The extent to which the original Birney car has been found to be adaptable to different classes of service should be an object lesson in the future. There should not now be the same desire for slight variations which affect the cost of construction. As long ago as 1915 this paper pointed out that a general saving in car costs would follow the general adoption of standard spacings between sideposts, standard window sizes, standard contour of roof, one or two standard widths and three or four standard lengths. Such standardization would bring about a material reduction in manufacturing costs over the special car, perhaps almost the same extent as would a standard car itself.

Toronto Takes Over Street Railways

Assumed Possession of System in September, 1921, When Thirty-Year Franchise of Private Company Expired—City Has Now Largest Municipal Railway in North America and Is Spending Eleven Million Dollars for Immediate Rehabilitation and Extensions—Construction of Terms in Original Franchise in Regard to Payment for Property Taken Over Now Being Considered by Arbitration Board



LOOKING EAST ON KING STREET AT YONGE STREET, FEB. 18, 1922. AT 12:45 P.M. THIS SHOWS A TYPICAL CONDITION DURING A SATURDAY NOON RUSH HOUR

WHEN the city of Toronto in September last took over the property of the Toronto Railway it acquired a system which, at least in number of cars owned, is larger than that of any other municipal railway in North America. The Toronto Railway operated about 143 miles of track and 830 cars. In addition to this property the city owns what are known as the Toronto Civic Lines. The construction of these lines was commenced by the city about ten years ago and since then they have been operated by the municipality. They comprise about 22 miles of track with twenty cars and have been combined with the property taken over from the Toronto Railway. The city has also taken over and is now operating the city portion of the Scarborough division of the Toronto & York Radial Railway, 1.87 miles in length. Further, the city plans to take over soon and operate in conjunction with its present system the portions within the city limits of the several remaining radial or interurban lines built or operated by private interests. Table I shows mileage of track and cars taken over from the Toronto Railway and those belonging to the Civic Railway.

Exclusive of the 20 miles or so of track in the yards, the mileage comprised in the entire system, including the portions of the Radial Lines to be taken over, will be approximately 179 miles. On the basis of about 30,000 inhabitants in the city proper, this gives Toronto a mile of track for every 3,000 resident population. Including the immediately adjacent communities, the population of the city amounts to about 75,000, exclusive of a floating population of about 10,000. At present about 950 cars are operated at the

maximum rush-hour peak. During the middle of the day the service calls for 390 cars, with headways of about four minutes on the different lines. In addition to street car service, the city is now operating two motor bus routes with seven gasoline buses, and expects

TABLE I—SHOWING MILES OF TRACK AND CARS BELONGING TO THE PRESENT TORONTO SYSTEM

	Toronto Railway	Civic Railway	Added Since Sept. 1, 1921	Total on Feb. 1.
Miles of single track:				
In streets.....	132.99	21.09	7.25	161.33
In carhouses.....	9.83	1.26	6.61	17.70
Cars				
Double-truck pay-as-you-pass.....			190	190
Double-truck trailers.....			60	60
Old double-truck closed.....	475	37		512
Old single-truck closed.....	234	33		267
Old single-truck trailers.....	121			121
Service cars.....	50	3	4	57
Carhouses.....	5*	3		8
Shops.....	1			1
Substations.....	5	4	1	10

* In addition to the five carhouses belonging to the Toronto Railway taken over by the city, the company had a small frame carhouse which it still owns.

soon to augment this service with four more gasoline buses and four trolley buses. The revenue passengers per day average 550,000.

During the latter part of its franchise the company had no inducement to put new equipment in service because there was no guarantee that it would be taken over by the city at what the company considered fair value. In consequence there was a reduction in the service as shown in Table II.

A brief account follows of the events which preceded and led up to the acquisition of the property of the Toronto Railway by the city. This account will show that history repeats itself in Toronto as elsewhere.

TABLE II—SHOWING REVENUE PASSENGERS AND OPERATING EXPENSES PER CAR-MILE YEAR ENDED JUNE 30
Reference Ontario Railway and Municipal Board

	1915	1920
Passengers.....	6.53	9.03
Expenses (cents).....	15.42	30.58

When the Toronto Railway gave up its railway system in September, 1921, it did just what an earlier company had done thirty years previously at the expiration of its thirty-year franchise.

FIRST STREET RAILWAY IN 1861

The first street railway system in Toronto was established in 1861, when a franchise for thirty years was granted to Alexander Easton and others. Under this

not advanced to admit the transfer being made. The city assumed possession on May 20, 1891, the amount of the award being \$1,453,788, and it immediately advertised for bids for a new company on a thirty-year franchise. At that time the system was still being operated by horses.

Tenders were requested on four different bases as to fares, guarantee of company bonds, etc. Several tenders were received, and the franchise was finally awarded to a company made up of Henry A. Everett, who was then largely interested in the Cleveland Railway; William McKenzie, a large contractor in Toronto; George W. Kiely, who had been connected with the previous company, and others.

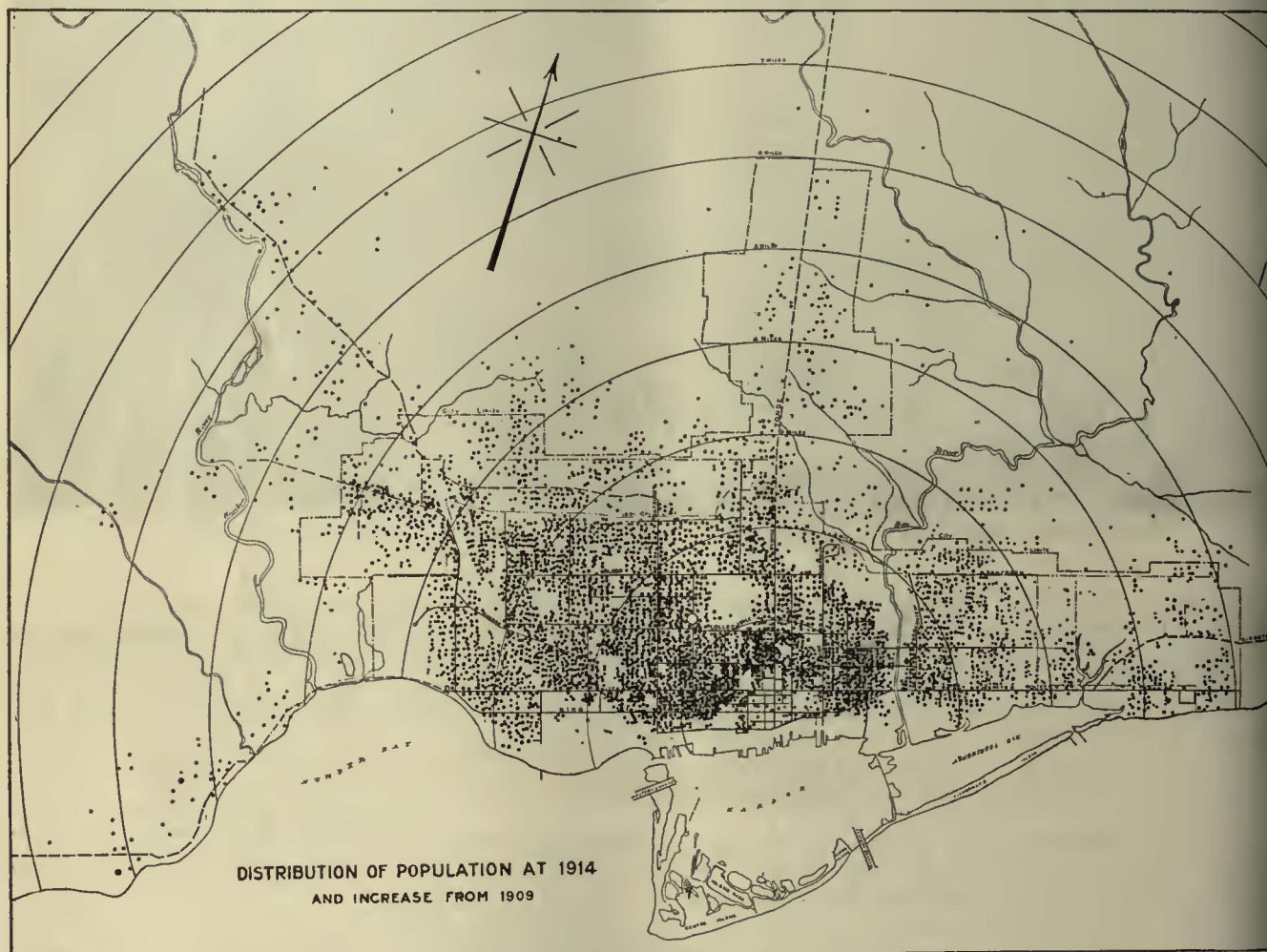


FIG. 1—DIAGRAM SHOWING DISTRIBUTION OF POPULATION IN AND AROUND THE CITY OF TORONTO, 1914.
EACH DOT REPRESENTS 100 PEOPLE

franchise the only payment made to the city was a license fee of \$5 per car per year. Afterward, in 1889, a payment of \$600 per annum for each mile of single track used by the company was made in consideration of the construction by the city of the pavement required in connection with the tracks and the maintenance of this paving. The rate of fare was 5 cents, and tickets were sold at six for 25 cents and twenty-five for \$1, with school tickets at a reduced rate. No transfers were given and no night cars were run, and under city ordinance no cars were permitted in service on Sunday.

According to this franchise the city had the right to take over the property at the end of the franchise, but on its expiration on March 26, 1891, an extension of time was necessary because the arbitration proceedings had

The company took over the property from the city on Sept. 1, 1891. Some of the features of the franchise were as follows:

PRINCIPAL FEATURES OF FRANCHISE OF TORONTO RAILWAY

1. The company received the exclusive right and privilege of using and working street railways in Toronto during the continuance of the franchise, except on that portion of Yonge Street, north of the Ontario & Quebec Railway (now Canadian Pacific Railway) and that portion of Queen Street (Lake Shore Road) west of Dufferin Street. On these excepted portions of the city, the company was also entitled to privileges in so far as the city had the power to grant franchises for the full thirty-year period that did not interfere



with the rights of existing street railway corporations on these streets.

2. If, at the end of the thirty-year franchise, the city desired to exercise the right of taking over the property necessary to be used in the working of the railways, at least twelve months notice must be given to the railway company to this effect. In case such notice was not given, the franchise became automatically extended from year to year. In this case, however, the city had to give only six months notice to the company of its intent to take over the property. If such notice was given, the franchise provided for an arbitration board to determine the value of the property. In such arbitration the franchise declared that the board must use as a measure of value "a railway of the best kind and system then in operation." The full wording of this clause follows:

In determining such value, the rights and privileges granted by the said agreement and the revenue, profits and dividends being or likely to be derived from the enterprise are not to be taken into consideration, but the arbitrators are to consider only the actual value of the actual and tangible property, plant, equipments and works connected with and necessary to the operation of the railways, which is not to include any land, property or rights acquired or used in connection with the said street railway, and which do not actually form a part of the said street railway undertaking necessary to the carrying on of the same.

In arriving at such value, the arbitrators are to consider and award only the value of the said several particulars to the city at the time of the arbitration, having regard to the requirements of a railway of the best kind and system then in operation and applicable to the said city.

3. The company was to pay for the construction of all track, i.e., rails, ties and fastenings, but the city was to pay for the cost and maintenance of all foundations and pavements and of all repairs to the same except those caused by the railway when it had to tear up paving to make repairs to its tracks. This has to be made good by the company. The company had to keep its tracks in a state of thorough efficiency and to the satisfaction of the engineer of the city, and to remove, renew, or replace the same as circumstances might require, and as the city engineer might direct.

TYPICAL VIEWS IN TORONTO

The upper view shows Queen Street at 5.15 p.m. Feb. 15; the one below Yonge Street at 1:10 p.m., Feb. 18 (Saturday); the lower view Yonge Street at 4:45 p.m., Feb. 16 with zero weather. The large number of autos should be noticed; yet with only 42-ft. wide roadways, the crossing at Yonge and Queen Streets carries 209 trains on Yonge and 104 on Queen during the maximum afternoon rush hour.

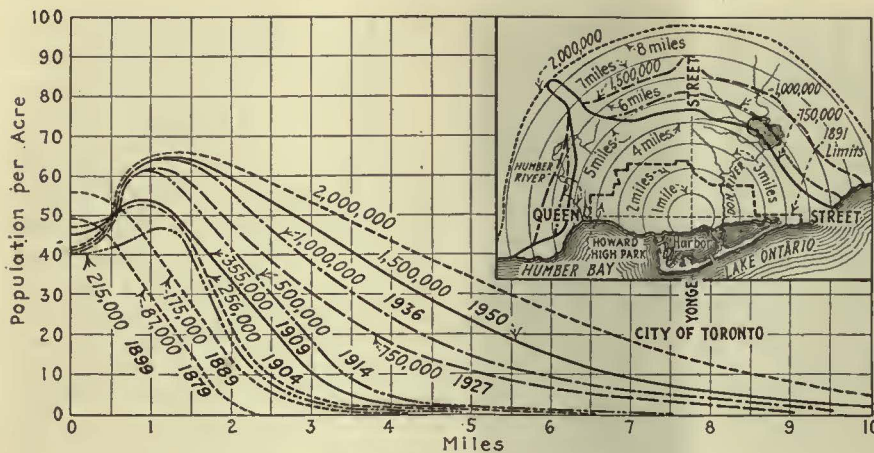


FIG. 2—COMPOSITE CURVES OF POPULATION DENSITY IN TORONTO

When streets were to be paved in a permanent manner by the city, the track also had to be reconstructed according to the best modern practice as approved by the city engineer.

4. The company was to pay the city \$800 per year per mile of single track. (This figure was considered to be roughly in lieu of pavement charges paid by the city as outlined above.) The company was also to pay the city a percentage of its gross receipts as follows: Up to \$1,000,000, 8 per cent; between \$1,000,000 and \$1,500,000, 10 per cent; between \$1,500,000 and \$2,000,000, 12 per cent; between \$2,000,000 and \$3,000,000, 15 per cent; on all gross receipts over \$3,000,000, 20 per cent. (This payment was considered to be equivalent to a tax on its franchise, and the company was exempted from all other taxes except school and real estate taxes.)

5. Fares were to be as follows: Single fare, 5 cents, except between midnight and 5:30 a.m., when the fare was to be 10 cents. Tickets good at any time except on the late night cars, six for 25 cents and twenty-five for \$1. Limited tickets, good between 5:30 a.m. and 8 a.m. and between 5 p.m. and 6:30 p.m. eight for 25 cents. School tickets, with the usual restrictions, ten for 25 cents. In addition to the above, free transfers had to be given.

6. The railway company agreed to build and equip a factory in the city for the manufacture and repair of all cars used on the railway during the life of the franchise.

7. A track gage of 4 ft. 10 1/2 in. had to be maintained, and track grades had to conform to street grades.

8. The railway company was not permitted to extend beyond the then city limits without conforming to cer-

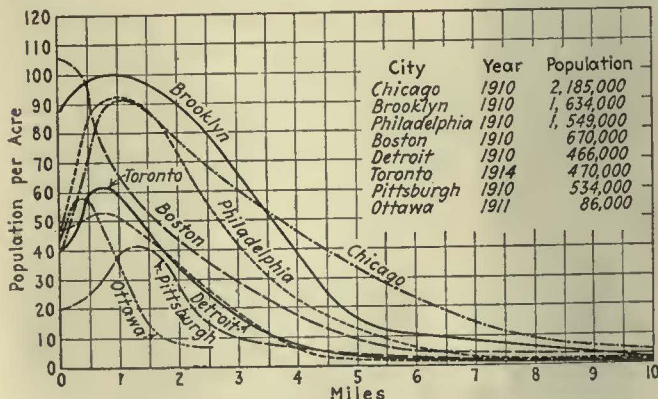


FIG. 3—CURVES SHOWING POPULATION DENSITIES OF VARIOUS CITIES

tain regulations, so that if the city should extend its territorial limits, these extensions would be governed by regulations similar to the main franchise, and the franchise for them would terminate on Aug. 31, 1921. All such extensions had also to be built as recommended by the city engineer and approved by the City Council. (The practical effect of this clause was that few extensions were made, and this prompted the construction by the city of the Civic Railway lines in 1910-11-12. It was the position of the company not only that it was under no obligations to go outside the city limits of 1891 but that it was not permitted to do so under the franchise. Litiga-

tion followed this statement of position, and the case was finally taken to the Privy Council in London, England, where the position of the company was sustained. Probably much of the prosperity of the company during the first twenty years of its franchise was due to the fact that its activities were confined to the highly congested central territory of Toronto.)

9. The railway could purchase land to operate pleasure resorts, but in case the city took over the railway

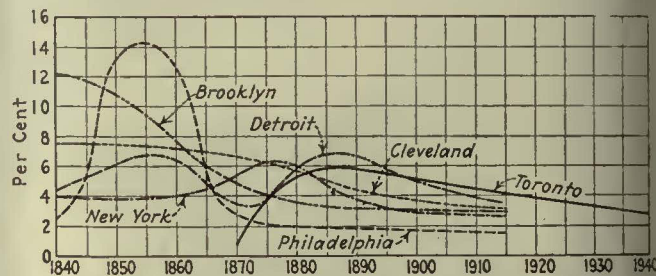


FIG. 4—CURVES SHOWING PERCENTAGE OF ANNUAL INCREASE OF POPULATION IN VARIOUS CITIES

in 1921 such lands or real estate would not be a part of the property acquired by the city.

10. Track allowances had to be kept free from snow and ice by the railway. In case the snow fell to more than 6 in. in depth, it had to be carted away at the expense of the railway.

11. Employees must not be required to work more than ten hours a day, or sixty hours a week, or six days a week, and no adult employee shall be paid less than 15 cents an hour.

12. Sunday cars were not permitted. (Sunday service began in 1897 under a supplementary agreement.)

ENTERPRISE AT FIRST SUCCESSFUL

In an interview with Mr. Everett in 1895, four years after the line was taken over by the new company. Mr. Everett said in part as follows:

"The cash capital of the Toronto Company paid in was \$600,000, for which \$6,000,000 worth of stock was issued. This is selling in the market at the end of three years for \$75 (par value \$100), which is an increase of \$3,780,000 over the investment of \$600,000 three and a half years ago. The property has been bonded for \$2,800,000 in 4 1/2 per cent, twenty-three year sinking fund bonds, which were sold on a 5 per cent basis. We have paid no dividends as yet, but the accrued profits for the three years and four months have been \$629,000.

"The reduction of fares (over those prior to Sep-

ber, 1891) has not affected the wages of our men. We are paying 16½ cents per hour, the same as before the reduction and 1½ cents more than the contract requirements in the city franchise. The hours are limited to ten hours per day and sixty hours per week, and these wages are fully equal to 20 cents an hour in the States. "The total cost per car-mile run in the city of Toronto for the year 1894 was 8.33 cents, which included insurance, taxes, injuries, and damages, in addition to all operating expenses, not allowing, of course, for the 8 per cent of gross receipts."

At the beginning of the company's franchise the only taxes it was called upon to pay, in addition to the percentage on receipts and the pavement charge, were school taxes and the ordinary tax levied against the company's real estate, which were especially mentioned in the franchise. After several years, however, the city commenced to assess the company's rails, poles and wires. This assessment was protested by the company, but in 1897 the courts decided that the roads, poles and wires were real estate. At first the assessment was about \$1,000 per mile of track, which was termed "trap value," but in 1902 the assessment was increased to \$6,300 per mile.

In spite of these facts the enterprise, on the whole, was prosperous until the great increase in the cost of labor and materials due to the war began to make inroads into the earnings of the company. In 1913, the year before the war, the gross income was more than \$1,000,000 and represented an increase of 147 per cent during a decade, or an average of 14.7 per cent per year. In spite of the fact that 18 per cent of the gross earnings were being paid to the city under the agreement or in general taxes, the company showed a surplus after paying 8 per cent dividends of its stock and had no difficulty in issuing new stock at par to its stockholders. Its average operating ratio for the ten years ended with 1913 was 54.85 per cent. By 1920, however, the company was paying 60 cents maximum to its motor-men and conductors, and while the gross earnings had increased to \$7,909,891, the net balance from operation

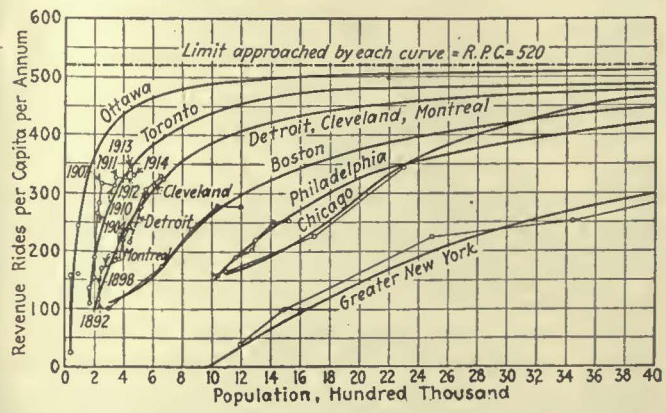


FIG. 5—CURVES SHOWING GROWTH OF RIDING HABIT IN VARIOUS CITIES

was only \$1,283,383, and the payment to the city amounted to \$1,559,868, or 121 per cent of the net balance. An accompanying table gives the financial and traffic data of the company.

STATISTICS OF TORONTO TRAFFIC

In 1915 the city authorized an extended inquiry into the transportation situation in and around Toronto in connection with the entrances into the city of the radial lines. The committee in charge of the inquiry consisted of R. C. Harris, Commissioner of Works; F. A. Gaby, chief engineer Hydro-Electric Power Commission of Ontario, and E. L. Cousins, chief engineer Toronto Harbor Commission. Among the conclusions reached by the committee was that the city should acquire the Toronto Railway at the expiration of the franchise in 1921, that a comprehensive program for street transportation development should be committed to a commission, consisting of representatives from the city, the Harbor Commission, and the Ontario Hydro-Electric Power Commission, and that a rapid transit system in the strict meaning of the term was not required at present in Toronto.

Many interesting data and charts were compiled

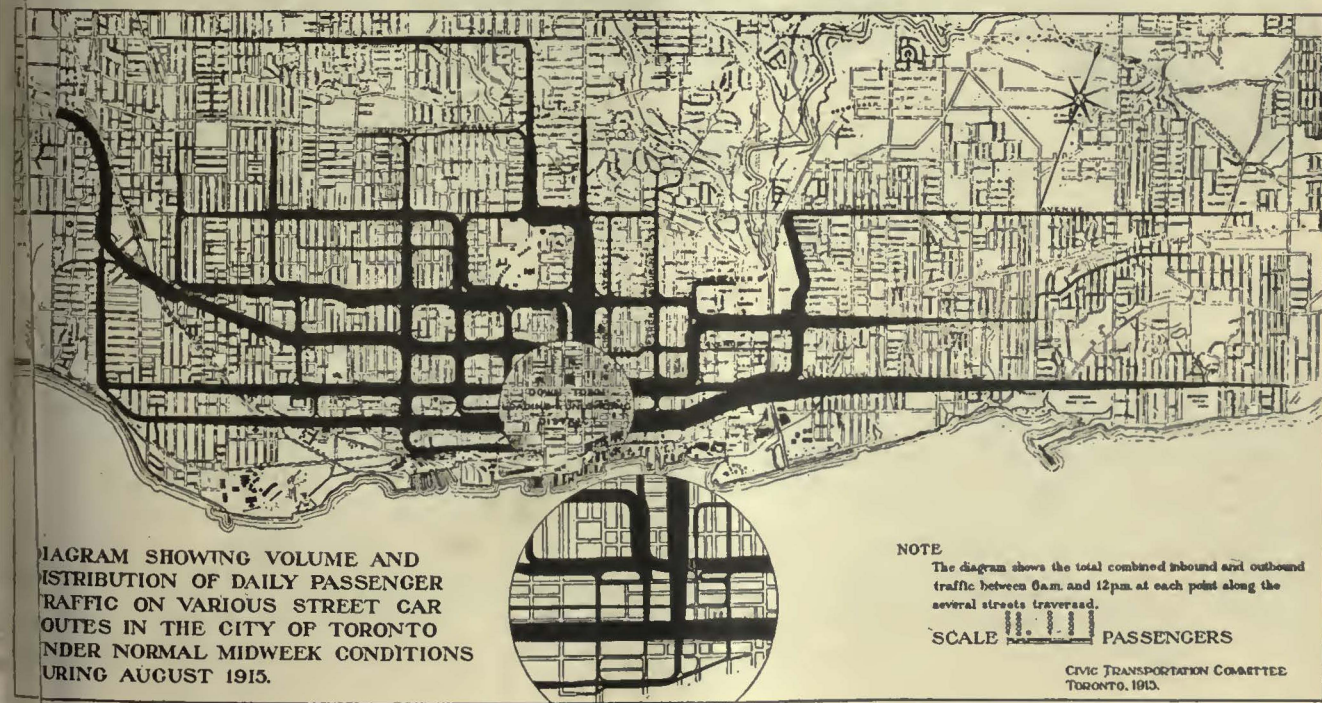


FIG. 6—DIAGRAM SHOWING VOLUME AND DISTRIBUTION OF STREET RAILWAY TRAFFIC IN TORONTO UNDER NORMAL MIDWEEK CONDITIONS DURING AUGUST, 1915

showing distribution of population and traffic. Although for the most part these data relate to 1915, some of the most interesting charts are reproduced in this article as the latest available.

Fig. 1 shows the distribution of population in 1914, each dot representing 100 people. In the report of the commission this chart was one of a series in which changes in the distribution of population over the previous period were distinguished by the color of the dot. In 1914 the population within the city was 470,100 and that adjacent to the city 31,400.

Fig. 2 shows the population per acre in Toronto at different periods and in zones from the civic center of

seems to be about 520. This theory has been followed in the chart reproduced.

Fig. 6 gives the approximate distribution of passenger traffic on various street railway routes in the city of Toronto under normal midweek conditions during August, 1915. The width of each route line is proportional to the combined inbound and outbound traffic between 6 a.m. and 12 p.m. at each point along the several streets traversed.

Fig. 7 shows by the colored area within the outside line the distribution of office and retail business district, heavy and light manufacturing and residential districts of Toronto, as estimated with a population of



FIG. 7.—MAP SHOWING EXTENT AND CHARACTER OF OCCUPANCY OF THE AREA REQUIRED BY TORONTO WITH A POPULATION OF 1,500,000 PEOPLE

the city at the corner of Yonge and Queen Streets. The data given in this chart are predicated on the removal of the traffic barriers presented by the Humber River and the Don River. A similar chart (not shown) shows the same data in case these barriers are not broken. Fig. 3 shows the population per acre for Toronto as compared with other cities mentioned. Fig. 4 gives the percentage of annual increase in population of various cities. Fig. 5 gives the rides per capita in different cities, the curves for the higher populations being estimated. In its discussion of these estimates the commission points out that the so-called "law of squares," that is, that revenue rides increase as the square of the factor of the increase of population, can be applied only as an approximation to a city in its earlier periods of growth, and that the limit of rides per capita per annum under present transit conditions

1,500,000 people, assuming that the existing barriers presented by the rivers on each side of the city are broken by adequate means of transportation. In the map the municipal boundaries and built-up area of 1915 are shown within the outside line. The municipal boundaries of 1891 are also given.

CITY DECIDES TO PURCHASE PROPERTY

In August, 1920, the city notified the company that would take over the property at the expiration of the franchise on Sept. 1, 1921, and appointed a committee to negotiate the purchase, consisting of the Commissioner of Public Works, the Commissioner of Finance and the Corporation Counsel. Negotiations were begun and while the city began operation of the property on Sept. 1, 1921, the question of compensation has not been settled, as the wording of the clause upon the basis of

THE TORONTO RAILWAY COMPANY STATISTICAL STATEMENT FOR THE YEARS 1910 TO 1920

	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910
Gross income.....	\$7,909,891	\$7,234,895	\$6,526,302	\$6,291,759	\$5,973,161	\$5,694,136	\$6,127,096	\$6,049,018	\$5,448,050	\$4,851,541	\$4,377,116
Operating, maintenance and other charges....	\$6,626,508	\$5,655,658	\$4,509,651	\$3,815,277	\$3,350,657	\$3,250,611	\$3,529,546	\$3,123,308	\$2,866,550	\$2,653,361	\$2,237,187
Net earnings.....	\$1,283,383	\$1,579,236	\$2,016,651	\$2,476,481	\$2,622,503	\$2,443,524	\$2,597,550	\$2,925,710	\$2,581,500	\$2,198,179	\$2,139,928
Passengers carried.....	197,346,726	182,327,494	166,510,326	158,087,984	149,529,754	142,061,258	152,966,153	151,236,925	135,786,573	120,992,844	109,415,264
Transfers.....	77,911,713	70,446,128	63,176,397	62,301,636	61,342,763	62,398,638	65,278,022	63,053,118	56,176,985	48,730,671	42,630,756
Percentage of charges etc., to passenger earnings.....	84.2	79.5	71.7	61.5	57	57.9	58.4	52.2	53.4	55.2	51.6

This compensation is capable of several interpretations and is now being considered by an arbitration board. This board consists of Major Hume Cronyn of London, Ontario, chairman; Sir Adam Beck for the city, and Sir Thomas White for the company. Hearings were begun on Sept. 13, 1921, and the company, after sixty-four sessions, completed its presentation of the case on Jan. 27. Adjournment was ordered until March 14, when the city was to commence the presentation of its side of the case. The testimony has been printed in abstract from time to time in the news columns of this paper commencing with the issue of Sept. 24, 1921.

MUNICIPAL OPERATING ORGANIZATION

The municipal operating organization is entirely separate from the committee appointed by the city to negotiate for the purchase of the property. It is known as the Transportation Commission and consists of P. W. Ellis, chairman; George Wright and R. R. Miller, commissioners with H. H. Couzens as general manager of the system. D. W. Harvey, who prior to the formation of the commission had charge of the Civic Railway Co., is assistant manager; A. T. Spencer is engineer-in-charge, W. R. McRae is superintendent of rolling stock, W. Howden is superintendent of schedules, and J. Culloch is traffic superintendent. Mr. Spencer came from Montreal, where he had long been associated with the Montreal Tramways Company, and the three officials last mentioned have been connected with the Toronto Railway. The act under which the Transportation Commission was appointed declares that the revenues from the property should pay the whole cost of the service.

This meant, of course, that the fares would have to be raised. The fares under company management remained as specified in the franchise. When the city took over the property the fares were raised to 7 cents cash with four tickets for 25 cents and fifty for \$3, with a cash fare of 15 cents between midnight and 3:30 a.m., and no workmen's tickets. Children are still carried at half rates.

A novel method is followed in determining whether a child is entitled to ride at half rates. The criterion is not the age but the height of the child. A mark is painted at the car entrance and near the fare box 51 inches above the car floor. Any child shorter than that height can travel at the reduced fare. If taller than

51 in. full fare must be paid. The position of the mark is such that the conductor can see at a glance as a child enters the car whether it is over or under this limit.

FINANCIAL ARRANGEMENT

To take care of immediate improvements and provide part of the purchase price for the company, the city in 1921 issued \$15,000,000 in serial thirty-year bonds, carrying interest at 6½ per cent. These bonds were sold to the public at about 102. One-third of this issue was sold in Canada, with principal and interest payable in Toronto, and two-thirds in the United States with principal and interest payable in either Toronto or New York, at the option of the holder. A sinking fund was established to begin in three years and to pay off entire bond issue in thirty years. The charges for sinking fund and interest amount to about \$1,200,000 per year. The tax rate of the city in 1921 was \$33 per thousand.

The budget of the commission for its 1921 program and covering both construction and rehabilitation was as follows:

Cars.....	\$4,400,000
Trackless trolleys and other buses.....	200,000
Carhouses and shops, including tracks in same.....	1,900,000
Tracks on streets.....	4,500,000
Total.....	\$11,000,000

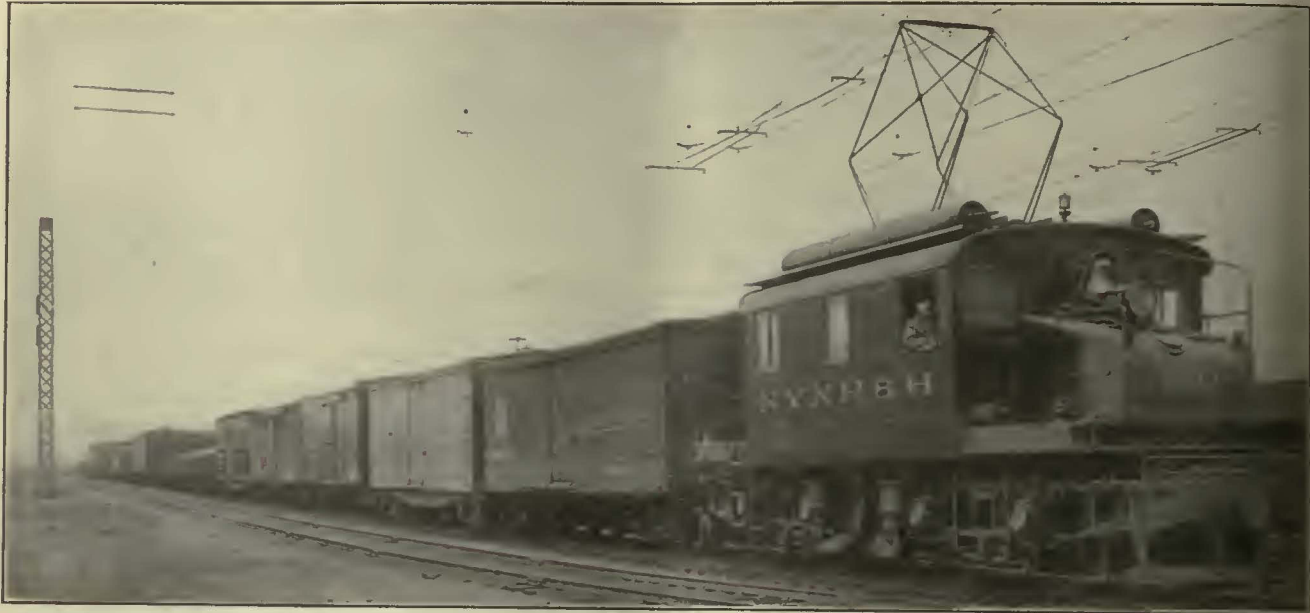
One of the enlarged carhouses will have a storage capacity of 9,000 sq.ft., with eighteen tracks, and the other a storage capacity of 21,000 sq.ft. with twenty-six tracks.

The commission has extensive plans for improving the service in addition to physical improvements. One of these is to decrease the number of stops so as to increase the schedule speed, which, on the Toronto Railway, has averaged 8.84 m.p.h.

A careful traffic survey will also be conducted to determine whether there will be any gain in rerouting. Methods of ameliorating conditions during the rush hour will also receive especial attention. At present, it is estimated that 37 per cent of the business is done between 7:30 and 9 a.m. and 4:45 to 5:45 p.m. This is a 65 per cent increase since 1915, although the general traffic has increased only 35 per cent during those years. A traffic study department has been appointed to conduct special studies along these and similar lines.



ST. CLAIR AVENUE AT AVENUE ROAD, MAY, 1921, BEFORE LINE WAS TAKEN OVER, SHOWING QUEUE OF PASSENGERS TRANSFERRING BETWEEN TORONTO RAILWAY CARS AND CIVIC RAILWAY CARS. WITH THE CONSOLIDATION OF THE TWO SYSTEMS THIS CONDITION HAS BEEN ELIMINATED



EIGHTY-TON ELECTRIC LOCOMOTIVES IN SWITCHING SERVICE ON THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD

Electric Switching Locomotive Results

Experience of the New York, New Haven & Hartford Railroad Is Cited to Demonstrate the Reliability and Serviceability of the Electric Machines in This Class of Service

BY F. W. CARTER

Railway Department, Westinghouse Electric & Manufacturing Company

IN THE report of the committee on heavy traction of the American Electric Railway Engineering Association, presented at the Atlantic City Convention last fall, considerable information regarding electric switching locomotives was given. The report included data of the sixteen New Haven switching locomotives, one of which was put into service in 1911 and fifteen in 1912. These locomotives have, therefore, been in use practically ten years. In view of the length of this service

and of the attention being given to electric locomotive switching by the men interested in electrification, some recent information will be of interest.

When the New Haven yards were electrified, every three electric locomotives replaced five steam locomotives which had been used for switching service. The sixteen locomotives in electric switching service weigh 80 tons each and are of the single-phase, 25-cycle, 11,000-volt type, having two articulated trucks suitable for the heavy strains to which locomotives are subjected in classification and yard work. The over-all length of these locomotives is approximately 37½ ft. They have a tractive effort of about 23,200 lb. with a horsepower rating of 752, and a maximum speed of 25 m.p.h. Each locomotive has four motors geared to the axles. The diameter of the driver is 63 in.

Five of these locomotives are located at the Oak Point yard, two at the Westchester yard, two at the Stamford yard and three at the Harlem River yard. One



CLASSIFICATION AND SWITCHING SERVICE IS EASY WORK FOR THESE LOCOMOTIVES, WHICH HAVE A TRACTIVE EFFORT OF 23,200 LB. AND A RATING OF 752 HP.

used for transfer of freight on the New York, Westchester & Boston Railway and the remaining three are held at the shops for inspection or use at whatever point the service demands.

The three main electrically equipped yards on the



TYPE OF SINGLE-PHASE, 25-CYCLE, 11,000-VOLT SWITCHING LOCOMOTIVE ON THE NEW HAVEN

New Haven are the Oak Point yard, having a track length of about 37 miles, with a total of 35.5 miles electrified; the Harlem River yard, with 23 miles, and the Westchester yard, with about the same trackage as the Harlem River yard.

ELECTRIC SWITCHING IN THE OAK POINT YARD

The number of electric switching locomotives assigned to the Oak Point yard varies at times from five to seven, according to the amount of traffic to be handled. The locomotives in this yard are used in two different classes of service, four of them being assigned to what is known as "float yard" service, to unload eastbound cars from the floats and to load westbound cars on floats, and also to do whatever switching is necessary with the westbound cars.

The New Haven road has approximately sixteen tugboats with capacities ranging from 350 to 1,200 hp. each for transporting the freight cars between the terminals by floats, the floats having a carrying capacity of from twelve to twenty-two cars each. The fifth locomotive used in these yards takes the eastbound cars from the float yard to the classification yard and makes up the eastbound trains. In looking over the records one month was selected as a representative month, which showed an average of forty-three floats handled daily at the Oak Point yard. Using an average tonnage of 90 for the eastbound float loads, and 600 for the westbound, the four locomotives assigned to the float yards would handle approximately 16,000 tons each in a twenty-four-hour service. The locomotive working in the classification yards handles about 75 per cent of the eastbound cars received, the other 25 per cent being taken to the Westchester yards by the transfer engines. This would make the average daily tonnage for these locomotives approximately 18,000. In addition to loading and unloading the floats the four locomotives in the float yard do a certain amount of switching of westbound cars and various miscellaneous work in the yards. The figure of 18,000 tons, therefore, seems to be a very fair average tonnage for the locomotives working in the yard.

The monthly mileage made by several of these locomotives in switching service is between 4,300 and 4,500. The locomotives are kept in service twenty-four hours

a day by using three eight-hour crew shifts, and after the completion of 2,500 miles they are sent to the Van Nest shops for a light inspection. A day force working eight hours is employed for locomotive inspection and the work is usually done at the rate of two locomotives per day.

A number of these electric locomotives have made records of twenty-four hours a day for thirty days without any interruption.

A French Experimental Gasoline Rail Car

The Tramway Company of the Department of Deux-Sèvres Has Recently Tried Out Successfully a Rail Bus Made from an Army Camion or Truck

IN THE Feb. 4 issue of *le Génie Civil*, G. Tartary gives recent information regarding the gasoline rail car which he described in an article several months earlier in *l'Industrie des Tramways, Chemins de Fer et Transports Publics Automobiles*. The sample car is now making 125 miles per day, at a normal speed of 19 to 22 m.p.h., and operating on grades up to 3.5 and 4 per cent.

This car is being used by the Compagnie des Tramways des Deux-Sèvres in France. It was built by the company with the chassis of an 18-hp. war-time motor truck as a basis. The following are the characteristics of the vehicle:

Length of chassis.....	15 ft. 9 in.
Length of body.....	13 ft. 11 in.
Width of body.....	5 ft. 5 in.
Height of body.....	5 ft. 11 in.
Horsepower.....	18 to 20
Seating capacity.....	16
Standing capacity.....	4 to 8
Weight, without load.....	4,410 lb.

The gasoline consumption under the conditions mentioned earlier is 1 gal. for about 12 miles.

The wheelbase is 10 ft. 6 in., which is too great to permit the rounding of ordinary curves with a rigid mounting of the wheels. The former mounting with steering wheel connection was, therefore, retained, but with the addition of a spring centering device to provide a restoring force always tending to bring the wheels



TINY RAIL BUS THAT HAS MADE GOOD IN FRANCE

back to a tangent-track position. The deflecting force in curved track is provided by the reaction of the wheel flanges on the rails. To insure a smooth transition into and out of curves the driver uses the usual steering wheel, which, however, is provided with an indicator to show him the position of the flanged wheels.

Illinois Associations Meet in Chicago

Advertising, Franchises, Car Design and Wood Preservation Occupy Attention of Electric Railway Men—Joint Sessions Held with the State Gas and Electric Associations

MEETING simultaneously with the Illinois Gas and Electric Associations, the Illinois Electric Railways Association held a convention in Chicago on March 15 and 16 with a good attendance. Joint meetings of the three associations were held both forenoons and a joint banquet on Wednesday evening. At the general session on the morning of March 15 John F. Gilchrist, Commonwealth Edison Company, Chicago, addressed the gathering on the need for co-operation on the part of the utility executives with the Illinois Committee on Public Utility Information, laying particular stress on the need for further work with the utility company employees in order that their far-reaching influence in the general program of informing the public may be secured. The splendid accomplishments of the Illinois Committee and how the utilities can co-operate with it to get the greatest good from its work was the subject of discussion by a number of utility men who followed Mr. Gilchrist.

The general session on Thursday morning was addressed by President Robert I. Todd of the American Electric Railway Association and R. B. Brown, vice-president American Gas Association. M. H. Aylesworth, executive secretary National Electric Light Association, spoke briefly of the recent investigations of the government-owned hydro-electric services in Canada and of the business promotion campaign which the association is about to undertake in a broad way.

W. L. Goodwin, assistant to the president Society for Electrical Development, was the only speaker at the evening banquet. B. J. Mullaney, People's Gas Light & Coke Company, Chicago, acted as toastmaster. Mr. Goodwin spoke of the need for more sales effort in the business of all of the utilities, laying particular stress upon the desirability of substantial advertising on a continuous sales basis and in far greater quantity. He pointed out that many merchandising businesses set aside from 5 to 10 per cent of their total revenue for advertising purposes, while the public utilities at present spend less than one-tenth of 1 per cent of their revenue for advertising. He referred to the drive for more and better business on the part of the N.E.L.A. and suggested a united drive of a similar nature on the part of all the public utilities.

ELECTRIC RAILWAY SESSIONS

At the first separate session of the electric railway association President W. L. Arnold, treasurer Elgin & Belvi-

dere Electric Company, Chicago, presided, while Second Vice-President R. A. Moore, general manager Aurora, Plainfield & Joliet Electric Railway, Joliet, Ill., presided the second afternoon. Following the paper by Mr. Moran on "Advertising the Electric Railway's Service," which appears elsewhere, the subject was discussed by Luke Grant, manager publicity department Chicago Elevated Railroads, and J. T. Downey, National Railway Advertising Company. Mr. Grant's remarks are given after the abstract of Mr. Moran's paper.

Referring to motion picture advertising for electric railways, Mr. Downey said that its value hinged upon the question of whether one should consider advertising in the nature of a food or a tonic. His thought was that as good as motion picture advertising is conceded to be (and it is the highest type of spectacular advertising), it is only tonic advertising. It can be used only at intervals. While a picture acts as a stimulant, every one knows a stimulant quickly wears off, and it is thus necessary to resort to more permanent advertising appeal. What is really most effective is a medium that will give the possibility of repetition, since selling depends upon the repeated telling of the advantages or value of what is to be sold.

Commenting on Mr. Grant's remarks that the most valuable medium of advertising is the satisfied customer, Mr. Downey said he agreed. But unassisted by advertising, a goodly measure of the value of the satisfied customer is lost because word-of-mouth advertising, while the best, is also the slowest. Therefore, in order to get the fullest measure of return from the satisfied customer, his good will should be capitalized in advertising.

The subject of electric railway franchises was then treated in a paper by Mr. Alschuler and discussed by D. E. Parsons, both paper and discussion appearing elsewhere.

"Traffic Relations between Steam and Electric Railways" was the subject of a paper presented by Richard Breckenridge, traffic manager Aurora, Elgin & Chicago Railroad, Chicago, Ill. In this paper Mr. Breckenridge reviewed the development of the electric railways, bringing out how their construction as competitors of existing steam lines was similar to the present paralleling of the electric lines by motor-bus lines, and how this development had led to an antagonistic feeling toward the electric railways which persisted to this day and prevented to a great extent full co-operation between steam and electric

railway companies. He stated various other reasons why interchange arrangements between steam and electric lines have not progressed much and how the electric lines are discriminated against, some of the inconsistencies of the relations, etc. He said that the electric lines seem to have made greater effort to effect freight, rather than passenger arrangements with the steam lines, while it would appear that the reverse should apply because of the preponderance of the passenger business of electric lines. He carried the view that probably the most effective way of commanding the respect of the steam lines was to originate passenger or freight business which would be attractive to the steam line as a joint proposition. He had not yet given up hope that some day the Illinois electric railways will have cars that may be interchanged not only among themselves, but with the steam roads as well.

C. E. Thompson presented a very able written discussion of Mr. Breckenridge's paper. It appears elsewhere in this issue.

A paper on wood preservation presented by Mr. Waterman of the Burlington Railroad contained some very interesting data on the results obtained and it appears elsewhere. This paper was discussed by Walter Buehler, the Barrett Company, New York. He said that some railway men were inclined to depreciate the value of data secured from test tracks. He thought such a test was good, except that the life shown in the test tracks may not hold exactly true as a basis of figuring over an entire system with the varying conditions that would then be involved. Commenting on Mr. Waterman's advocacy of treating of all bridge timbers, Mr. Buehler said that some claimed that this made the timber too inflammable, but that he had other equally good evidence that creosoted timber is less inflammable than untreated timber. One of the things to be considered is the design of bridges to make them less inflammable, such as by using ballasted track across the bridge, etc.

DISCUSSION ON ONE-MAN CAR DESIGN

Following the paper by Mr. Adams on safety-car design and the prepared discussion by Henry Cordell, both of which appear elsewhere, the general discussion of the subject brought out some very interesting ideas. J. R. Blackhall, general manager of the Chicago & Joliet Electric Railway, told how his company is starting to convert its entire city and suburban equipment for one-man operation. He considers the double-truck car to be superior for

one-man operation, for while admitting that there may be some current saving in using the single-truck car and certain other advantages, yet he felt that the advantages of the double-truck car more than outweigh these. In studying the platform equipment for one-man operation, Mr. Blackhall had been impressed with the unsightly appearance of the piping and devices and the inconvenience of its arrangement for the operator. In rebuilding the cars in Joliet, therefore, a special effort to avoid both of these points is being made. The controller is to be set in a hole in the platform so that it will be lowered 6 or 7 in., and a shelf put straight across the front of the car between corner posts and the controller and brake handle mounted on this. This gives the operator a chance to put his knees comfortably under the table with both operating levers at a convenient location and comfortable height. The controller handle is connected by chain and sprockets to the drum. All piping and conduit and other equipment is then concealed in a cabinet, with considerable improvement in the appearance. Mr. Blackhall expressed the thought that it may possibly develop that a remote-control will be more satisfactory than this drum control as it is to be arranged in these rebuilt cars, and the manufacturers are giving some consideration to the subject.

EFFECT OF LOCAL CONDITIONS ON SAFETY CAR DESIGN

M. B. Lambert, Westinghouse Electric & Manufacturing Company, in referring to the past experience of the operating men with light-weight equipment, said that the manufacturers had also had some excellent experience that would be very valuable in further development work. The argument of "local conditions" used by some electric railway men as the reason that they could not make use of the so-called standard safety car has been looked upon as inconsequential, but Mr. Lambert said we must now admit that there are local conditions that affect the trucks, the motors, the brakes, and everything about the car. The one-man car problem today is broadening as to whether 25 hp. or 35-hp. motors should be used, and whether two motors or four motors on double trucks. Where the use of the standard safety car has been greatly successful, this success has been one of merchandising rather than of operating economics, for there probably has been some high maintenance. It is possible, therefore, that a larger, four-motor, more substantially built one-man safety car will be better, for this will give better traction and better acceleration than can be had with a single truck and two motors. The car is primarily for the purpose of giving rapid service, and all features of the design should be directed toward that end.

Mr. Lambert then emphasized the great value of keeping performance records. He said that no other device

known to the electrical art has undergone more rapid development than the street-car motor. This development is costly and the industry has had to pay the cost that has resulted from the necessity to do too much of this development work without good information on which to base the development.

FURTHER FACTS REGARDING THE CHICAGO CAR

Mr. Adams then answered some of the points raised in the discussion. On the use of aluminum air piping, he said that this was being watched and studied very closely on the new Chicago Surface Lines car, and that he had serious question in his own mind whether it would be practicable. Step heights of the one-man cars are a very important item of the design, the steps on Chicago's newest car being 13 in., and 12 in. onto the platform and 6 in. onto the car floor. As to the use of a selective door control, making it possible to open either entrance or exit doors separately, or both doors simultaneously with the one brake valve handle, he said this would necessitate nine additional pipes on the platform. He had considered that this was a complication which was hardly warranted and had avoided it and at the same time obtained a partially selective control by the use of a separate handle just above the brake handle which makes it possible to open the exit door without regard to the position of the brake handle.

On this first double-truck one-man car four 25-hp. motors have been used, but there is likelihood that four 35-hp. motors or two 50-hp. motors on maximum traction trucks may be used on any future cars built. He said that the Chicago Surface Lines has 650 two-motor equipments in operation and that during the very severe winter of 1917-18 a large number of motors were lost. Many of the four-motor cars were running around during this period with only three motors in operation, and holding to schedules, but with the two-motor equipments, when one motor was down, the car had to be shopped. This was a very serious disadvantage for the two-motor equipment. The problem is one of cost, and if there is enough advantage in this respect in the two-motor equipment to offset this other disadvantage, they may be used on the safety cars in prospect.

SURFACE LINES' CAR DESIGN INDORSED

W. H. Sawyer, president East St. Louis & Suburban Railway, concluded the discussion on one-man cars by admonishing every railway man present not to leave the city until he had seen Mr. Adams' double-truck safety car with the separate entrance and exit and automatic doors at the exit. Mr. Sawyer has been one of the strong advocates of the standard car, and he said he had been out to see Mr. Adams' car and that nothing would have pleased him more than to have been able to find some flaw in this new design. But he had not been able to do it. The

small single-door single-truck car is all right for the small city, he said, but Mr. Adams' car can and will be used in so many places where the standard car can never be applied that it opens up an altogether new idea of the field of the one-man car.

BUS PROBLEM BRIEFLY DISCUSSED

In a general discussion of the use of motor buses, W. C. Sparks, Rockford & Interurban Railway, Rockford, Ill., told of the events leading up to the inauguration of bus service by his company. He said that when Camp Grant was closed the Fay Motor Bus Company had thirty to thirty-five buses on hand with no place to operate them, and finally succeeded in getting permission of the city to operate a competitive service with the street railway. The latter got an injunction immediately so that the bus operation never began, but in the final settlement of the matter with the city the traction company had to agree to buy some buses to serve certain territory not reached by the street railway—a newly-developed section of the city to which the street car lines had not been extended. Buses will be placed in operation within ten days to connect this district with the end of the car line, charging an 8-cent fare and issuing and receiving transfers between the bus and the cars. Mr. Sparks considered that these buses would not make any money, but if they kept competition out and broke even on expenses they would be well worth while. He also considered that it would be doubtful if this plan of operating the buses to connect with the end of the car line could be retained permanently, feeling that the buses would ultimately have to be operated all the way into the city, and that this would mean a duplication of service. For this special service, the trolley bus was not considered at all, because of the feeling that the proposition was likely to be temporary. The buses to be used are White chassis with body built by the Kuhlman Car Company and he said they were much finer than those used by the motor bus company.

J. C. Thirlwall, General Electric Company, contended that very few interurban bus companies are making any money. He said the only reason the buses in city service can show any profit is that they are not attempting to provide additional equipment to handle rush-hour service as the railroads have to do. W. G. Brooks and M. B. Lambert, Westinghouse Electric & Manufacturing Company, expressed the general view that the main problem before electric railway men is to study the motor bus and determine where it can be used to advantage. The electric railway man is primarily a transportation man, and he should not shut his eyes to any new development that may fit in anywhere into his business of providing transportation. Mr. Lambert suggested that a committee be appointed to make a special study of the bus and report to the association.

Advertising the Electric Railway's Service*

The Well-Edited House Organ, Proper Newspaper Contact and Well-Informed Employees Are the Means of Creating Favorable Public Sentiment—
Moving Pictures in Which the Appeal Is Indirect Are
Valuable in Soliciting Patronage

BY J. J. MORAN

Chicago, North Shore & Milwaukee Railroad, Chicago

IN CONSIDERING the question of advertising the electric railway industry, we might put the subject under two general headings, viz: publicity aimed at creating a friendly atmosphere and selling good will and advertising to induce travel and sell transportation service. The former is essential to all transportation lines, whether they serve a local community alone or whether they branch out into the interurban field, while the latter is more directly needed by the interurban lines. In discussing methods to be employed to obtain the object sought, we might, under our first heading, consider house organs, newspapers and employees.

The house organ, if properly edited, can tell the general problems of the property in a concrete way, which will be understood by the traveling public who are entirely unfamiliar with organization matters. Financial reports are usually puzzles to the uninitiated, and if they were brought down to a basis where the every-day individual could understand them, they could serve a very broad purpose. In addition to the financial condition of the property, the problems with which a company is confronted daily can be explained and the columns of the organ opened to patrons for suggestions or requests for information. Many people have ideas which they feel would help service but are reluctant to give them expression. Others are not so reluctant, and if the thoughts are passed on by those, others receive the benefit of the explanations given. Great care should be exercised to see that the information furnished is accurate and clear. If your readers come to a realization of the fact that the information received through this medium is dependable, it will go far toward creating confidence in the company as well as a spirit of good will toward it.

Our second subdivision is newspaper advertising. It is very essential that a representative of the property keep in constant touch with the newspaper office, especially in small cities, and that the editors of the paper are treated in such a way that they will know their suggestions and criticisms are properly received and acted upon. If this thought can be conveyed to the local press, any criticisms or suggestions in connection with service, which might be received by them, will be immediately taken up with the company representative and the subject discussed, so that the editor will be able, if necessary, to publish the company side of the controversy from the fact that he is in personal touch with the trans-

portation official, and it will have a tendency to make him look at the company's problems with sympathetic understanding.

The third subdivision is the employee. The employee is one of the best assets that a property can have for creating public sentiment in favor of the company, if care is taken to see that he is properly informed on the company's problems. Much depends upon the supervisory force as to the success of this work. From time to time executives in all organizations discuss problems with their department heads, feeling that in these discussions they are doing all that is necessary; but they fail to see what view the next group of their employees may take on the same problems. It is just as necessary to have trainmasters, supervisors and clerks thoroughly educated on problems of the industry as it is for executives and officers themselves to be thus informed. These men in turn are in touch with the employees who come in direct contact with the public, and can disseminate this information to the ranks and in that way pass it on to the public. Therefore, instead of having one publicity man in the organization, you immediately increase that department so that every employee becomes a member thereof. The minute a trainman hears a discussion on an affair of the company, he will break in and give the persons present the benefit of his knowledge. The majority of residents in a community are not in possession of facts and figures, and the moment an employee undertakes to explain conditions to them, quoting facts, that minute the talk changes, for the reason that the individual making the criticism usually is at a serious disadvantage. These facts are brought into the homes by the employees and into various organizations to which they belong, with the result that the truth on the situation is finally carried in a forceful way to the attention of every resident in the community.

If this is successfully done, it will have a strong tendency to iron out many of the present-day troubles of transportation companies and ill-feeling on part of the public; and will force the issue out of the political field. The politician has been using the public service companies as a football for a great many years, but he will cease his attacks in this direction as soon as he finds that public sentiment is leaning the other way. The removal of this question from politics is one of the most needed things of the present day.

In connection with advertising for patronage, it is very questionable if much can be accomplished in that direction in the local transportation field. If a person has to go to a certain

point in a city, he will take the public service line to reach that point, but if he has no occasion to go there it is very doubtful whether or not the best worded advertisement could induce him to go.

On interurban lines, however, advertising is very essential for the reason that there is usually competition and the property which shows the better degree of service at the greatest savings in both time and money naturally gets the business. For this purpose, billboard, car card and moving picture advertising can be used to good advantage. Three of the above methods have been tried out for years and have proved effective, so that it is hardly necessary to discuss them in detail, but the last named is not so well known.

In considering moving picture advertising, two things are essential: There should be a story which will interest the audience, and a proper method of distribution. In the early days of moving pictures, almost anything could be shown on the screen, but as the industry improved it became more and more difficult to secure space in the various theaters. At present it is almost impossible to secure the consent of a moving picture house to display any type of advertising. Where a patron pays his money to see a show, he naturally resents having his time taken up in reading advertisements. He can see these in the streets or in street cars without paying a premium; therefore indirect advertising must be used. The first step is to make a study of what your property has for sale; second, there must be an interesting scenario around which you can build up a story of your service, and one that will create the desire for travel without directly appealing to the audience; third, there should be a good camera man, and fourth, a reliable distributing agency to handle distribution of the picture.

This method of advertising was tried out on the North Shore Line two years ago and has proved very successful. The story starts in the early days of Chicago's history, showing Fort Dearborn, the old Kinzie House and the Indians in their native garb, traveling on the old Green Bay trail, running from Chicago along the lake shore and through north shore towns to Milwaukee and Green Bay. This old trail is paralleled by the North Shore Line. The picture then changes from the Indian scene to the present central district of Chicago, showing the present-day method of travel compared to the Indian in the former scene.

The picture simply shows a train pulling into the station at Adams Street and Wabash Avenue and passengers getting aboard. The name of the road is not brought out in any way to indicate advertising. The various steps of the Indians' journey are then taken up—each step contrasted with the present-day electric method of travel, and gradually a travelogue is served by the line. Finishing in Milwaukee, the picture shows the train pulling into the North Shore station. The name of

*Abstract of paper read at meeting of Illinois Electric Railways Association, Chicago, March 15-16, 1922.

the road is strongly brought out on the side of each car as the train slowly passes the machine. The accommodations at Milwaukee terminal are then shown, followed by a travelogue of the city of Milwaukee. The most interesting feature in each community is emphasized in this picture, and only at rare intervals is the road itself shown; so that unless a person was thoroughly familiar with the district, the film could not be connected with this property until the final scene. By this time the thought of travel has been planted and the desired result obtained.

This reel was shown in more than 300 theaters in Chicago, in all of the motion picture houses in towns between Chicago and Milwaukee, in more than 100 theaters in Milwaukee, and in choice locations as far south as Gary, west to Aurora and Elgin, and north to Watertown, Sheboygan and Madison, Wis.

Before showings were made in the various towns served by the North Shore, notices were sent to the newspapers calling attention to the fact that the picture would be shown, with the result that residents in the vicinity of the theaters immediately made arrangements to see their own community in moving pictures. The story which I heard all along the line was that the majority of moving pictures in the present day show wonderful scenes in New York and San Francisco, but "we never have an opportunity of viewing our home-towns."

In addition to theater display, the picture was shown at the Pageant of Progress in Chicago, at county fairs, expositions and to numerous commercial associations, church organizations and in private clubs. Even some of the schools solicited its use for educational purpose. Numerous incidents have proved that it actually procured business. At the Pageant of Progress Exposition, a tourist party stopped, saw the film and changed their plans and chartered a train for Milwaukee and return. At an exposition in Milwaukee a society had almost closed arrangements to travel to Chicago over another route when some of their members saw the film, communicated with the committee in charge of arrangements and prevailed upon them to change the plan. You can readily see that owing to the fact that pictures tell your story in a way which registers quickly and clearly, and tell about your service in a way that is not offensive, good results will follow.

"Give Service that Will Sell Itself"*

By LUKE GRANT

Manager Publicity Department, Chicago Elevated Railroads

DISCUSSING some of the methods of advertising the electric railway industry, Mr. Moran appears to have directed his comments more to publicity

men than to executives. I shall direct my remarks to operating officials. I believe they, in large measure, are the men who are responsible for whatever success the publicity man attains.

While railway officials have come to recognize the public's interest in railway operation and are anxious to take the people into their confidence, the public is not yet fully "sold" on the proposition. The big problem, therefore, in advertising the electric railway industry is to convince the public that the railway executives have seen the light.

How can this best be done? Mr. Moran has pointed out a few of the methods to be employed, but the effectiveness of any of them depends upon one method, which I will give you in a sentence—*Give service that will sell itself.* Get the public talking about the good service, instead of the poor service, and the publicity man and the advertising man will have a smoother road to travel and their work will be more effective.

I realize that I have set the operating men a big task. Most of you no doubt will say that you are now giving excellent service, and, measured by past standards, that undoubtedly is true. But the public has set new standards, and there is always danger that the men who are actually operating railroads are too close to the job to get the right perspective. The man poring over schedules and car mileage in his office is apt to have a different view of the service from the man who hangs on a strap.

It is the business of the publicity man, as I understand it, to try to place himself in the position of the strap-hanger and from that position endeavor to gauge public sentiment. That is why I am talking frankly to the operating men, because I am not quite sure that everything possible is being done to

give the kind of service that the public demands, and I realize how futile publicity and advertising are when they are not backed up by good service.

The best kind of advertising that a company can get is to have its patrons talk of the good service. That can be done. It is being done to my positive knowledge. On one of the roads with which I am connected, it is the most valuable advertising that we get. A man who has taken a trip over the line tells an acquaintance of the good, convenient service. The acquaintance tries it on his next trip. He has already formed a favorable impression from what his friend said of the service. He finds it comes up to his anticipations and becomes a regular customer. I have received scores—yes hundreds—of letters from passengers who got acquainted with the service in just that way. The effect of such advertising is cumulative. Every customer becomes a salesman for the service and the company gets the most valuable kind of advertising without the expenditure of a dollar, except, of course, the cost of giving service that sells itself. The spoken word is always more effective than the written word.

I do not wish to create the impression that if good service is given, there is no need for the publicity man. Good service will make his work more effective, but there is a place for him in every organization. If you are giving good service, let the public know about it. Encourage customers to talk about it. The point I have endeavored to make is, that when the publicity man writes something about the good service a company is giving, the executives should see that the service really is good. That is the way to make advertising effective. The public will not be "sold" on untruthful advertising. It demands real service and will not accept word pictures as a substitute.

The Modern Electric Railway Franchise*

To Provide by Ordinance the Rate of Fare Is Injurious to the Public in the Last Analysis—Local Ordinances Should Include Provisions Peculiar to Each City, While Rates and Service Should Be Within the Commission's Power

By BENJAMIN P. ALSCHULER

Alschuler, Putnam & Flannigan, Attorneys at Law, Aurora, Ill.

APPROACHING this subject in line with the most progressive thought of the times, I might say that there is no such thing as a modern electric railway franchise granted by a municipality. This is particularly true in those states which have been most progressive with respect to the regulation of utility companies. In Wisconsin, for example, the right to use city streets is now granted by the state regulatory body under so-called indeterminate franchises. But unfortunately for the public and the street railways in Illinois, legislation has not advanced in our state as it has in some other states. We still have to deal with our local

councils and boards of trustees when it comes to the granting and securing of rights to operate street and interurban railways in streets.

In former days when ordinances were passed, it was the custom to write into them all manner of provisions, having to do principally with the compensation to be paid for the use of streets, with the imposition of burdens for paying for pavements, sprinkling, cleaning streets, for making annual payments into the city treasury, etc., and what was then looked upon as one of the most important provisions was with relation to the rate of fare that might be charged. In that particular most street railway ordinances were uniform in that fares were fixed at 5 cents.

Street railway companies in Illinois

*Abstract of paper read at meeting of Illinois Electric Railways Association, Chicago, March 15-16, 1922.

Discussion of paper, "Advertising the Electric Railway's Service," presented before the Illinois Electric Railways Association, Chicago, March 15-16, 1922.

have had to carry on litigation with municipalities to have 5-cent fare provisions set aside. True, the law is no different today than it was twenty years ago with respect to the effect of ordinance provisions fixing rates, but unfortunately a large proportion of human kind do not want to believe the truth if it does not agree with its ideas as to what the truth ought to be. As far back as 1899 an ordinance provision fixing a rate was held by the Supreme Court of Illinois not to bind subsequent City Councils; in other words, it was held that a Council had no power to make a contract fixing the price for all future time, and the Supreme Court then said:

What might be proper for a city this year might not be proper the next year. It is impossible to determine with absolute or even tolerable certainty what changes a few years might work in the character and reasonableness of rates. No contract is reasonable by which the governing authority abdicates any of its legislative powers and precludes itself from meeting in a proper way emergencies or occasions that may arise.

This statement affirmed by the United States Supreme Court in 1899, fifteen years before our public utilities law went into effect in this state, has not served to educate the public generally, nor has it served to prevent unreasonable and unwarranted litigation on the part of public officials, and even now, although the Supreme Court since the adoption of the utilities law, has reiterated the statement made back in 1899 by such language as was used in the Quincy case: "The municipal authorities of this state have never been clothed with power to fix by binding contract rates for any definite term of years." When it comes to making application for new ordinances in municipalities we are always met with the demands of city officials that we make provision relative to rates.

No fixed and invariable fare can be reasonable because conditions change. We know that a utility charged with a public duty is entitled to earn a fair rate of return upon property used and useful, devoted to the public use; and with varying conditions as to costs of operation and maintenance, the fare must vary to bring that rate of return to the company and so that the public may be served at a price that conforms to the variation in costs.

There is no question but that the public is primarily interested in service. True, a large proportion of the people do not know this. An extra penny is not of nearly as much importance to an individual as safety, cleanliness and adequacy of service. If it be properly brought home to the individual he will appreciate the truth of this statement, but when it comes to negotiating for ordinances the apparent paramount thought of the municipal official in far too many instances is the rate of fare, service being but a secondary consideration, if any consideration whatever be given to it.

But people are becoming educated to

these things and it is only to be regretted that the campaign of education which our utility associations have been carrying on so well during the past three or four years was not begun twenty years ago.

Since Jan. 1, 1914, we have had in Illinois a regulatory law which by implication is written into every ordinance. It has superseded all the regulatory provisions of the existing ordinances. And any new ordinances that may be passed, if they contain any regulatory provisions as to such, must give way to the superior authority of the state as expressed in the Illinois utility law. In other words, to include in any ordinance today any provision, other than the statutory provisions, relative to what fares shall be, now or hereafter, is but a futile endeavor. We of course will meet with the political municipal official who seeks to curry favor with the public or to profit at public expense who will endeavor to include regulatory provisions in an ordinance and who must know, if he is properly advised, that any regulatory or police provision as expressed in an ordinance is contrary to our statutes.

It has been, as I might say, my misfortune to be placed in a position where I have had to negotiate street and interurban railway ordinances in the past few months. In this work I have been acting under the orders of United States Judge Evan A. Evans in a receivership proceeding. Following a suggestion made by the judge before an assemblage of leading and representative citizens of communities served by the particular company in his court room in Chicago a committee representing the different municipalities was appointed, and I have been negotiating with this committee ever since. The principal point at issue seems to be the inclusion of a fare provision in ordinances, to which of course I cannot agree because our law does not permit it, and were I to agree to it, it would be merely the procuring of ordinances under false pretenses.

People are learning more and more every day that the regulation of utilities, including the fixing of fares, is in the hands of the state; they are learning more and more every day of the problems of utilities and also that if they are to have service the utilities must be permitted to earn their way. Of course, in years gone by it was looked upon almost as rank heresy for utility companies to take the public into their confidence, but with practically no exception the utility operators have come to see the light and now appreciate the wisdom of publicity. This publicity will in time educate the public to a point where it will learn that the street railways and other utilities are but associations of people who have invested their money in a common enterprise for the purpose of serving the public and to earn a fair return upon the money which they have been willing to risk. If they are to render an efficient service they must be permitted to earn that fair return.

We have read considerable in the public print and in our railway journals of the Des Moines situation and of the Des Moines ordinance, which is somewhat different from the stereotyped service-at-cost franchise in that the valuation of the property for rate-making purposes is not mentioned. This ordinance appeals to me as one which, if it could be adopted in Illinois, would undermine opposition in that its fairness is so apparent upon its face; in other words, it states that certain returns should be permitted to be earned upon outstanding bonds and funded debt, the amount of which was agreed to. It has a sliding scale of rates and with the primary rate in effect the company is not permitted to earn any return on its common stock, but as rates are reduced earnings may be set aside on common stock, increasing as the rates drop. Such an ordinance is one that will appeal to the public, but in practical effect we have such an ordinance in every city in the State of Illinois today. True, our commission fixes rates upon valuation, but the value of the Des Moines property was considered when agreement was made as to the amount of funded debt upon which the company should be permitted to earn return.

The public today is better educated than it was in the past with respect to the fallacy of payments made by companies for pavement, for licenses, etc. It is becoming educated to the fact that such payments must in the last analysis be made by the car riders. It is beginning to realize that such expenditures in no way serve to improve service and are nothing more nor less than a dead weight which the company must carry and that with such expenditures eliminated from ordinance provisions a corresponding reduction will be reflected in the rate of fare. But I say the public is just beginning to realize. It must also be made to realize that, in the last analysis, expenses of companies in litigation with municipalities must be borne by the car riders.

It is a rather anomalous situation, however, for a city to have the right to state whether or not a company may operate on its streets and then have all manner of regulations left with a state regulatory body. The wisdom of statewide regulation has been demonstrated to the satisfaction of practically all students of the question. It is the theory of regulation that utility operation shall be a monopoly and that it is within the power of a commission to require satisfactory service at reasonable rates. Who the operator may be or who may compose the company is of small moment to the community served so long as adequate service is rendered at a reasonable rate.

The length of time for which a given company may serve a community is of no real concern either to the community or its government, except that they should be concerned to the extent that they shall be adequately served for all time, or at least until progress in

the art may require different methods of operation. Such being the case, there is no good reason why a local council should prescribe who may or who may not operate a given utility, nor should it prescribe the length of time for which it may operate. A regulatory body with all the facilities at its command is in far better position to judge as to who should or should not serve the public. It can judge of the policies of the operators and of their financial ability to provide service. The indeterminate permit granted, as for example in Wisconsin, by a state body, would seem to be the answer and look for the day not far distant when through the co-operation of our committee on public utility information, the people themselves will advocate and favor such system in Illinois.

IMPLICITY SHOULD BE THE CHARACTERISTIC OF A FRANCHISE

The modern electric railway franchise, limited to conditions and laws as they today exist in Illinois, after all is but a short, concise and simple proposition. It should be nothing more or less than a grant of authority by municipal legislative body to a company to operate its railway. To charge for the use of the streets is but another way of increasing rates of fare to the car rider for the benefit of the taxpayer. To make a company pay for pavement which it does not use is but another way of reducing the cost of pavement to the property owner whose property is benefited because the railroad is located on his street. To require a company to pay for sprinkling and cleaning streets is but another tax upon the car rider for the benefit of the property owner. All these items, paid for by the car rider, simply serve to keep rates up; they contribute nothing to the successful rendition of service and they must be eliminated from franchises. To provide by ordinance for a rate of fare serves only to cause trouble and litigation. If such provision could be made effective it could not serve to injure the public in the first analysis, because if the rate agreed upon is too high the public would be paying too much for a ride, and if it is made too low, then service would of course be correspondingly curtailed.

With the inclusion of proper provisions for conditions peculiarly local, an ordinance which would be entirely free from political bunk and which would in fact be the only ordinance that would be in conformity with the law, could be written somewhat in this fashion:

Right, permission and authority are given to _____ Company to lay down and maintain its railway tracks and to operate its cars thereon, together with the right to construct, maintain and operate its lines of poles and wires in connection therewith for the operation of a street railway system upon the following streets (naming them) in the City of _____ for the period of twenty years from and after the date of the passage of this ordinance."

Discussion on Franchise Paper

By D. E. PARSONS
General Manager
East St. Louis & Suburban Railway

ILLINOIS electric railways are regulated as to service and fares charged for service. Conditions of the past few years in our industry have been such that it has given those who are interested in the street railway business considerable anxiety as to what the railways should have in reference to regulation, both city and state, in order to perform a service that will be satisfactory to the patrons of the utilities.

In his paper, Mr. Alschuler has mentioned a few types of franchises that are being tried, but the "indeterminate" franchise, most of us agree, is the most desirable for the proper rehabilitation of street railway financing. Such a permit, of course, should be exclusive, it should allow the fare to be flexible, it should insure against competition which parallels, it should permit not only ample regulation but regulation which will not confiscate, and regulation that is flexible enough to give a fair return on a fair value of the property at all times.

Most of the public utility operators find that the old franchises are as a rule worthless and destructive, consequently those financially interested and those in direct charge of operation have found it necessary and urgent that the railway companies immediately start an aggressive publicity campaign, with the object of presenting a correct and

honest viewpoint to the minds of the public, the press, and the city and state officials.

History tells us that the American people are not unfair on any problem if they understand, and if they are not improperly influenced in the wrong direction.

I have recently read an editorial in the *Railway Age*, under the subject: "Why Not Sell Necessary Service at a Profit?" The editor makes the following assertion: "We have said that the public fixes the prices it will pay. Here is a fact of vital importance which is constantly overlooked by many managements. The railways, collectively and individually, are well organized and equipped to present their cases to lawmakers, commissions and courts. In other words, they are well organized and equipped to 'sell' the lawmakers, commissions and courts. It is a well-known fact, however, that over and over again they convince lawmakers, commissions and courts that certain policies should be adopted, and that in spite of this, directly contrary policies are adopted. Why? Because the lawmakers, commissions and courts have been 'sold' the policies in question, but the public has not been, and it is public sentiment that finally determines the policies actually adopted."

In conclusion, the instrument that controls the destiny of a public utility, whether municipal or state, must take into consideration that in the long run it is to the best interest of the public to have its utilities operating efficiently year by year with a fair return to the investor.

Traffic Relations Between Steam and Electric Lines Improve*

Ill Feeling of Past Is Disappearing with Desire of Both to Improve Service—Electric Lines Have Created New Traffic, Relieved Steam Lines of Short Haul Unprofitable to Them and Are Natural Feeders of the Trunk Lines

By C. E. THOMPSON
Assistant to President Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

THE prejudice which has so long prevented traffic relations between electric and steam railroads is a matter which every electric railway man should now appreciate, as many of the conditions which bring about the ill feelings of the steam road men for the electric road are now experienced by the electric railway in the competition of the jitney, the motor bus and the motor truck.

Not all the blame should be laid at the doors of the electric railways either, for, had the steam roads recognized that electric railways were a natural development and taken steps to use them as feeders rather than as competitors, the situation would be very different today. The electric railways, and the steam roads, also, should recognize that the motor car and motor truck are

natural developments; that they have a field of usefulness and should take steps promptly to use them as allies to gather traffic in out-of-the-way places and deliver it to the rail carriers.

I believe the ill feeling of the past is fast disappearing. Many of the large steam railway systems have electrified terminals in large cities, some have entire divisions operated by electric power and others are operating the electric railways in their territory as part of their system.

When the steam roads were loaded to the breaking point during the World War, the electric lines demonstrated their ability to handle large volumes of traffic and made a place for themselves as a part of the transportation system of this country. In the transportation act of 1920, Congress recognized the electric railways, and while they rightfully exempt them from many of the provisions of the act, the law provides

*Abstract of paper read at meeting of Illinois Electric Railways Association, Chicago, March 15-16, 1922.

that through routes and through rates and divisions shall be established between all carriers subject to the transportation act and vests the Interstate Commerce Commission with the power to establish through routes and joint rates between carriers without regard for the kind of motive power used. In case the carriers cannot agree as to the division of joint rates, the commission has the power to fix the proportion that each company shall receive.

With the better understanding that now exists, the demonstrated ability of the electric roads to perform as efficiently as the steam roads, with the disposition to deal fairly and openly, with the regulatory agencies definitely instructed by law, and the desire on the part of both the steam and electric roads to give the best possible service to the public, there seems to be no serious obstacle in the way of establishing the same traffic relations between electric and steam roads as now exist among the steam roads.

If such relations are desirable I believe the American Electric Railway Association, the various state associations and the individual companies should make a united effort to bring about full recognition by the steam railways. When the facts are presented showing the enormous volume of business now handled by electric lines, what a factor they have been in the building up of communities, how they have created a riding habit among the people, how they have relieved the trunk lines of the unprofitable short-haul business, and have been and can more and more be used as the creators of traffic and the natural feeders of the steam roads, and how the best interests of the public can be secured by full traffic relations, the desired results will readily be obtained.

The big question, however, is to what extent are interchange arrangements desirable? Most electric railway traffic men think that if they could become parties to all the joint tariffs applying in their territory, their problems would be solved and that greatly increased traffic would move via their line.

In order to discuss this question intelligently, we must divide it into two natural divisions—passenger traffic and freight traffic.

PASSENGER TRAFFIC

Passenger rates are based on the distance traveled, the same amount being charged for the last 5 miles as for the first 5 miles of a journey. Generally speaking, the rates are the same on all lines, both steam and electric, in a given territory. The only exceptions should be those necessary to establish the proper differentials to offset the difference in the character of the service rendered. The only benefit to the public through joint fares is that of service. Time and inconvenience are saved by purchasing a ticket and checking baggage to destination, and where through routing of cars or trains is arranged for, the elimination of the transfer adds to the comfort and pleasure of the passenger. Joint passenger

and baggage rates with steam roads are desirable and should be readily obtained. Before an aggressive effort is made along this line, however, it would be well for the electric lines of this territory to get together and put into effect joint passenger and baggage rates among themselves.

FREIGHT TRAFFIC

Freight rates are computed on an entirely different basis from passenger rates. While the length of haul is one of the elements considered, the classification of the articles is the chief element and the rate becomes proportionately lower as the distance becomes greater. The consideration of freight traffic naturally suggests a division of the subject as between carload freight and less than carload freight or merchandise shipments.

Carload Freight.—Most of the electric roads have physical connections with steam roads and interchange business at these junction points. In the absence of through rates, the local rates of the connecting lines are combined. The sum of these local rates being more than the through rate, the industry located on the electric line is discriminated against or the tonnage diverted from the electric line. Through routes and joint rates will, without a doubt, add a substantial volume of traffic and be of great advantage to shippers on or near the electric lines, and through routes and joint rates can, as I have pointed out, be obtained. Whether or not interline shipments can be handled on a basis that the revenue will pay all the costs of the service, including a fair return on the necessary investment, depends largely on the division of the through rates. The division allowed the so-called short-line railroads is such that most of them are in very bad financial condition. I know of no electric road having joint rates which keeps the cost of its freight service on

a basis that it can tell whether the handling of through carload shipments is at a profit or at a loss. It is my opinion that most of this interline business is handled at a loss by the electric lines as well as by the short-line railroads. These are times when each department of a business should be self-supporting. A very exhaustive study should be made as to the probable financial results before arrangements are made for participation in all the tariffs published for the carriers.

Merchandise Freight.—Contrary to the general opinion, I think the l.c.l. or merchandise freight offers the greatest opportunity for the electric lines. Many lines are now engaged in this branch of the business with considerable success. Through rates between electric lines, and between electric lines and the steam roads, will do much to increase the popularity of this business. The principal difficulties are the lack of proper terminals in the larger cities and the cost of handling at stations. Both problems can be solved by co-operation between the carriers. Joint use of terminals will aid greatly. The use of containers will, I believe, solve the excessive cost of handling at stations and the transfer between terminals.

There have been a number of successful experiments in the use of various forms of container. A container will be designed that can be handled on motor trucks, on electric railway cars in city streets, on standard steam-road flat cars, on river barges or on ocean-going vessels, which can be filled at the factory door, handled by motor truck to the nearest station, transferred, if need be, from one terminal station to another by truck and finally delivered at destination with the least possible cost of handling. Here again the electric lines should work out interchange arrangements, first among themselves and then through concerted action with connecting steam lines.

Recent Developments in Car Design*

Premature Standards Which Will Hinder Progress Must Be Avoided, but Certain Group Dimensions Should Be Established—The Automatic Treadle-Operated Exit Door of New Double-Door Chicago Safety Car Is Described

BY H. H. ADAMS

Superintendent of Shops and Equipment,
Chicago Surface Lines

THE development of the safety car has resulted in the rapid introduction of these single-truck units on a large number of properties. This widespread use of the car has been due primarily to the fact that their use makes possible a very substantial reduction in operating expenses and at the same time enables a more frequent service to be offered to the public.

The success of the car in meeting these requirements, and its consequent rapid introduction, has led some manufacturers and railway men to consider the construction as a final development,

and it has been widely referred to as a "standard" car. Although operating experience in a number of places has suggested some very desirable improvements, a considerable sentiment has existed against making any changes from the original design.

None of us will question the desirability of working toward standards in car construction as rapidly as the development of the industry and conditions permit. Care must be taken, however, to avoid the establishment of premature standards which will interfere with progress. Before a body construction can be considered as a standard for a particular type of service, it must represent, in the opinion of the

*Abstract of paper read at meeting of Illinois Electric Railways Association, Chicago, March 15-16, 1922.

dustry, the highest development, combining the factors of strength, weight, cost of construction and appearance. It must also represent the most effective and efficient arrangement for the safe, comfortable and rapid transportation of passengers. It is, in the writer's opinion, impossible to obtain in any single design of car, for service under all operating conditions on various properties in different parts of the country, the best combination of the above requirements. This problem may be met in the future by several types of cars, each designed for certain classes of service. Considering the subject on the basis outlined, I feel sure that there are very few of us who believe that we have reached a stage in any particular type of car now in operation where we are justified to stop and establish a standard. Every season shows long steps forward in the construction of light-weight cars. We are just beginning to see the possibilities of the future. The electric companies and the truck manufacturers are also apparently alive to the needs of the day. In car building the use of higher grade, lighter-weight materials is just commencing. Development of non-corrosive steel has recently made some long strides. This in itself opens up to car designers unnumbered possibilities in reduction of weight and cost of construction. The application of lighter and better materials will and must affect the design of car bodies. Methods of handling heavy passenger traffic in more and more efficient ways are constantly being developed.

This does not mean that progress cannot be made toward standardization. Immediate progress of this nature can be made along the lines of certain group dimensions, fixing post centers, car widths, roof types, etc., into certain groups to be applied to meet the varying conditions on different properties. Returning to the question of the one-man safety car, we in Chicago, although recognizing the great service which this car has rendered the electric railway industry by the successful establishment of certain principles of operation, have found after a period of experience under actual operating conditions on certain of our lines that this unit has certain inherent limitations. The most impor-



THE 37-FT., 45-PASSENGER DOUBLE-TRUCK ONE-MAN CAR NOW BEING TESTED BY THE CHICAGO SURFACE LINES

tant of these limitations are: (1) Excessive time for passenger interchange, due to single doorway, permitting only one stream of passengers to alight from or board the car; (2) congestion within the body, due to narrow aisle and restricted space for movement of passengers at the front end; and (3) excessive damage resulting from comparatively light collisions.

With these factors in mind we prepared a design which would more nearly meet our requirements, and our first efforts were along the lines of a single-truck unit. This car was made 8 ft. wide, 29 ft. 4½ in. in length over bumpers, and weighed, completely equipped, 16,375 lb. It is illustrated and described in the ELECTRIC RAILWAY JOURNAL of Jan. 14, 1922.

In the design of a car for city service, provision should be made for the efficient loading and unloading of passengers during maximum load conditions. Where schedule speed is of any importance, loading and unloading of passengers should be accomplished in the minimum time possible. The use of a single entrance for the interchange of boarding and alighting passengers is not in accordance with this principle of good railroading.

Our sample single-truck car was therefore provided with a double passageway at each end. The exit pas-

sageway is protected by means of a barrier, which is latched in a closed position. This barrier is released by a passenger stepping on a treadle in the exit passageway on the platform, thus permitting the gate to be pushed outward. After the passenger has alighted, the gate returns automatically to the latched position. This barrier was installed with an idea of educating the public to enter via the entrance passage and leave through the exit.

This car was completed and placed in service the early part of September, 1921, and has been in successful operation on outlying lines since that time. From observations of its operation, we decided that a double-truck car would give a more flexible unit and would more satisfactorily meet the service requirements on similar lines in Chicago. We attempted to work out a combination which would have the advantages of small, light-weight units, with which a frequent economical service could be rendered during periods of light travel, and which at the same time would take care of the heavier requirements of rush-period conditions.

The double-truck car, which is also illustrated and described in the Jan. 14 ELECTRIC RAILWAY JOURNAL, was made 8 ft. 6 in. in width, 37 ft. 2 in. in length over bumpers, and was provided with a double passageway at each end,



LEFT—IN COLD WEATHER PASSENGERS CAN LEAVE CAR WHERE THERE IS NO ONE TO GET ON WITHOUT HAVING BOTH DOORS THROWN OPEN. AT RIGHT—A CLOSE-UP OF THE PLATFORM SHOWING THE TREADLE CONSTRUCTION

having the exit barrier as described for the single-truck car, in the exit passageways. Four 25-hp. motors, and a light pair of double trucks, specially designed to carry the center plate loads, were used. A line breaker was installed under the car floor to eliminate the objectionable platform circuit breakers, and a pneumatic tripping mechanism operated during an emergency application of the safety devices was installed directly in the line switch box. This car weighs 28,050 lb. completely equipped, and has a seating capacity of forty-five passengers. The aisle width between the end plates of the cross seats is 28½ in., which permits a free movement of passengers toward the rear end after the seating capacity has been exceeded.

The details of the design involve a

a maximum number of passengers in the most efficient manner on a car operated by one man, and at the same time to avoid distracting the operator's attention when he is collecting fares, has led to a further development for the protection of the exit passageway against passengers boarding the car there. This has been accomplished by making the exit doors automatic in their operation, through the medium of a treadle similar to that used with the exit barrier operation previously described. In this arrangement the entrance doors are connected with the safety control equipment and operate without any changes through the brake valve furnished with that equipment. The exit doors are opened by a passenger stepping on the treadle, which is made large enough so as almost com-

We believe that this automatic exit door simplifies the problem of rapid loading and unloading of passenger on cars operated by one man, and eliminates all objections that have been raised to the use of double passageway on a car of this type. The operator of the car is relieved of the necessity of giving any attention to alighting passengers when he is busy collecting fares. In cold weather passenger may be allowed to leave the car when there are none to board same without throwing open both doors.

The double-truck car has been equipped with two of these automatic exit doors, and is now in operation. We are making observations at the present time and are following the operation very closely. The door is interlocked in such a manner as to safe-



AUTOMATIC EXIT DOORS ON CHICAGO SURFACE LINES' DOUBLE-TRUCK ONE-MAN CAR

Number One. A passenger standing on the treadle cannot open the exit door until the brake handle has been moved to the door-opening position.

Number Two. The exit door does not close until the passenger has entirely cleared the step.

Number Three. After the passenger takes

his foot from the step, the exit door automatically closes almost instantaneously.

Number Four. A "feather weight" passenger on the treadle will operate the door.

number of interesting construction features, in all of which consideration has been given to the question of weight. In no instance has proper strength been sacrificed, and the structure is such as to give a very rigid construction with ample provision against excessive damage from minor collisions.

The car was completed and placed in service about the middle of December, 1921, and has since been in successful operation, handling passengers in a very much more satisfactory manner than the smaller car.

Considered from the standpoint of speed in handling passengers, it has been found that double passageways are a decided improvement and very much more satisfactory than the single passageways. Preliminary observations on our single-truck car, having double passageways, in comparison with cars having single passageways, have up to the present time shown a reduction of 31 per cent in time of passenger interchange, at stops where similar conditions prevailed.

Our study of the problem of handling

pletely to fill the exit passage, and makes it practically impossible for the passenger to stand in front of the exit door, without standing on the treadle. The exit doors cannot be opened by the passenger until a full brake application has been made, and brake valve handle moved to "door opening" position.

The door closes automatically and quickly with no supervision from the operator when the passenger has cleared the exit step. This is for the purpose of preventing boarding passengers from entering via the exit door. The door does not begin to close, however, until the alighting passenger has entirely cleared the step. When several passengers are leaving the car in succession, the door remains open until the last passenger has cleared the step. Provision is made to prevent jamming any one who might be caught in the door by attempting to enter through the exit side. When both the entrance and exit doors are open, they may be closed, even though a passenger remains standing on the treadle, by moving the brake-valve handle to the "door closing" position.

guard against accidents due to the carelessness of the passenger or the operator of the car.

In considering the general problem of handling passengers under the control of one operator, we believe that any arrangement for cutting down the time of interchange should from the standpoint of safety provide for a movement or interchange of passengers to be directly under the observation of the operator. This means primarily that all such interchange must be effected at the front end of the car, and it is therefore particularly desirable to so design this type of car that there will be ample aisle width and space within the body at the front end to facilitate the ready movement of passengers. For city service, where short periods of comparatively heavy congestion occur, a double-truck car properly designed offers a more flexible unit and affords a more attractive service to the public than the single-truck car. For the operating requirements on a great many interurban properties the double-truck car is also entirely applicable.

How Electric Railways Are Being Advertised*

Birdseye View of the Work Being Done to Improve Public Relations by Typical Properties Scattered from Coast to Coast—The Essentials of Good Work Are Stated to Be Frankness, Brevity and Clarity

BY LABERT ST. CLAIR

Director of Advertising Section
American Electric Railway Association

IT SEEMS to me to be worth while no longer to tell electric railway men about the value of good public relations. This has been shown by the results that have accrued to the companies that have tried to improve them. Electric railway men are tired of waving forefingers wagged in their faces, along with the declaration that the goblins will get you if you don't catch out." It is time to declare a holiday on the wagging forefinger and substitute some plain talk on how companies that are doing constructive public relations work are achieving success.

Advertising, publicity and public relations work generally have developed rapidly throughout the electric railway field in the last three years. Today approximately fifty per cent of the companies in the country, including virtually every large company, are engaged in this work in some form. The work of getting the electric railway story to the public finally is being divided along constructive lines. A smooth working plan of co-operation between local companies, state committees and our national association has been worked out. The Illinois committee has done splendid work, not only within its own State but also in blazing the trail for other state committees.

Taking the Illinois plan as a model, more than twenty-five states now have organized state committees and more are being organized right along.

There is scarcely a state in the Union which today does not have several electric railway companies that are doing big outstanding advertising and public relations work. For example, starting with Massachusetts we find the Eastern Massachusetts Street Railway operating a plan of community committees successfully. This company co-operates with the car riders in each community in forming a community committee to consider all questions as to service.

In Providence, R. I., the United Electric Railways is just beginning an advertising campaign. And coming down to Connecticut, we find the Connecticut Company engaged in intensive progressive public relations work. President Leius S. Storrs, of this company, carries the electric railway story directly to the car rider in many different ways. One of the most successful things that he did was to wage a fight in the Legislature against unregulated jitney competition through the medium of a leaflet. With this single advertising medium and personal work in a few months he got the required legislation.

He also has a policy of frankness with the newspapers which works.

In New York City the car card as used in the subways is well known, and in Brooklyn we find C. E. Morgan, the general manager of the Brooklyn City Railroad, addressing groups of employees daily in an effort to humanize his company. He also uses company publications, car cards and other advertising material to good effect.

In Philadelphia, the P. R. T. long since learned the efficacy of the car card and is making broad use of it and other advertising literature. Using the car card and leaflets as its advertising medium, this company once saved the skip-stop for its service which meant a million dollars a year.

Nowhere in the United States is found a smoother working public relations machine than that which has been set up by C. D. Emmons, president of the United Railways & Electric Company of Baltimore, Md. Here, every executive who comes in contact with the public is definitely assigned to a task. One man's activities center around local clubs; another is assigned to charities and other civic activities; a third deals with the politicians and public meetings, and a fourth is active in the Advertising Club and in newspaper circles.

Down in Richmond we find the Virginia Railway & Power Company using car cards and leaflets with highly successful results. This company recently passed through a bitter strike. By using the mediums mentioned as well as newspaper space, the company won a victory. In Charleston the street railway is headed by P. H. Gadsden, who proves his belief in advertising and public relations work by using newspaper space liberally to advertise his service.

Skipping along to Atlanta, Ga., we find P. S. Arkwright, president of the Georgia Railway & Power Company, pursuing a policy of frankness in dealing with his public and his men. He has the happy faculty of talking from the angle that is most interesting to the audience he addresses. For example, he talks electric railway service to merchants in terms of shoes, overalls, lollipops, etc. T. L. Small, in Baton Rouge, is effectively telling his story in 1-in. newspaper "readers." In New Orleans, the railway company has set a pace with car cards that is approached by few. In fact, the South is full of managements that are up on their toes courting the public.

In the North Central States some of the best work in the country is being done. Youngstown told its story effectively on the introduction of the monthly pass. The Northern Ohio

Light & Traction Company has created a better public feeling through boosting community spirit. Toledo sold its service-at-cost plan to the people through publicity. One company in this territory now is making a personal canvass of every citizen to determine what it can do, if anything, to please its riders better. The Union Traction Company of Indiana, under the direction of Arthur W. Brady, is doing safety work that might well be copied by any company. E. M. Walker of Terre Haute has sold the safety-car idea to his riders in a manner which has excited favorable comment.

In Illinois W. H. Sawyer of East St. Louis is doing effective safety work and the Illinois Traction System excellent general publicity work. All roads might profit by studying the merchandising-of-transportation plans and safety work put into effect by Britton I. Budd on the Chicago Elevated Railroads. Likewise, it is a pleasure to see the Chicago Surface Lines telling its story through car cards and otherwise taking the public into its confidence.

Going west from Chicago we find the Twin Cities getting the frank story of their electric railway problems from Horace Lowry. In Duluth, R. B. Thompson is carrying on a continuous newspaper advertising campaign. Kansas City is learning its local railway story through frank, open discussion by the company. Lincoln, Neb., has just started issuing a company leaflet that is vigorous in style and well printed.

Farther west is the Portland Railway, Light & Power Company, of which W. P. Strandborg is publicity manager. Recently he not only has cultivated the most friendly relations with his public and the newspapers but has successfully floated two large security issues.

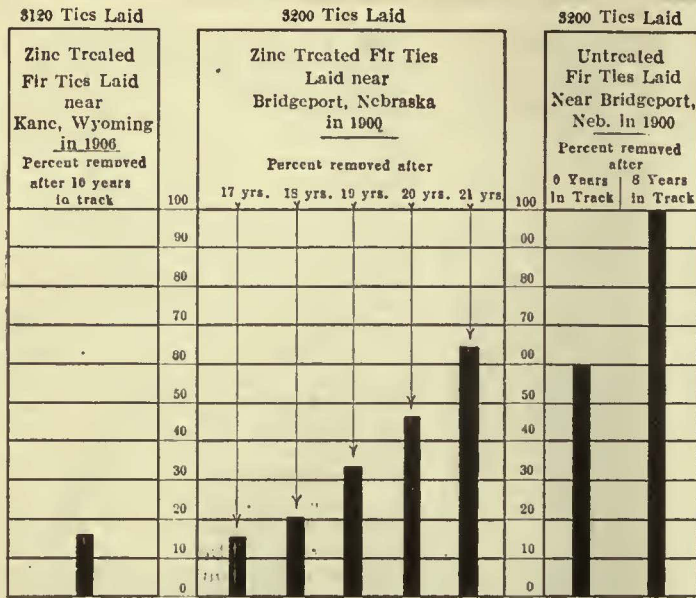
California is a territory that has been beset by bus competition of vigorous character. Paul Shoup and others in charge of the electric railway properties are continuing to "carry on." Through newspaper advertising, booklets, car cards and speakers, electric railway problems are being made clearer to Californians every day.

In conclusion, I repeat that *the electric railways are on their toes*. They are getting results, and those that are getting the best results are the ones that are following this brief rule in advertising and in public relations: Be frank. Be brief. Be clear.

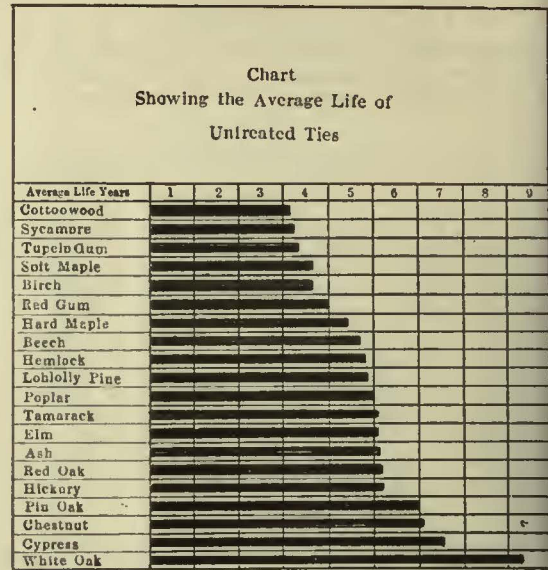
Safety Convention in Toronto

A JOINT safety convention under the auspices of a number of Canadian industrial and other organizations will be held at the King Edward Hotel, Toronto, on April 4 and 5. The convention is one primarily for employers, and the chief aim is to secure reduced compensation and eliminate unnecessary waste by extending the benefits of accident prevention in large and small industries. The chairman of the first session will be Sir John M. Gibson, K.C.M.G., president of the Ontario Safety League.

*Abstract of paper presented before the Illinois Electric Railways Association, Chicago, Ill., March 15-16, 1922.



COMPARATIVE LIFE OF TREATED AND UNTREATED FIR TIES



AVERAGE LIFE OF UNTREATED TIES OF VARIOUS WOODS

Tie and Timber Preservation*

Numerous Experiments with Various Methods of Treatment and Varieties of Wood Have Been Conducted by the Burlington Railroad During the Past Twelve Years

By J. H. WATERMAN
Chicago, Burlington & Quincy Railroad, Galesburg, Ill.

WHEN we began treating ties in 1898 we used a white oak untreated tie as a unit of measurement, the life of which was estimated at that time at eighteen years. It was thought then that if inferior wood like pine and

red oak would last eight years when treated, the maximum life had been obtained. Exhaustive tests that we have conducted over a period of twelve years have proved to us that treated soft-wood ties have an average life nearly 100 per cent more than was expected.

The accompanying charts and tables show the results of our various tests. It is especially interesting to note in the summary of the total ties placed in the experimental tracks during 1909 and 1910 that practically all of the untreated ones have been taken out. This summary includes the test results of ties of various kinds, each kind having been treated with the various processes.

We have in our test tracks ties treated with the straight creosote, the Card, and the Burnettizing (zinc chloride) processes. A summary of the comparative life of ties treated with the two last processes in wet and dry climates shows how much longer life in the wet climate ties treated with the Card process give than to those treated with the Burnettizing process. The determination of proper treatment is largely a matter of experience. This is illustrated by the experience of our railroad which reduced the amount of zinc used from 1/2 lb. per cubic foot to 1/4 lb. Although theoretically the lesser amount was sufficient, several

TABLE I—SUMMARY OF TEST RESULTS ON TIES OF VARIOUS KINDS TREATED WITH VARIOUS PROCESSES, AND PLACED IN EXPERIMENTAL TRACKS OF THE C., B. & Q. RAILROAD DURING 1909 AND 1910

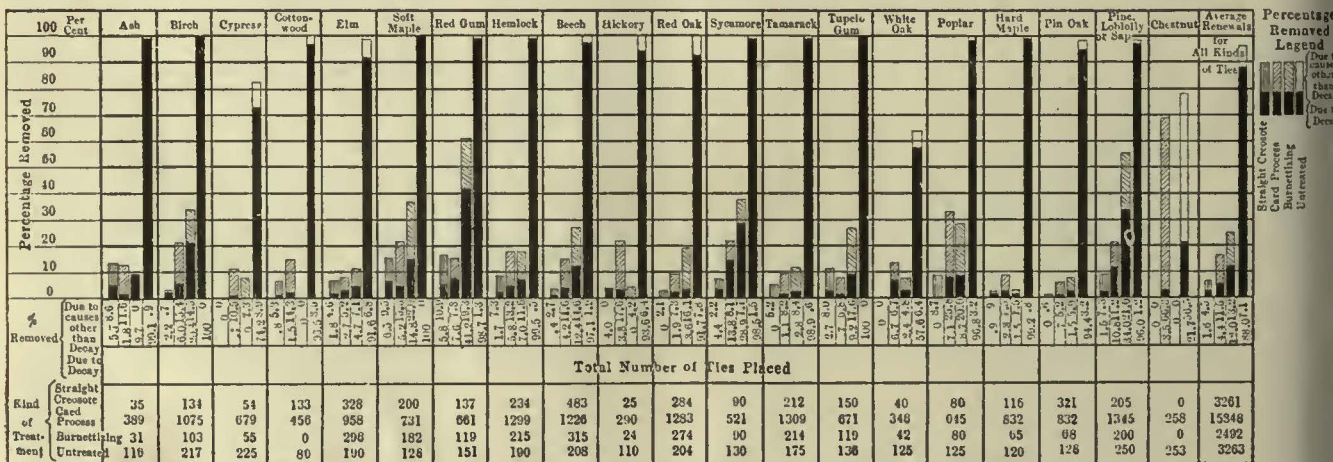
Process	Total Placed	Total Removed to Date	Percentage removed because of Decay	Percentage removed for Other Causes
Straight creosote...	3,261	198	1.6	4.5
Card process.....	15,846	2,518	4.4	11.5
Burnettizing.....	2,492	629	12.0	13.2
Untreated.....	3,263	3,106	88.0	7.1

Note: Included in these percentages only are the ties placed in thousand lots on various divisions.

*Abstract of paper presented before the Illinois Electric Railways Association, Chicago, Ill., March 15-16, 1922.

TABLE II—COMPARATIVE LIFE OF TIES TREATED WITH THE CARD PROCESS AND THE BURNETTIZING PROCESS IN THE WET AND DRY REGIONS

Process	Region	Number Placed	Number removed	Per Cent removed because of Decay	Per Cent removed for Other Causes
Burnettizing	Dry..	773	156	5.9	16.1
	Wet..	1,719	473	15.7	11.1
Card process	Dry..	4,270	543	2.5	10.0
	Wet..	11,576	1,975	4.9	12.1



GRAPHIC RECORD OF RESULTS OBTAINED BY BURLINGTON RAILROAD WITH TREATED AND UNTREATED TIES OVER A PERIOD OF TWELVE YEARS

years trial showed that those treated with a half-pound of zinc per cubic foot gave at least double the life of the others.

BRIDGE LUMBER AND PILING

Everyone, I believe, will agree that bridge lumber and piling ought to be treated. We have many bridges where the piling is apparently just as sound as when driven. In this case the treatment was with straight creosote by the full cell process.

In regard to seasoning ties and lumber before treatment, my observation has been that piling placed in the storage yard in the fall can be carried through until the second winter before it begins to deteriorate. In our loca-

tion red oak piling ought to be seasoned from fourteen to sixteen months to gain the maximum benefit from treatment with preservatives.

In the past few years, during which I have watched closely ties under rail joints, I have found that they wear out much faster than those in the same tracks which are between the joints. Loose bolts have been found to be the cause of this severe mechanical wear.

It is hardly necessary for me to say that good ballast lengthens materially the life of a tie. A sufficient amount under the track helps to keep the ties dry by furnishing better drainage. Longer life of the ties may also be expected because of the more firm bed provided.

story, leaflet or display advertisement by local companies. The section also co-operates with the committees on merchandising of transportation and safety, and assists other committees in the preparation of advertising material.

The association also, through its various committees, constantly watches the trend of national affairs with a view to promoting co-operation between the industry and the public as represented by governmental bodies. For example, its Washington office and its committee on national relations look after the interests of companies affected by the jurisdictions of the Interstate Commerce Commission, the United States Railroad and Labor Boards and the public service commissions of several states. At the present time the committee on national relations is co-operating with the other utility associations through a national joint committee in the study of such questions as the exemption from taxation of state and municipal securities.

The effort of the association is always to co-operate with government officials and as a result its relations with them are cordial. One of the most recent activities was in connection with a request from the Joint Committee on Agricultural Inquiry of Congress. In this case information was furnished covering the connection of electric railways with the transportation of agricultural products. As originally planned the scope of this inquiry was far more extensive than necessary and would have involved obtaining much material that would have been of no use to the commission. The collection of this material would have cost probably \$200,000. The chairman of our committee on national relations and the executive secretary conferred with representatives of the commission and supplied all of the needed information immediately and at no cost.

Manufacturers and operators work together splendidly in this association. An instance of this is found in the recent formation of a manufacturers' special committee to spread the facts about our industry through manufacturing channels.

The association distributes monthly more than 6,000 copies of its magazine, *Aera*, devoted to educational articles largely by executives and heads of departments. It maintains close co-operation with the United States Chamber of Commerce, the National Industrial Conference Board, the American Engineering Standards Committee, the National Safety Council and other national organizations. Through its affiliated associations, the American Association keeps abreast of all that is newest and best in these different lines of activity.

Finally, the association's published proceedings form a valuable reference library of the progress and development of the electric railway industry. The reports of the standing committees represent the work of the best brains in the industry, and their recommendations and conclusions are available in these published reports.

What the American Electric Railway Association Does and Stands For*

A Summary of the Facilities Which the Parent Association and Its Affiliated Organizations Have Placed at the Disposal of the Members, and a Statement of What the Association Is Doing for the Public

BY ROBERT I. TODD

President American Electric Railway Association and President Indianapolis Street Railway

THE spirit of the American Electric Railway Association is one of progress. Its purpose is to help the railways to serve the public adequately. The aim of its members is to make transportation safe and reliable; to give rides at the lowest possible cost; to furnish steady employment at fair wages to our employees, and to earn a fair return on invested capital.

As mutually helpful understanding is growing today between the public and the utilities, the impression that one is necessarily the enemy of the other is fast disappearing. Utilities, perhaps more than ever before, are facing their problems squarely before the public, and the public is studying and appreciating these problems more than ever.

The outstanding efforts of the association are first to show its members how to improve their service and next to help them sell the service to the people. The association is a clearing house for facts of vital interest to the industry. Through committees and a trained staff at headquarters it strives to supply to the railways the best information as to the conduct of properties and to the public the facts about their work which are of vital interest to the public welfare.

The climax of the association's activities is reached twice a year, at the midwinter meeting and the annual convention. All of the committees function under a regular schedule, the executive committee meeting monthly.

One of the outstanding activities of the association is the conducting of a Bureau of Information and Service, which supplies information relating to wages, working conditions, fares, buses, one-man cars, and many engineering

traffic and operating problems. Information for this bureau is obtained through clippings covering the principal trade and technical publications, public service and court decisions and questionnaires and other communications addressed to members.

As exhibits in court cases or hearings before public service commissions, as evidence in arbitration proceedings or for the purpose of merely fore-arming a member company when entering a wage negotiation, the reports and compilations prepared by this bureau have proved of inestimable value. More than 10,000 inquiries were answered last year by this bureau.

One of the newer activities of the association is the Advertising Section, financed by the Committee of One Hundred and designed to give service to all companies. The formation of this section was the outgrowth of the industry's first organized attempt to tell the story of its problems to the public at the time of the formation of the Federal Electric Railways Commission.

This section operates under the direct supervision of the committee on publicity. It has an experienced advertising man in charge. It constantly strives to induce companies to increase their advertising.

The Advertising Section prepares and releases news and advertising material for use through various publicity channels. It co-operates closely with the state committees on public utility information and other publicity divisions of national public utility organizations. It also renders a personal service to companies that desire it. Any manager may write to the section and secure, without charge, advice as to his particular problems. When a local problem assumes national interest a special investigation is made and a report is issued for release as a news

* Abstract of address delivered before the American Electric Railways Association in Chicago, Ill., March 15-16, 1922.

A. R. E. A. Convenes in Chicago

Vast Amount of Information Covering the Usual Wide Range of Topics Brought in by Committees of Railroad Engineers at Their Twenty-third Annual Convention—Material Pertinent to Electric Railways Is Presented

THIS year at the twenty-third annual convention of the American Railway Engineering Association, held in Chicago, March 14 to 16, the twenty-three standing committees added a wealth of information to that already accumulated. An attendance of 2,000 members broke all records of participation in the Engineering Association proceedings. Differing from the work of the committees presented at last year's meeting, the preponderance of research done during the past twelve months was along the line of way matters. Although there is an increasing possibility of, and tendency toward, trunk-line electrification, but little investigation was made in this direction.

As with the electric railways, the steam railroads have found that the necessity for effecting the greatest economies possible has been more pressing than ever before. Their foremost problem, the labor question, was the subject of detailed investigation. For the purpose of studying some phases of this question, the association has actively at work two committees, one on the economics of railway labor and another on the economics of railway operation. Another committee whose work is tending to produce economy of operation is that on standardization. This work is designed to reduce the multiplicity of specifications for the various materials required in daily use on the railroad and to permit of the production of so-called standard materials at a smaller cost than is possible under present practices.

President Downs in his address at the opening session of the association dwelt on the failure of the steam railroads to attract technically trained men. Out of twelve replies to questionnaires from various universities came the information that during the past ten years there were 3,003 graduates in civil engineering, and surprising as it may seem, only 272, or 9 per cent, are working for the railroads. Though not finding out how many of the men of the engineering department of the railroads were graduates of engineering schools, Mr. Downs found from a count made on two railroads that employed about 350 engineers that only about 50 per cent were graduates of technical schools. Some immediate effort must be exerted, he urged, to bring technical men into railroad work. A canvass made by him discloses the fact that the average monthly salary paid to the young engineering graduate entering railroad work is \$118.

Speaking more of what the railroads can do toward developing their present engineering personnel, R. C. Marshall, Jr., general manager Associated General Contractors of America, said that

there still exists a need for the railroads to produce more executives with both engineering skill and a knowledge of business and transportation economics. The difficulties attending future development of railroads as private projects have greatly increased in complexity. These new problems open an extensive field for combined engineering and economic studies. There is every reason to believe that the engineer can take up these studies of railroad building and solve their problems more readily than an executive with no engineering experience. This new field, he concluded, offers an opportunity for development of the highest type of executive ability and with it will go a high degree of prestige and compensation.

The following abstracts of the various committee reports have been made rather to indicate the scope of the committee work than to present the actual data and information.

Reports of Committees

The report of the committee on electricity, of which Edwin B. Katté is chairman, included the result of studies made during 1921 on the subjects of electrical interference, water power, electrolysis, overhead transmission line construction and third-rail and overhead-line clearances. The committee also reported the result of its review of the National Electric Safety Code, issued by the United States Bureau of Standards, submitted railroad specifications for commercial adhesive and rubber insulating tapes, and stated that next year a study will be made of railroad specifications for electric light, power supply and trolley line crossings between steam and electric railways. It is also intended to report on insulators with a view to preparing plans and specifications for standardizing them.

The sub-committee on electrical interference submitted a progress report only, which included tabulations of possible mitigating measures that may be employed, but made no definite recommendations as to their practicability. The committee recommended that the subject be continued with a view to establishing, if possible, remedial measures.

In reporting on the utilization of water power for railroad electric operation, the sub-committee on water power was instructed to co-operate with the United States Geological Survey in its super-power survey. The report on the super-power survey was not available until shortly before the conclusion of the committee's work, so that it was

not afforded an opportunity to give the survey the comprehensive study warranted by the importance of the subject. However, the sub-committee did issue a report dealing specifically with sources of electric power available for the operation of railroads within economical reach of the Niagara and St. Lawrence Rivers and tributaries of the St. Lawrence River.

In its summary this water-power sub-committee said that there are at present, at Niagara Falls, hydro-electric developments under the control of the United States totaling 486,000 hp., of which amount practically none is available for railroad electrification. However, there is being developed at Niagara Falls under existing treaty provisions, 660,000 hp. additional, of which 210,000 hp. is on the American side. Of this latter amount, 100,000 hp. is available for railroad electrification and is sufficient for local requirements only. There are possibilities, subject to treaty revisions, of developing on the American side 600,000 hp. additional, of which the greater part may be available for railroad electrification. This would be sufficient to furnish power to a large proportion of the steam railroads within economical transmission distance. There are existing, or under development, other installations such as the Canadian Chippawa-Queenston project and that at Shawinigan Falls. Power from these plants is not available for railroad use in the United States. Other projects are under contemplation, such as the Niagara Falls Union and the St. Lawrence Waterway. While such power would be available for railroad electrification, it is not believed that the projects have yet reached the stage where the committee can report as to their applicability.

The transmission of power developed at Niagara Falls is limited in distance only by ability economically to construct and safely to insulate the transmission line. Also from Niagara Falls, power can be delivered to large consumers within economical transmission distance at approximately 1 cent per kilowatt-hour, which figure is sufficiently attractive, as compared with present costs of steam production, to warrant serious consideration as to its use for railroad electrification.

On the subject of electrolysis, the sub-committee charged with the duty of studying that subject reported that it co-operated during the past year with the American Committee on Electrolysis. The American Committee has completed a comprehensive report which was abstracted on page 913 of the ELECTRIC RAILWAY JOURNAL for Nov. 19, 1921. The committee had

nothing to report this year as to the effect of electrolysis on reinforced concrete other than to say that experiments are being continued in the laboratory of Swarthmore College and it is hoped that interesting results may form the basis of next year's report on this subject.

The sub-committee on co-operation with the United States Bureau of Standards had prepared a commentary on the National Electrical Safety Code with the object of acquainting the members of the association with the manner in which it can be used to advantage and wherein the code requirements differ from accepted railroad practice. After preparing this detailed commentary, the committee recommended that the railroad specifications for electric light, power supply and trolley line crossings, steam and electric railways, adopted by the association in 1920, be opened for revision with a view to making them conform with the code as far as consistent with established railroad standards, conferring with other interests giving special attention to the following items: (1) A definition of the grade of construction; (2) minimum overhead clearances; (3) clearances between lines and between conductors and supports; (4) minimum size and material of conductors; (5) unit stresses in steel and wooden crossing supports; (6) grounding of arms and guys; (7) grade of construction on branch lines.

After issuing questionnaires to about twenty representative railroads requesting information regarding railroad transmission and distribution lines at present in operation, the sub-committee on overhead transmission line construction reported that some data of interest had been collected. The subject of transmission line standards is extremely active just now. Specifications have been issued or are being considered by several state public utilities commissions, and by various technical organizations. The establishment of common standards for power work and reduction in the present number of types and kinds of line construction material is very desirable from an economic standpoint and the committee hopes to co-operate with other bodies to promote this result.

Since by far the greatest experience and development in transmission and distribution line construction has been that of electric power companies, it seems probable that types of good construction which have been found satisfactory for them may be adequate for lines of a similar class for railroad use. However, the proximity to railroad tracks presents a hazard to trains from pole and wire failures, which is an important consideration. The most important difference would probably be the fact that railroad lines are usually confined to a restricted right-of-way. Next year the committee hopes to submit some specifications for a standard transmission line construction.

Some interesting data regarding third-rail and overhead clearances were presented in tabulated form by the sub-committee charged with the investigation of this subject. Information about the type of contact, the protection, the mileage in operation, etc., of third-rail lines was tabulated for twenty-five heavy traction and electric railways. Corresponding data of electrified steam roads and interurban lines were listed for the clearance of overhead lines. These data among other things include the size of the conductor and the type of contact device used.

The standardization committee this year presented specifications for friction and rubber insulating tape which it recommended for adoption. These railroad specifications cover completely the material to be used, the manufacture, the chemical properties, the physical properties and tests, the standard weight, dimensions and variation, the packing and marking, and the inspection and basis of rejection.

WAY MATTERS REPORTED ON

The following abstracts cover the reports on track and allied subjects, which for convenient reference have been arranged under committee titles:

Committee on Ballast.—The principal work accomplished by the sub-committee on ballast was a report on time and cost studies covering the application of ballast, giving particular attention to the organization of the ballast gang and also to the organization of small emergency gangs. Some valuable data were presented in tabulated form of the time required, cost of skeletonizing track, of unloading ballast, of placing and dressing ballast, and then in a recapitulation, the cost per mile of ballasting main line track. The committee considers all figures supplied to it to be very creditable. The committee also presented the specifications for ballast shovels. It had also prepared a design for a spot board with the necessary holder and raising block.

Committee on Stresses in Track.—A progress report was submitted stating that the principal work of the year 1921 had been the reduction and correlation of data of the field tests made in 1920, the principal purpose of which was to determine the effect of curvature of track upon the stresses in the rail caused by locomotives of different types running at different speed, as compared with the stresses developed in straight track. Another line of work which was carried on was the investigation of stresses developed in the various parts of the rail joint at ordinary wheel loads.

Committee on Rail.—This committee reported that it had been giving consideration to the revision of the specifications for steel rails and expects to have something to submit soon. Also during the past year it devoted considerable attention to the details of rail

manufacturing practices of the several rail mills of the country, with reference particularly to the influence they have on the properties of the finished rail. It is thought that the most important item in the manufacture that affects the quality of the finished rail is the condition of the steel as it is poured into the mold. The committee found from its annual statistics on rail failure that the war-time rollings and particularly the rails rolled in 1917 are not showing up very well.

On the subject of steel rail inspection the committee presented a résumé of the practices of various roads and also a schedule of recommended practice. In this connection a paper was submitted by M. H. Wickhorst on "A Formula for the Elongation of Rails in the Drop Test." Mr. Wickhorst also prepared a discussion on fissures, which has been revised and the bibliography has been extended five years to include the year 1920.

Committee on Economics of Railway Labor.—The problem of furnishing labor for railway service, the committee says, is complicated by fluctuation in the available supply in labor markets, by the seasonal nature of trackwork and especially by that class of extensive improvements usually termed construction work. Because of local weather and climatic conditions, it seems impracticable to recommend a country-wide plan for the permanent employment of laborers in the maintenance of way department, but consideration is recommended for a much broader all-year program of maintenance work and a permanent force wherever conditions permit.

The conclusions reached were that the best results may be obtained by providing some officer or some organization to supervise the selection and care of employees, that the living conditions of employees should be sanitary and comfortable, and that free transportation for railway labor should at all time be within the control of regularly delegated officers or employees.

Committee on Standardization.—This committee was appointed last year to promote the use and formation of association standards by acting as a clearing house for the recommendations of the various A.R.E.A. committees. This year it recommended that five subjects be submitted to the American Engineering Standards Committee as a basis for standardization. Among other things, these include tamping tools, tie specifications, railway lamps and commercial adhesive tape and rubber insulating tape.

Committee on Uniform General Contract Forms.—A few minor revisions were suggested to be made in the Manual. The committee has drawn up for adoption a form of license for wires, pipe, conduit and drains on railroad property and has offered for criticism and suggestion a form of license for private road crossings.

Committee on Signs, Fences and Crossings—On the basis of information obtained by circularizing a large number of railroads in regard to the location of signs with relation to the track, location with relation to the object effected and details of any local state or public service commission laws or orders applying to the location of signs, it was recommended that all mile posts, bridge numbers, section and such signs be located at a distance from the center line of the track to the nearest space or edge of the sign of 10 ft. 4 in. Highway crossing signs should be set at a distance of 17 ft. from the center line of the track and 300 ft. in advance of the crossing. Because of the high price of wood crossing signs there has resulted in recent years the introduction of a number of substitutes. Seventeen have come to the attention of this committee, which grouped them in five classes in accordance with the material of their construction. Information was presented covering ninety-five individual crossings, and data in regard to others were obtained from railroad users and from the manufacturers. For the most part, these crossings have been in use but a short time and a definite conclusion as to maintenance costs and service cannot be reached. Comprehensive specifications were submitted by the sub-committee to which was assigned the preparation of plans and specifications for concrete fence posts. The specifications which it recommends for criticism deal with the materials, the proportioning and mixing of the concrete, the depositing of the concrete, and the curing and handling of the posts. Typical drawings of end posts and brace handles for a right-of-way fence with concrete or steel line posts were included with the report.

Committee on Ties—The specifications for a standard tie and the practice to be followed in its installation were submitted for approval so that there may be some unit of comparison. The recommendation regarding a test installation is that an equal number, though not less than a hundred, standard test ties be installed at the same point in the same track under identical traffic, rails, ballast, drainage and sunlight conditions. The test record should be continued until all standard test ties have been removed as well as all other ties of the test. The standard test tie is to be according to the A.R.E.A. 1921 specifications, grade 3, 6 in. x 8 in., class-U, white oak, 8 ft. long, untreated. A form is provided to record such information as location, kind of ballast, tangent or curve percentage, tie plate, weight of rail, rail fastenings, size and kind of ties, etc. Additional data to be included cover the gross tonnage per year passing over the test ties, the annual average rainfall, the mean temperature of the locality and the kind and depth of ballast.

Some tables have been prepared from

the returns to the committee's questionnaire as to the life of ties. The first table concerns untreated ties only, and its information is limited to returns which indicate that the failures were more than half caused by decay, and it is, therefore, an effort to compare the decay-resisting qualities of various kinds of untreated timber. A second table shows the relation between the specific gravity, beam strength and rail-bearing strength of timber used for cross ties, and from it the conclusion can be drawn that the strength of various kinds of timber can be said to vary with the specific gravity.

Conclusions reached by the committee as to the effect of size of ties and the use of tie plates were based on the general belief as expressed in the questionnaires that a tie 7 in. x 9 in. would outlast one 6 in. x 8 in. when subjected to the same conditions, by about 25 per cent. The data relative to ties failing by decay show an average for plated ties of 30 per cent greater life for the 7-in. over the 6-in. ties, and for unplated ties, 20 per cent greater for the 7-in. over the 6-in. It was also found that the value of the tie plate in the case of 6-in. ties is 12 per cent greater life, and in the case of the 7-in. ties, 21 per cent. The greater value of the tie plates with the 7-in. ties may be ascribed to the fact that 7-in. ties are, in general, used under heavier traffic.

There has been very little activity as regards substitute ties during the past year. The test installations as a rule are being continued, but a few have been discontinued. Reports in three installations not heretofore included were made. Two of these installations consisted of but a few ties each, but the third is a 3,400-ft. section of track on the Pere Marquette Railway laid with Kimball concrete ties in a concrete foundation. The ties laid in 1901 and 1902 consist of two concrete blocks under the rails connected with each other by two 3-in. channels and all imbedded in the concrete foundation of the street and track. The ties supported 75-lb. rail, which was changed in 1914 to 90-lb. rail, at which time about 50 per cent of the wood blocks were renewed. Records of the various ties now under test were brought up to date.

Committee on Iron and Steel Structures—The principal accomplishment of this committee during the year was the drawing up of general specifications for the erection of fixed span steel railway bridges less than 300 ft. in length, and the compilation of specific and detailed rules for the design and manufacture of movable railway bridges. These latter specifications are submitted as a conclusion by the committee, which believes them to be the best specifications for movable bridges now available. They are intended to be a guide to both the designer and the shop rather than merely a statement of principles.

Committee on Wood Preservation—Of the different chemical preservatives available the committee stated that there is no question about the use of

creosote oil being preferable. Zinc chloride in a mixture with creosote oil is used with much success in certain regions. With present scarcity of creosote oil, economy demands that some other preservative be used. It is imperative, therefore, that the zinc chloride treatment be more widely used. To its report the committee added the record of the completed tests made by the Forest Products Laboratory, Madison, Wis. The summaries of these records for zinc-chloride-treated ties show that the average life for twenty-three test sections in Texas was 8.2 years; for ten sections in California, 9.9 years; for twelve sections in Pittsburgh-Chicago, 9.1 years; for seven sections in Connecticut, 7.1 years; and for six sections in Nebraska, 9.2 years. The average life of twenty-three test sections of ties treated with zinc-creosote in Texas was 12 years. For creosote treated ties no average figure is given, but the life ranges between 6.4 years and 20.2 years for different roads in various parts of the country.

The outstanding development in the preparation of Douglas fir ties for treatment is the perforating process. The machine used for perforating ties was described in the *ELECTRIC RAILWAY JOURNAL* for April 30, 1921, page 819. The sub-committee has also carried on some experimental treatment on thoroughly seasoned Douglas fir ties, both perforated and non-perforated. The summary of the result obtained brings out that the perforated ties, given the same treatment as the others, show a much higher absorption in volume percentage. Photographs are included in the report which show the uniformity and depth of penetration that this process allows. Other sub-committees have also made extensive studies of Pacific Coast marine piling, preservative treatment to be used on piles and timbers on land construction and methods for storing lumber and piling for air seasoning preliminary to preservative treatment.

Committee on Wooden Bridges and Trestles—The committee has drawn up a plan which it recommended as standard practice for a light and heavy design of open-deck pile trestle. For approval it has also prepared a design for a heavy and light open-deck frame trestle, a multiple-story trestle and a ballast deck trestle. Although in last year's progress report a 12-ft. span was suggested, after careful consideration of the advantages of a 16-ft. span where flood conditions exist and in zones where Western fir can be readily secured, it decided to include both spans. After considering carefully the loadings it was decided to keep in harmony with those of the steel specifications, which are Cooper's E-60 and a load which shall not be in any case lighter than three-fourths this amount. For any structures designed to carry more than E-60 steel and concrete of course should be given serious consideration. The exhibits that go with this report are detailed drawings of the various types of

construction for which it recommends standardization.

Committee on Masonry—Tentative specifications for cold-drawn steel wire for concrete reinforcement have been drawn up by this committee. This covers the customary items of manufacture, physical properties and test, permissible variations in gage, etc. Tables prepared by Prof. Duff A. Abrams were presented as a part of the report. These tables give the proportion and quantities of material, using aggregates of different make-up, for concrete of various strengths and with different degrees of plasticity as measured by the slump test. The purpose of these tables is to furnish a guide in the selection of mixtures to be used in preliminary investigation of the strength of concrete from given materials, to indicate proportions which may be expected to produce concrete of a given strength under average conditions where control tests are not made, and to furnish a correct basis for comparing the relative quantities of concretes made from aggregates of different sizes when the plasticity and strength of the resulting concretes are taken into account.

Committee on Economics of Railway Location—On the effect of curvature on cost of maintenance of way and equipment, the committee has reached the conclusion that it is difficult to present information on this subject that would be of practical value. Its recommendation was that the subject be dropped. The sub-committee assigned to the subject of railway locomotive power is making a study of the various processes for predicting tractive efforts at various speeds, in the expectation of revising where necessary the present section on power in the Manual.

Committee on Shops and Locomotive Terminals—Of interest to electric railway men, perhaps, is the report of the sub-committee on passenger repair shops. It stated that the shops, yards, buildings and machinery should be arranged so that the various operations follow through in a logical sequence. The bad order equipment should pass in at one point, progress by various steps, without hindrance from congestion or awkward movement, over a predetermined circuit to the point of release, and emerge as a finished product. In general repair work a car will enter the shop, be unwheeled and stripped, after which the car, trucks and trimmings will progress through the shop, each over a different route, and will finally meet at some point for trimming, assembly and release. The committee also made some general comments and recommendations for the various shop subdivisions which go to make up a large passenger shop layout. In connection with this study the committee added comments on special features of some existing plants which are of considerable value.

Committee on Track—Ten plans for olded rail crossings and eighteen plans for manganese steel insert crossings

were submitted for adoption. Valuable work has been done along the line of providing specifications for track tools. Plans were submitted for a pinch bar, lining bar, claw bar, track wrenches, adze, rail fork, spike pullers, track gage, rail tongs, track chisel, clay pick, spike maul, sledge, track level and track shovel.

Two tables were the result of the work of the sub-committee on gages and flangeways for curved crossings. The first one gives the approximate rigid wheelbase of locomotives in combination with the number of pairs of flanged drivers that will operate on the gage of track with curvature ranging from 6 to 33 deg. The purpose of the second table is to give the more nearly exact gage necessary for a given locomotive on a given curve. The figures have been verified by some observations and some comparisons with actual practice and conditions.

An investigation on the possibility of canting the rail inward revealed the fact that the Canadian Pacific Railway has used tie plates since 1914 which are inclined to a slope of 1 in 20, and that it is securing excellent results in so far as the wear on the head of the rail is concerned. Reports of continued tests on the Pennsylvania System indicate slightly more wear on the rail head with the inclined plate, and that there was practically no difference with regard to cut ties as between the inclined plate and the standard level plate. Neither of these installations had any special construction of frogs, switches and turnouts with inclined rail. In view of the fact that foreign practice is reverting to laying rails in the upright position, no definite conclusions were drawn on this subject. In regard to the reduction of taper of wheel tread the New York Central Lines are reported to have changed the slope from 1 in 20, which is the M.C.B. standard, to 1 in 38, which has been found a more favorable contour.

Committee on Roadway.—The sub-committee on shrinkage and swell of grading material found nothing that would lead it to change any conclusions previously made on this subject. It added that it seems to be impossible to find any rule for the swell of grading material, but it seems that the method of handling has considerable to do with the result secured. In regard to sliding of cuts and fills, the conclusion reached was that the primary cause of slides is the lack of proper drainage. In the construction of a new line where conditions indicative of future trouble with soft spots or slides are encountered, special attention to the diversion of the springs or streams which are likely to cause trouble should be given.

On investigating the chemical killing of weeds, the sub-committee found that the chemical mostly used is a mixture or compound of arsenic and caustic soda, using 8 to 10 per cent of the latter by weight and dissolving the solid chemicals in water. The application is made on any desired scale from a handcar,

single flatcar, or an entire train, all with proper equipment. A very convenient unit of measurement is 1 gal. of solution per foot of width per mile of roadbed, which appears to be ordinarily within the limits of 5 and 15 gal.; or a minimum application of 5 gal. per width of 8 ft. will take 40 gal. per mile, while a maximum application of 15 gal. per foot for 14 ft. width will take 210 gal.

Some roads also claim that the weeds should be allowed to attain their full growth before application, while others advocate applying the chemical to the growing weeds in order to eliminate them from the roadbed during the summer season. One road reports that after four years application it was decided to discontinue entirely the use of the weed killer and to resort to the weed burner, claiming that the weed killer did not destroy all the weeds and that those that did succumb were dried and left to foul the ballast.

Committee on Economics of Railway Operation—It has been found by the sub-committee on methods for increasing the traffic capacity of a railway that train operation can be represented by a mathematical law. The complete development of this law is included in the report. Its application to different sets of observations make possible a comparison of several months operation of a given division on a more equal basis.

By comparisons like this it is felt that the result of extreme weather conditions, greater track facilities, characteristics of motive power, character of commodities, supervisory methods and the average time on the road can be more accurately determined. An exhibit added to the report shows how closely actual conditions can be forecasted by application of the mathematical theory.

Committee on Rules and Organization—In connection with the use of mechanical appliances and tools with organization of labor involved, this committee has compiled some information on the use of machines and combinations of machines for doing special work. These include the methods used and cost of spreading ballast with a tie scraper and with a snow flanger. Also valuable data were given on the use of a gravel ballast unloader, pneumatic tie tampers, bonding machines, a rail handling machine, and ballast cleaning machine.

A.S.M.E. Spring Meeting at Atlanta

THE spring meeting of the American Society of Mechanical Engineers will be held in Atlanta, Ga., May 8-11. Preliminary events will take place at Charlottesville, Va., May 6 and 7, in co-operation with the A.S.M.E. Virginia Section. Immediately following the Atlanta meeting observation tours will be made to points in the South, including Birmingham, Greenville, S. C., Muscle Shoals and Pensacola, Fla.

New Englanders Discuss World Problems

At Annual Meeting of New England Street Railway Club, Men Prominent in Public Life Outline Problems of Reconstruction Period—Reports Showed Club as Prosperous—A. E. Potter Elected President

FOUR HUNDRED AND FIFTY members and guests of the New England Street Railway Club listened intently to addresses upon the great economic problems of the age in general and their local application at the twenty-second annual banquet of the organization, which was held on March 23 at the Copley Plaza Hotel in Boston. The club is in a most flourishing condition, 117 new members having been added during the year, while the cash balance reported in the treasury is \$3,900. During the usual business meeting preceding the banquet, A. E. Potter, president and general manager United Electric Railways, Providence, R. I., was elected president of the club for 1922-1923. By a rising vote, every member pledged his support to the new administration.

Hon. Samuel L. Powers of the board of trustees, Boston Elevated Railway, officiated as toastmaster after being introduced by the retiring president, Edward Dana. Hon. Channing H. Cox, Governor of Massachusetts, congratulated the club on its growth and influence and urged the membership to join as citizens and as a group with others in seeking the just interests of New England in the matter of transportation rates and other problems of importance to the Northeast. An honorary member of the club, Governor Cox was received with great enthusiasm.

Service as the motto of the electric railway industry, and particularly as exemplified locally, was attested by Hon. E. Mark Sullivan, corporation counsel of the city of Boston. In the absence of Mayor Curley, Mr. Sullivan welcomed the members to the New England capital, paying high tribute to the efforts of Chairman James F. Jackson and the other public trustees of the Boston Elevated Railway to give the Boston metropolitan district a great transportation system. The open-handed policy of this board in giving out figures upon the road's operations and explaining its economic problems, said the speaker, is winning the tolerant sympathy and confidence of the public. The policy of explaining these matters in simple, straightforward ways, he declared, will make friends of the people. Even under present trying conditions of rush-hour crowding, the good nature of the car-riders is evidently in part due to a recognition of the efforts of the trustees and their associates to provide good service under conditions frankly placed before the public.

Gen. Guy E. Tripp, chairman of the board Westinghouse Electric & Manufacturing Company, New York, reviewed the situation in Europe from the reconstruction standpoint, emphasizing the need of removing continental

trade barriers artificially set up, of reducing the excessive costs of state administration, and of stabilizing the currency and balancing governmental budgets. Until these countries live within their incomes, the speaker said, no reduction in their financial obligations to the United States should be considered seriously. A more extended résumé of General Tripp's address will be published in a later issue of the *ELECTRIC RAILWAY JOURNAL*.

Hon. John H. Crim, assistant attorney-general of the United States, was the last speaker. He made a strong plea for active participation by business men in government and condemned the tendency toward over-centralization of governmental functions at Washington, with its dangers of developing a reckless bureaucracy. Already federal officials are staggering under many burdens of local importance to the enforced neglect of national affairs. The terrible example of Russia, the speaker said, should suffice

for the proletariat nearer home. Optimism in the ability of the American business man to solve his governmental problems was emphatically voiced by the speaker.

Following an invitation by A. G. Bourry, Montreal, to the club to attend the eighteenth annual convention of the Canadian Electric Railway Association, June 1-3 at Quebec, the meeting adjourned.

During the afternoon business session the following officers were elected to serve during the coming year: President—A. E. Potter, Providence, R. I.; vice-presidents—Massachusetts, Ralph D. Hood, Haverhill; Connecticut, W. J. Flickinger, New Haven; New Hampshire, T. H. Kendrigan, Manchester; Vermont, T. B. Jones, Burlington; Maine, Fred D. Gordon, Portland; Rhode Island, Edward A. Brown, Newport; secretary—John W. Belling, Boston, Mass.; treasurer—Fred F. Stockwell, Cambridge, Mass.; executive committee—Edward Dana, Boston; Charles H. Wood, Boston; W. W. Field, Cambridge; F. B. Walker, Boston; George H. Martin, Boston; George H. McFee, Framingham; L. D. Pellissier, Holyoke. Finance committee—A. E. Potter, W. C. Bolt, H. B. Potter.

American Association News

American Association Executive Committee

THE March meeting of the executive committee of the American Association was held at New York headquarters on March 24. There were several of the usual routine reports of the executive secretary and some of the committees, including a financial report showing the cost of the midyear dinner. This proved to be about 60 per cent of the cost of the 1921 dinner.

In his report for the committee on national relations, Charles L. Henry said that there were three things of present interest in this field: The interchangeable mileage-book bill, the Bacharach bill, and an investigation of power brakes by the Interstate Commerce Commission.

As to the mileage-book question the committee hopes that it will be provided that railways which wish to take advantage of the joint mileage book may do so. The Bacharach bill is one which would provide that no recourse may be had by a public utility to any federal court in a question of rates until all possible steps provided by state law have been taken.

The power brake investigation is one which will apparently not affect electric railways, but only the question of heavy trains on steep grades.

Reporting for the publicity committee J. N. Shannahan said that its principal activity was in assisting the committee on co-operation with manufac-

turers. He reported very favorable results on the nation-wide publicity obtained for the Midyear Meeting.

With reference to the location of the 1922 convention, to be held in October, the executive committee, after a long and careful analysis, approved the report of the location committee. This recommended that the convention be held in Chicago, with exhibits, on the Municipal Pier. The recommendation of the sub-committee was reached at a largely attended meeting held in Chicago, March 15 and 16, with H. H. Adams presiding. The executive committee also authorized the appointment of a director of exhibits.

The executive committee passed a motion instructing the Engineering Association to appoint a committee on the cost of highway construction and maintenance. This was done in the belief that this is a subject related to bus transportation, about which the association should have information.

On recommendation of Mr. Palmer there was authorized the appointment of a committee to confer with a committee of the National Safety Council on problems of mutual interest. The executive committee then adjourned to meet in Baltimore, Md., on April 28.

Those in attendance at the meeting included: President R. I. Todd, J. N. Shannahan, C. S. Kimball, L. H. Palmer, F. E. Webster, C. L. Henry, L. S. Storrs, H. G. Bradlee, W. H. Sawyer, R. P. Stevens, J. G. Barry, C. R. Ellicott, J. R. Welsh and M. B. Lambert (guest).

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City Wins New Orleans Case Court Blocks Attempt by City to Conclude Negotiations Looking Toward Settlement of Railway Dispute

The State Supreme Court of Louisiana on March 20 handed down an opinion dismissing the suit for an injunction sought by the state to prevent the Municipal Council of New Orleans from making an agreement with the New Orleans Railway & Light Company permitting the collection of a higher rate of fare than 5 cents. This is the rate fixed in the original franchises held by the company.

The judgment of the court was unanimous. The court held that the Attorney General on behalf of the State had no cause or right of action and for this reason the State Supreme Court affirmed the previous judgment dismissing the suit.

In reviewing the case Justice O'Neil says the question presented is whether or not the authority to fix the fare in New Orleans is vested in the Municipal Council or in the Louisiana Public Service Commission. The authority of the commission, created in 1921 with the power of supervision, regulation and control over local public utilities, powers which its predecessor, the Railroad Commission, did not enjoy, is qualified by the expression in the law, "except as herein otherwise provided." And Section 7 of the same article declares that "the powers of supervision, regulation and control over any street railway, or other public utility now vested in any town, city or parish government" shall not be vested in or exercised by the Public Service Commission unless or until a majority of the qualified electors . . . shall vote to surrender such power."

No such election has been held in New Orleans. Justice O'Neil declares further that it is not pretended that the Legislature has deprived the municipal government of its rate-making authority over street railways or other local public utilities, since the railway franchises, which were the subject of the litigation, were originally granted by the Municipal Council.

The State of Louisiana has fifteen days within which to ask for a rehearing, but it is not likely that Attorney General Coco will take this step in view of the unanimity of the opinion of the state court of last resort. This decision practically settles the suit of the State in the United States Supreme Court, since the cause of action for the forfeiture of the franchise has been settled by the decision of March 20 by the State Supreme Court. It is expected the decision in the case pending in the United States Court of Appeals, on appeal from the district federal

court, where a ruling was rendered favorable to the railway, will follow along the lines of the opinion in the State Supreme Court.

Commissioner Paul H. Maloney, of the Department of Public Utilities, has wired G. M. Dahl, of the Chase National Bank, New York, to return to New Orleans. The idea now is to resume the negotiations which were abruptly broken off last August when the restraining order was issued by Judge Provosty of the State Supreme Court. At that time the negotiations with the Commission Council and the security holders had resulted in an agreement for the reorganization and refinancing of the company. This agreement provided for a 7-cent fare and gas at \$1.30 per 1,000 cu.ft.

The suit instituted by the junior security holders in the federal court, by which body the receiver was appointed and is now exercising authority, will have to be dismissed. Among the steps to be taken in connection with this phase of the matter will be the sale of the property under foreclosure and the discharge of the receiver.

Announcement was made by Receiver O'Keefe, who has just recently returned from New York, that arrangements have been made with representatives of the security holders to extend more than \$1,000,000 of certificates which fall due in April and to place an additional \$1,000,000 of certificates to pay for improvements already under way.

It is expected that it will take all of six months more to effect all these arrangements.

Looks Into Future—Sees Public Ownership of Trolleys

Public ownership of electric railways is inevitable. This was the judgment delivered by Peter Witt in a talk made recently before the Get-Together Club in the Hotel Bond, Hartford, Conn. Municipal ownership had come in San Francisco and in Seattle, was at hand in Detroit, and was due in Cleveland, in a future not far distant, he said. The transportation of the future was to stick to steel wheels.

Harrison B. Freeman, receiver of the Hartford & Springfield Street Railway, was toastmaster. He said that an electric railway must have the good will of the public and the co-operation of the public officials. Mr. Witt sees the day ahead when the electric railway will be free to taxpayers in the sense that the public will own the trolleys just the same as it owns the highways.

Lucius S. Storrs, president of the Connecticut Company, said that a transportation utility was a semi-public enterprise run by a private corporation charged with a public function.

New York Legislative Session Disappointing in Some Respects

The Legislature of New York adjourned on March 17. The session of 1922 was one of the shortest on record. Backed by a heavy Republican majority in both houses, Governor Miller's entire program as outlined in his message to the Legislature was written into law.

Measures involving public utilities were killed during the last minute rush. Among these measures were bills outlawing one-man cars, repealing the full crew law and relieving traction companies from paying charges. The New York city fare bill is referred to elsewhere in this issue.

Governor Miller's water power development program was approved. The first law provides for private development of the State's water power resources under supervision and control of the Water Power Commission and the Public Service Commission. The second law provides for State development or surplus canal waters, the initial development to be at Crescent Dam and Vusichers Ferry, near Schenectady.

The Port Authority program favored by Governor Miller and Alfred E. Smith, former Governor, was adopted for New York City over the protests of the Hylan administration.

Some of the measures passed by the Legislature and now in the hands of the Governor as thirty-day bills follow:

The Gibbs bill (Senate Print No. 804): Adding new section 67 transportation corporations law by permitting construction of electric lines over Indian reservations. The construction contemplated is in Erie County.

The Lowman bill (Senate Print No. 378): Amending Section 93 railroad law providing new provisions for maintenance of bridges over railroads.

The Dick bill (Senate Print No. 904): Adding new subdivisions 9, 10 and 11 Section 49 public service commissions' law, defining service-at-cost contract, authorizing municipal corporations of less than 1,000,000 inhabitants and street surface railroads to enter into such contracts, and providing that a domestic railroad corporate service commission.

The Kavanaugh bill (Senate Print No. 741): Adding new section 160 railroad law, providing that a domestic railroad corporation, other than a street railroad owning at least three-fourths of capital stock of another domestic railroad other than a street railroad, may acquire minority stock of such other railroad on an appraised valuation in aid of merger.

The Jesse bill (Senate Print No. 1659): Amending Section 183 railroad law, by permitting a street surface railroad to operate in any city by underground electric power to use tracks of other street surface railroads for not exceeding 2,500 ft. under certain conditions.

All of the special bills requiring certain street surface railroads which formerly operated between New York and Brooklyn to restore service failed of passage, although one or two of them passed the Assembly.

The Duell bill providing industrial courts for the settlement of disputes between capital and labor was killed.

Columbia Situation Clearing Up

Company Has Police Protection and Operates Under Railroad Commission's Orders

Events in the labor situation in Columbia, S. C., have moved rapidly during the past week. It will be remembered that car service stopped on Feb. 15, when the employees went out on strike because the company would not agree to refer all discharges of employees to arbitration. At the time last week's issue of this paper went to press, the Legislature had adjourned after increasing the Board of Railroad Commissioners from three to seven members, but the company was prevented from hiring new men to operate its cars because of an existing city ordinance.

This ordinance, which was passed in 1917, forbade the employment of any motorman or conductor on a street car within the city unless he had received instructions on the cars in Columbia for the fifteen days immediately preceding the time of assuming his duties, the instruction to have been given by a motorman or conductor who had been actively employed in such capacity in Columbia for the six months immediately preceding.

RAILROAD COMMISSION ACTS

Promptly last week after its appointment the new Railroad Commission, consisting of seven members, organized and ordered "The Columbia Railway, Gas & Electric Company to resume its street car service as soon and in such a manner and to such extent as it may be able, exercising due care and caution to employ such motormen and conductors as may be qualified and capable of operating its cars, and failing so to do, that it show cause why it has not done so or why it should not be peremptorily ordered to do so before this commission."

This order was issued under the authority granted under section 6 of the new railroad law which provided:

"The Railroad Commission is hereby vested with power and jurisdiction to supervise and regulate the rates and service of every public utility in this state and to fix such just and reasonable standards, classifications, regulations, practices and measurements of service to be furnished, imposed or observed and followed by every public utility in this state."

COMPANY OPERATES CARS

The company, therefore, on Monday morning, March 20, having recruited some new men, started operation. Up to 3 p.m. there was little disturbance, but by that time strike sympathizers gathered and began to make raids on a number of cars. As a result two operators and one passenger were injured so severely that they had to be taken to the hospital. The police arrested three strikers, members of the union,

and one strike-sympathizer for these disturbances. Late in the afternoon of Monday the cars were withdrawn until Tuesday morning and an appeal was made to the Governor for protection. The Governor said that he would do this, "even though the entire law enforcement force of this state, including the National Guard, be necessary to guarantee this protection. . . . The company has a lawful right to operate its cars in peace and security, all the more so since this operation is being undertaken at the order of the State Railroad Commission."

CITY ACTS TO STOP VIOLENCE

On March 20, the day that car operation was begun, a body of the strikers appeared before the Council to ask that the ordinance of 1917 be enforced. They were rather taken back, however, when the city attorney, C. S. Monteith, declared that the State legislation increasing the powers of the Railroad Commission and the order of that commission had nullified and superseded the city ordinance which specified the qualifications of motorman and conductors, that the matter was now entirely in the hands of the commission, and that it was the duty of the city to afford police protection so that the company could resume its service.

After a consultation between the Mayor and chief of police on March 20 in regard to the best method of protecting of the cars, it was decided that each car would be conveyed by six police, five riding in an automobile behind the car, while a sixth followed on a motorcycle. On arrival at the city limits the protection is taken by rural policemen and sheriff deputies, conveying the car in the same way. The Mayor authorized the Police Department to engage any number of special policemen necessary to keep order. The Mayor said:

"Columbia police must protect the citizens and their property, and if we cannot do our duty we should step out and let others in who will."

On March 21 the board of directors of the Columbia Chamber of Commerce in open meeting passed a series of resolutions which, while expressing no opinion on the merits of the controversy, condemned the attacks on cars that had taken place, indorsed the steps taken by the city and county officials to prevent their recurrence and called upon the members of the union and their sympathizers to refrain from acts of violence.

The operation of the cars was conducted for seven hours on March 21 without any recurrence of violence. The police guard arranged for protection proved effective.

The four rioters who were arrested on March 20 were arraigned on charges of assault and battery with attempt to kill and were bound over for trial under bail bonds of from \$1,000 to \$3,000. Three more arrests were made for the disturbances on the previous day. It also developed that two of the cars attacked on March 20 were carrying

United States mail, which the company had contracted to deliver and that the Federal authorities had asked for information from the company as to the attacks on these cars.

On the afternoon of March 21, F. H. Knox, president of the company, issued a short statement expressing thanks to the state, county and city officers for the protection given to its patrons, employees and property. At a meeting of the union held on the evening of March 20, while no official action condemning the use of force was taken, the speakers, according to the president of the union, urged the men to refrain from attacks upon the cars.

Development Depends on Public Attitude

The best bet for the development of water power in Georgia is a favorable public attitude, from which will result private enterprise, according to Preston S. Arkwright, president of the Georgia Railway & Power Company. President Arkwright addressed members of the Rotary Club of Rome recently on the subject of water power development.

In spite of apparent opposition, what business men really want, said Mr. Arkwright, is the development of water powers and their use electrically. The company wants the water powers developed too, said Mr. Arkwright, and for this has fought constantly during its ten years' existence against a public opinion unfavorable to such projects. He asked the men to take an unprejudiced attitude.

Whoever can carry on the work most capably should do so, stated Mr. Arkwright, whether it be the Georgia Railway & Power Company or some other concern.

Boston Paper Talks About Trolleys

The Boston *Traveler* commenced on March 22 the publication of a series of seven articles on the trolley situation in Boston. It is in the form of questions and answers and began with the statement that there had been so much discussion on the subject of a 5-cent fare that the paper decided to get the entire story. When it began its investigation it was amazed to find that specific information could be got only from the public trustees and management of the elevated. Others contented themselves with the statement that there ought to be 5-cent fares, but when pressed for details became very hazy.

The paper declares it could not find, among the responsible and well-informed critics of the present public control law, any who would offer a definite substitute or definite plan for 5-cent operation. This applied even to the Mayor, who says that the fare should be a nickel, but has offered no remedy beyond a call for legislative action and saying that he thinks the situation a problem "for the best legal minds in the community."



STEPS TO ELEVATED WRECKED



STATION PLATFORM BADLY DAMAGED

Fire Ties Up Chicago "L"

Platform and Ties Destroyed Following Collapse of Building in \$8,000,000 Fire Which Wiped Out a Block

Service on the Metropolitan-West Side Elevated Railroad, Chicago, was seriously crippled on March 15 by an \$8,000,000 fire which wiped out the block of buildings surrounded by Jackson Boulevard, Van Buren, Canal and Clinton Streets. The Canal Street station of the elevated, which is located in the center of the block, was demolished and the platforms and ties set on fire by the collapse of an adjacent building.

The steel elevated structure and the canopy and platform on the north side suffered the most severe damage, because they received the full blast of the fire from the immediately adjacent burning buildings. The rails of the two north tracks were warped and the ties burned out so that the track was impassable. The intense and continued heat on that side caused several girders to sag, and in all about ten will have to be replaced as well as about 2,000 ties. The total damage to the "L" is estimated at between \$75,000 and \$80,000.

From 1 a.m., when the fire started, until 5 p.m. the same day trains of the Garfield Park, Douglas Park, Logan Square and Humboldt Park elevated lines and the Aurora, Elgin & Chicago Railroad were unable to come further toward the Loop than Halsted Street. However, passengers were brought to the Loop by routing all Metropolitan trains north from the Marshfield Ave. Junction to the Lake Street crossing

with the Oak Park Elevated, to which passengers were transferred and carried to the Loop on special trains. At 5 p.m. the two south tracks were repaired and direct loop service was restored. At present the Clinton Street or west end of the station has been arranged for temporary use with a runway from the street. Practically normal service is now being operated over three tracks.

While the firemen were still pouring water into the ruins three or four hundred men were at work replacing the charred ties and warped rails on the two south tracks. These, as was mentioned before, were made safe for travel at 5 o'clock the same day.

Will Consider New Wage Scale.—On April 1 the matter of a new wage scale



CHARRED TIES AND STRINGERS ON CHICAGO ELEVATED STRUCTURE

It will probably be impossible to place the fourth one in commission until the new steel girders are received and installed. Orders for this steel were placed by the engineers of the elevated road at 8 o'clock the morning of the fire.

The accompanying views give some idea of the extent of the damage and the measures taken to restore service.

for trainmen of the Seattle & Rainier Valley Railway, Seattle, Wash., will come up for settlement. The company has announced that on that date it desires to put into effect a maximum wage scale of 58 cents an hour, to replace the present maximum of 62 cents, which was adopted several months ago to serve as a temporary adjustment.



STRUCTURE CAUSED TO SAG BY INTENSE HEAT



WRECKAGE UNDER THE ELEVATED STRUCTURE

Pittsburgh Traction Plans Explained

President Thompson Addressing Chamber of Commerce Outlines Changes to Result from Reorganization.

In an address before the Pittsburgh Chamber of Commerce during the week ended March 11 A. W. Thompson, president of the Philadelphia Company, speaking on "Problems of the Pittsburgh Railways," assured members that the many traction lines in Pittsburgh will become one property eventually, through the new reorganization bond plan. One of the next big steps to be taken is the sale of \$5,000,000 of bonds in the Pittsburgh district.

He said a public utility must enjoy the good will of the public, for a banker and investor will not continue to invest or loan money to a company with which the community is unfair and upon which unjust burdens are placed. He said people willingly paid an increase in a few years from 5 cents for seats in "movies" to 10, 20, 30 and even 40 cents, and stood for a 40 per cent increase in steam railroad fares.

According to Mr. Thompson one of the big questions in the rehabilitation problem of the local railway was how to take care of various securities coming due, failure to meet any issue at maturity generally meaning foreclosure. It is proposed to provide for retiring these issues as they come due with a new class of bonds covering one property for the purpose of exchange with the old bonds. These new bonds are to be issued under a mortgage covering all the properties, which comprise more than 100 separate companies. As these various issues are exchanged for the new bonds the traction lines will become one property eventually.

Mr. Thompson said that for more than ten years active discussion of the railway subject has been before the Chamber of Commerce, mostly because of inadequate service. During this period \$750,000 had been expended in making reports, investigations and a valuation. Nineteen separate reports were made during this period, with the final result of receivership, four years ago. Inadequate service still prevailed. Because of the lack of co-operation between the management of the railways and the people of Pittsburgh, brought about through an absence of understanding of the difficulties, these difficulties gradually increased until the railways lost credit and were unable to finance improvements. In continuing Mr. Thompson said:

A live, modern public utility is one of the best assets of any community. A broken-down public utility, without funds to provide modern equipment and facilities, and without any means of financing, is a liability to any community.

You know as well as I do that the prosperity of any community depends in a large measure upon its transportation facilities. The prosperity of any community is, therefore, bound up with the ability of the street railways to render adequate service.

A proposition was made to the Mayor and City Council to join in a conference to see if something could not be suggested and started with a view to giving Pitts-

burgh the same type of service that the city was receiving from other public utilities which serve the community.

A contract was rounded out which had the semblance of being practical and could be put into effect. It soon was found that the most difficult problem was the question of credit; that without new capital for purposes of buying equipment and making improvements, as well as for general rehabilitation of the lines, a success of the transportation system was impossible.

The contract was changed somewhat, the results of which are shown in the approval of the contract by the Public Service Commission. I think the Mayor and the Council, with others of the present city administration are in earnest in making the new transportation company a success.

Some events in the affairs of the city stand out like milestones along a highway. This agreement seems to be one of those milestones. From every point of view it seems to be democratic, fair, reasonable, and, above all, hopeful for the future Inter-city transportation, as it aims to promote progress; it strives to lighten the burdens of the car rider; gives a square deal to the security holders, many of whom are Pittsburghers, as well as provides for thorough co-operation between the municipal officers and the railway officers.

The spirit of the Pittsburgh Railways agreement is the important thing. Words often fail to express the underlying intention. Difficulties may arise in the interpretation of the agreement, but if the people of Pittsburgh and the railways management always will remember that it was entered into in a spirit of co-operation and good will, and always strive to keep that spirit alive, all difficulties will be surmounted.

Here Mr. Thompson said that the financing of \$5,000,000 for extensions and improvements was the one step that remained in the closing of the contract with the city. It was absolutely necessary to secure this amount to make a success of the transportation system. It was proposed that this amount of bonds should be sold in the Pittsburgh community, and that the backing of the Chamber of Commerce, together with the backing of the various boards of trade, civic bodies, municipalities and others, be secured in order to effect a proper distribution of the bonds.

Mr. Thompson said that with the new franchise contract in force, many banks have stated their willingness to advise their patrons of the soundness of the bonds which it is proposed to issue. The securities to be offered will be in denominations from \$50 to \$1,000.

Important Questions Referred to Supreme Court

A number of questions affecting vitally utility valuations may be considered by the Supreme Court of the United States in the case of Georgia Railway & Power Company, Atlanta Gas Light Company, appellants, vs. Railroad Commission of Georgia, et al., appellees. A speedy hearing on this case has been urged by both parties.

The case mentioned is pending on appeal from the special tribunal of three judges from the Northern District of Georgia, being a suit in equity to restrain the Railroad Commission of Georgia from putting into effect an order reducing the rates for gas.

The questions involved in said appeal are as follows:

(a) Whether the State Railroad Commission, in fixing the present value of property, has the right to disregard the advance in value since 1914.

(b) Whether it is the duty of the State

Railroad Commission, in fixing the value of the property of public service corporations, to consider the value of the special franchises thereof.

(c) Whether the normal federal income tax should be included as part of the operating expenses of public service corporations.

(d) Whether the original cost of financing should be considered by public service commissions in fixing the value of the property of public service corporations.

The appeal to the Supreme Court, in which both sides join, declares that the matters involved are of great public interest, in that these same questions occur in a very large per cent of the cases before public service commissions, and the determination of these questions is of pressing importance not only to the public service corporations, but to the State as well. Again the inferior Federal Courts are not in accord in their answers to the questions involved. Finally, the appeal says, the Railroad Commission of Georgia has now pending before it a number of cases in which these questions are involved and it is of vital importance to this State tribunal that they should be speedily settled.

The assignments of error on which the company based its appeal were referred to in the ELECTRIC RAILWAY JOURNAL for March 4, page 380.

Strong Opposition Voiced to Maintenance by Taxation

The proposed plan of Councilman C. J. Erickson, which is to be presented to the voters at the coming city election, and which provides for the maintenance of the Seattle Municipal Railways by taxation, is meeting with widespread opposition among business men and taxpayers in the city. A body recently formed, known as the League Opposed to Maintaining Public Utilities by General Taxation, has opened offices at 303 Securities Building and is conducting an educational campaign against the movement. The campaign has been indorsed by the board of trustees of the Seattle Chamber of Commerce. The league has issued a statement calling attention to the fact that during 1922 it will cost approximately \$5,100,000 to maintain and operate the municipal railway lines.

Erickson claims that under his plan, which is guaranteed to reduce the fares to approximately 3 cents, there will be an increase in travel of at least 20 per cent, which, it is stated, means an increase of not less than 10 per cent in the operating cost. This means, according to the league, that under the Erickson system it will cost not less than \$5,610,000 to operate the lines in 1923. Even at the present cost, it is estimated that 21 mills will be added to the present total tax rate of 63 mills, making a minimum total tax in 1923 of 84 mills, and possibly more.

The league also estimates that if the Erickson plan is favorably voted at the city election it will mean the indefinite suspension of projected improvements totalling more than \$10,000,000 and will cut building operations 50 per cent.

Men Plan Wage Agreement at Schenectady

Delegates representing the employees of the electric railway companies of Schenectady, Rochester, Utica and Syracuse ended a two days' session at Schenectady on March 21 by completing the drafting of a blanket agreement governing wage scales and working conditions in the four cities. The tentative draft will be presented to employees in the several cities for amendment or ratification on the following dates: March 23, Utica; March 24 and 25, Rochester; March 27, Syracuse; March 28, Schenectady.

The board drafting the agreement will meet on March 30 at Syracuse to perfect the final draft by incorporating amendments which may be decided upon by the several locals. The amended agreement will be presented to the several traction companies April 1, and if accepted by the companies will be effective May 1, for a year. Officials attending the conference refused to make public the details of the agreement, but it is learned that it calls for the continuance of the present wage scale in each of the cities, 50 cents an hour in Schenectady and 52½ cents in the other cities. It is also stipulated that a higher wage must be paid the operator of one-man trolley cars. This type of cars is operated in Schenectady, Utica and Syracuse. No draft of changes in regard to working conditions was made, it is said.

Accident Bonus Starts for Georgia Railway

A bonus accident plan, whereby each trainman of the Georgia Railway & Power Company, Atlanta, will receive \$3 for each month in which no avoidable accident is charged against him, has been announced by F. L. Butler, general operating manager. The bonus, which is open to all trainmen, regular or extras, who work at least twenty-five days of the month is payable quarterly.

The company has classed all accidents as "A," "B" or "C." "A" accidents are those for which the trainman is not to blame, Class "B" accidents are those which could have been prevented by extraordinary care. The motorman must make allowance for possible carelessness of the other person and try thus to prevent the accident. This class of accident will not call for discipline, but will prevent the trainman from getting his bonus. Class "C" accidents include those for which the trainman was responsible. A "C" accident against a man will automatically prevent him from getting his bonus, and will carry with it demerits, suspension or dismissal.

The plan goes into effect April 1. In the booklet which introduces the plan to the trainmen certain types of "B" and "C" accidents are specifically mentioned. Some of these are collisions between cars, collisions at steam railway crossings, collisions with automo-

biles and other vehicles, collisions with pedestrians, motorcycles and bicycles, collisions with animals, horses, cows, mules etc., and derailments. They are in almost every circumstance to be held against the trainmen. The closed type of car practically eliminates accidents to persons boarding moving cars, or alighting from them. The trainman is held responsible to see that passengers do not board or alight from an open car while it is in motion. Accidents to persons boarding cars at rest or alighting from cars at rest are generally classed as "A" accidents, if the trainman shows that the car was at rest, and that he did not try to operate the door while passenger was boarding.

Bankers Indorse Certificates for Subway Construction

New impetus was given on March 16 to the proposal for municipal ownership of the surface and elevated railways of Chicago. On that date the report was presented from a committee of bankers on the "public utility certificates" proposed to be issued under the plan of Alderman Schwartz. This plan has been mentioned several times in the ELECTRIC RAILWAY JOURNAL. The companies had practically agreed to the proposition if a purchase price could be fixed and if the certificates were found to be salable. The bankers gave their indorsement, subject to court approval, to the certificates. They thought the certificates would be not only marketable but "attractive."

It is expected that negotiations with the companies will be resumed and if an agreement on other features of the plan is reached a court test will be made of the certificates. The opinion of the bankers stirred up considerable discussion because the faction led by Mayor Thompson has been contending that nothing can be done without legislation and that the only solution lies in the formation of a "local transportation district" with authority to impose and collect taxes for purchase of the properties.

Meanwhile the committee of engineers is working on plans for a subway system. It has been decided that this matter would have to be submitted to a referendum next June. The details of routes, etc., will be worked out during the next six months.

Pacific Railway Club Elects Officers

At the annual meeting of the Pacific Railway Club held in San Francisco, Cal., on March 11, the following officers were elected for a period of one year: President, F. S. Foote, professor of railway engineering, University of California; vice-presidents, J. N. Clark, chief of the Fuel Bureau of the Southern Pacific Railroad, and J. M. Yount, master mechanic of the Market Street Railway, San Francisco; treasurer, R. G. Harmon, chief clerk of the Western Pacific and Denver & Rio Grande road.

News Notes

Differences to Be Settled.—Conferences are taking place between representatives of the employees of the Scranton (Pa.) Railway and officials of the company over the matter of wages. The men have demanded approximately a 10 per cent increase.

Electric Cars to Carry Mail.—The postoffice department appropriation bill reported to the United States Senate by its appropriations committee provides \$700,000 for the inland transportation of mails by electric and cable cars.

Mr. Bemis Retained by Syracuse.—Announcement was made on March 11 by Mayor John H. Walrath and Frank J. Cregg, corporation counsel of Syracuse, N. Y., that Edward W. Bemis, Chicago, would be retained to aid the city in seeking to require the New York State Railways to reduce its fare from 8 cents and to discontinue use of one-man cars. The city will begin the presentation of evidence against the one-man car and for a reduction in fare on March 31 in Syracuse, the Public Service Commission having transferred trial of both cases from Albany to Syracuse in order to accommodate the city's witnesses.

Wants Wage Dispute Settled.—The London (Ont.) Street Railway employees' union has applied for a board of conciliation to settle a wage dispute under federal labor laws. The company enforced a wage reduction of 3 cents an hour on March 1. The men also formally lodged a protest with the department of labor against the action of the company, the claim being that the company should have itself applied for a conciliation board or awaited action by the men. The Ontario Railway and Municipal Board was previously asked by the men to restrain the company but that body ruled that it has no jurisdiction in wage disputes.

Mr. Beeler Retained in Richmond.—The members of the committee on streets of the Council of Richmond, Va., has recommended the retention of John A. Beeler, New York, as consultant in connection with its investigation of the local railway situation. The Council originally appropriated \$10,000 for an investigation. It then asked for bids from engineers. When the matter came up for discussion before the committee on streets of the Council there were many replies to the appeal of the Council. After the matter had been discussed it was found that the scope of the investigation as planned originally was too narrow to secure what was really desired, and the whole matter was considered again. In consequence it was decided by the committee that the sum of \$25,000 should be set aside to secure the study which is now deemed essential.

Financial and Corporate

\$9.19 a Share on Common

Public Service of New Jersey Presents Very Encouraging Report—President McCarter Optimistic

The annual report of the Public Service Corporation of New Jersey and subsidiary companies shows net income, after charges and taxes, amounting to \$3,594,629. This is equivalent, after deduction of preferred dividends, to \$9.19 a share earned on the \$30,000,000 common stock, and compares with net income of \$2,218,408, or \$5.12 a share, earned in 1920. Details of the report are shown in the following table:

	1921	1920
Operating revenue.....	\$75,311,507	\$72,318,047
Other income.....	2,097,315	2,378,407
Total income.....	\$77,408,822	\$74,696,494
Operating expenses.....	51,769,627	52,638,939
Amortization charges.....	4,893,956	3,237,529
Net after taxes.....	\$20,745,237	\$18,820,026
Subsidiary companies' fixed charges.....	12,856,151	12,324,889
P. S. Corporation's fixed charges.....	4,294,458	4,276,729
Net income.....	\$3,594,628	\$7,218,408
*Preferred dividends.....	835,739	681,757
Common dividends.....	1,200,000	1,199,984
Balances.....	\$1,558,890	\$336,667
Miscellaneous debit.....	107,986	†18,658
Surplus.....	\$1,450,904	\$355,325

*Exclusive of that owned by Public Service Electric Company. †Credit.

In his remarks to the stockholders Thomas N. McCarter, president, says:

The company came through the year in a very satisfactory condition. Special attention is called to the amount of \$4,893,956, which is plowed back into the properties of the company through the amount set up for amortization charges. In addition thereto, a very considerable amount was carried to profit and loss account, over and above the sum disbursed for dividends. The future is full of promise. If the company is allowed to proceed in its great work of developing the State along the lines of its activities, without undue interference occasioned either by political agitation or unfair and ill-advised regulations, it believes it can perform a most useful service to the people of the State and yield to its security holders a reasonable return upon their existing and future investments.

Mr. McCarter says that the basic problem of wasteful jitney competition still remains unsettled in New Jersey, although nearly everywhere else it has been solved at least to the extent of the removal of useless competitive service upon the same streets. Although the financial condition of the railway company is already much improved and this improvement is expected to continue, it cannot function at its highest efficiency at a minimum fare so long as this destructive competition remains.

The plan put into effect during the year for selling the preferred stock to customers on the installment plan has been favorably received. The company intends to continue this method of distributing its securities. There has been sold at par an issue, chiefly in this way, of \$1,666,600 of 8 per cent cumulative preferred stock. In addition \$1,198,600 of the issue has been sold on

the instalment plan and partially paid for.

The directors of the corporation on March 21 increased the annual dividend rate from \$4 to \$6 by the declaration of a quarterly dividend of 1½ per cent on the common stock, payable March 31 to stock of record March 29. The \$4 rate has been paid since March, 1920.

Philadelphia Directors Organize

The present agreement of the Philadelphia (Pa.) Rapid Transit Company with Thomas E. Mitten has been renewed with compensation unchanged. He was also elected president and chairman of the board.

The by-laws of the company remain unchanged and an executive committee of five members has been elected by the board, with T. E. Mitten as chairman, the other members being W. C. Dunbar, who is also vice-president of finance and accounting; G. A. Richardson, also vice-president in charge of operation; H. G. Tulley, who represents Mitten Management in co-operative welfare matters, and C. J. Joyce, counselor.

The other officers elected by the board were E. L. Austin, comptroller; G. W. Davis, treasurer; F. B. Ellis, secretary, and W. D. Witt, auditor.

Brooklyn Outlook Bright

Protesting Figures in Commission Valuation Committee of Stockholders Sees End of Receivership

The protective committee of stockholders of the Brooklyn Rapid Transit Company made public on March 19 a letter to George McAneny, chairman of the New York Transit Commission, protesting against the valuation set upon the properties of that company and its subsidiaries by the commission.

The committee in this letter questions the authority of the commission to set a valuation of only \$154,000,000 on property in which it is said that \$238,000,000 had been invested, as the first step in its plan for a unified transit system, and charged the commission virtually with attempting to confiscate property by wiping out all equities.

The committee said that the city had flagrantly and deliberately violated its contract with the Brooklyn Rapid Transit Company, particularly by delay in the construction of the Fourteenth Street-East New York line, and served notice on the commission that it proposed to request Receiver Lindley M. Garrison to take immediate legal steps to recover at least \$20,000,000 for the city's alleged defaults under the contract.

The letter says at the outset:

When your commission promulgated the general outlines of its proposed plan of re-adjustment last fall, and this committee

was invited to express its views on some of the underlying principles, we gladly complied, and assured you of our co-operation. We endeavored, however, to impress upon you that any such plan as you were then contemplating, to be successful, must be predicated upon valuations which would be fair to all classes of security holders.

Your engineers state that they have endeavored to ascertain actual or original cost, and that, where this has not been ascertainable, they have "estimated" the same on various theoretical assumptions as to conditions under which the properties should have been constructed. Apparently, however, no real effort has been made to check the actual investment, especially with respect to the older properties.

In this manner an unfair impression has been given the public, and both your commission and the public may be grossly deceived thereby. We are advised by those who are familiar with the history and development of the properties that the actual investment exceeds \$238,000,000, the principal items of which are readily ascertainable and easily verified. This aggregate (including Brooklyn City Railroad for comparative purposes), we are advised, is made up of approximate amounts as follows:

- Capital debt outstanding, consisting of bonds, notes, receiver's certificates and real estate mortgages, but excluding stocks \$140,000,000
- Cash paid in by stockholders of Long Island Traction Company (predecessor of B. R. T.) 4,500,000
- Cash expended by B. R. T. Company and represented by bonds, converted into B. R. T. stock, par for par 29,600,000
- Cash realized from the sale of B. R. T. stock 4,600,000
- Cash expended out of income and other sources for construction and equipment and not represented by any capital securities in the hands of the public, but mostly in unsold treasury bonds 23,600,000
- Cash appropriated from earnings for additions and improvements against which no securities have been issued 5,000,000
- Cash used to retire or withdraw bonds against which there are no securities outstanding in the hands of the public 3,000,000
- Cash paid in for Brooklyn City Railroad stock 12,000,000
- Cash and equivalents put into Brooklyn Union Elevated Railroad, Kings County Elevated Railroad, and Nassau Electric Railroad, prior to acquisition, less bonds outstanding at that time, this equity being now represented in stocks, at least 15,700,000

Total \$238,000,000

It is explained by the committee that the total of \$238,000,000 does not include any value for franchises, nor does it include a large amount chargeable for interest during construction, appreciation of real estate over original cost and other items which would very substantially increase the above amount. The committee then explains that as opposed to this actual investment, which is \$10,000,000 in excess of the net capitalization of the B. R. T. system outstanding in the hands of the public Dec. 31, 1921, the engineers of the commission propose to allow, on the basis of their theoretical assumptions as to "actual" or "original" cost, only \$154,000,000, or a difference of \$84,000,000. The committee says that this recommendation is obviously so unfair as to afford no basis for discussion.

In continuing its comment the committee says:

In view of the conclusion which we have reached and already expressed, we do not propose to consider separately the valuations placed upon the properties of the subsidiary companies included in the foregoing aggregate. We cannot, however, refrain from emphasizing the very great in-

justice which the proposed valuations do not take into account the rapid transit properties of the company, or the extension and equipment of which, in conjunction with the new city-built subway lines, approximately \$78,000,000 has been obtained from investors and expended since 1913.

The outstanding debt against these properties, including the underlying bonds, notes and bonds issued since 1913, with interest in default, receiver's certificates, tort claims and other obligations, is estimated at more than \$135,000,000, approximately \$78,000,000 of which has been expended since 1913 under the direct supervision and control of our commission or your predecessors in authority. To provide for this debt of more than \$135,000,000 your engineers recommend a valuation of approximately \$96,000,000, or \$39,000,000 less than enough to provide for the debt, thus eliminating completely all stockholders' equities in the properties.

In reaching this valuation your engineers have placed a net value of approximately \$2,400,000 on the company's extensive elevated railroad system in the Borough of Brooklyn, which was given an earning power under the contract with the city of \$5,000,000 per annum, which, capitalized at 5 per cent (the rate proposed under your plan), would support a value of at least \$6,000,000 for the property.

In conclusion the committee calls attention to the fact that the earning power of these properties has shown marked improvement during the current fiscal year. Conditions are beginning to return to normal. The average operating ratio (including taxes) of the surface lines has been reduced from 71.15 per cent in 1921 to about 78 per cent for the first seven months of the current year, and the operating ratio (including taxes) of the rapid transit lines included in the system has similarly been reduced from 94.43 per cent to about 75 per cent.

At present the B. R. T. system as a whole is earning full interest on its bonded debt, and the committee says that it is advised that there is a possibility of further improvement in the future. It is certain, according to the committee that as soon as the new lines which the city has not yet finished can be placed in operation the net revenues of the rapid transit system will be increased by a substantial amount, estimated at not less than \$1,000,000 per annum. It may, therefore, be predicted, says the committee, that at a not distant date, with the co-operation of the security holders, it will be possible to take the properties out of receivership and permit them, with credit restored, to render a still greater public service.

\$727,914 Profit in Winnipeg

Despite Adverse Economic Conditions Winnipeg Electric Railway Again Makes Encouraging Progress

At the annual general meeting of the shareholders of the Winnipeg (Man.) Electric Railway on March 10, the report of the president and directors and the financial statements for the year ended Dec. 31, 1921, were presented and adopted. The report of the operations for the year ended Dec. 31, 1921, follows:

Gross earnings from operations.....	\$5,418,023
Operating expenses, before charging depreciation	3,559,380
Net operating revenue.....	\$1,858,643
Miscellaneous income	161,406
Income available to meet fixed charges, etc.	\$2,020,050
From which the following deductions are made:	
Interest charges on debenture stocks, bonds, gold notes, etc..	\$633,331
Extinguishment of discount on securities	52,526
City percentage and car license taxes	183,069
Taxes	164,315
Miscellaneous non-operating expenses	3,312
Other income deductions.....	54,532
	\$1,091,085
Net income as shown on accounts submitted herewith, excluding depreciation	\$928,964

The gross earnings for the year 1921 show an increase of \$184,323 over the previous year, and the net income shows an increase for the year of \$132,389.

The company has continued making extensive improvements, particularly in the rehabilitation of rolling stock, track and roadbed. Substantial extensions were also required to take care of the expansion of the electric utility business and there were also improvements at the gas works.

After payment of all fixed charges and making the usual provision for depreciation the company made a net profit of \$727,914. From this amount has been deducted the dividends paid on preferred stock amounting to \$182,367 and also an additional allowance for depreciation amounting to \$122,605,

leaving \$422,941 to be transferred to surplus.

The preferred stock recently authorized has all been marketed and the proceeds have been used to retire floating liabilities. President Nanton said:

The company has continued its policy of maintaining good relations with the public and has given wide publicity to the problems confronting it so that all patrons may be acquainted with the conditions surrounding the operation of the properties. Emphasis has been stressed on the company's desire to provide courteous and efficient service and the public appears to appreciate the sincere efforts on the part of the company to bring this about.

Washington Merger Bill Reappears

Senator Ball of Delaware, chairman of the Senate Committee on the District of Columbia, has reported a bill previously introduced by him, authorizing the merger of certain street railways in the District of Columbia. In his report on the measure Senator Ball says that if the bill is enacted the railway situation in Washington will be greatly improved and simplified by operation of all the lines by one company. He points out that under the new system there will be no charges for inter-company transfers and that re-routing will be possible to the benefit of the car-riding public. Another advantage will be a saving in the operation of railways and a reduction in the coal bills, in addition to saving in overhead charges. Summarizing the benefits he says they will embrace "better service and lower fares."

Engineer Commissioner Keller of the District of Columbia Public Utilities Commission, in a letter to the Senator, recommends that there be not attached to the bill he has reported, which provides for taxing the surplus revenues of the car companies, a mandatory provision for a merger of the two lines.

Failing to secure authorization of the Utilities Commission to sell three tokens for 20 cents for both lines, the Citizens Association Federation has requested the commission to authorize this rate of fare on the Capital Traction Lines, on the ground that the company is now selling tickets fifteen for \$1.

	Latest	Month Ago	Year Ago	Peak	1913
Street Railway Fares*	March 1922 7.14	Feb. 1922 7.16	March 1921 7.21	May 1921 7.24	4.84
Street Railway Materials*	Feb. 1922 156	Jan. 1922 157	Feb. 1921 191	Sept. 1920 247	100
Street Railway Wages*	March 1922 214	Feb. 1922 214	March 1921 231	Sept. 1920 232	100
Unfilled orders (Million tons)	Feb. 28 1922 4.14	Jan. 31 1922 4.24	Feb. 28 1921 6.93	Apr. 30 1917 12.18	5.91
S. Bank Clearings Outside N. Y. City (Billions)	Feb. 1922 10.16	Jan. 1922 11.58	Feb. 1921 10.43	March 1920 18.54	6.12
Business Failures Number	Feb. 1922 2,090	Jan. 1922 2,705	Feb. 1921 1,435	Jan. 1922 2,705	1,213
Liabilities (millions)	Feb. 1922 68.64	Jan. 1922 115.3	Feb. 1921 79.12	Jan. 1922 115.3	24.64

Conspectus of Indexes

for
March, 1922
Compiled for Publication in this Paper
by
Albert S. Richey
Electric Railway Engineer
Worcester, Mass.

	Latest	Month Ago	Year Ago	Peak	1913
U.S. Bur. Lab. Stat. Wholesale Commodities	Feb. 1922 151	Jan. 1922 148	Feb. 1921 167	May 1920 272	100
Bradstreet's Wholesale Commodities	March 1 1922 11.60	Feb. 1 1922 11.42	March 1 1921 11.87	Feb. 1 1920 20.87	9.21
Dun's Wholesale Commodities	March 1 1922 169.7	Feb. 1 1922 165.0	March 1 1921 181.9	May 1 1920 263.3	120.9
Annalist Wholesale food	Mar. 18 1922 182.6	Feb. 18 1922 173.2	Mar. 19 1921 193.6	June 12 1920 329.2	140
U.S. Bur. Lab. Stat. Retail food	Feb. 1922 142	Jan. 1922 142	Feb. 1921 158	June 1920 219	100
Nat. Ind. Conf. Bd. Cost of living	Feb. 1 1922 157.7	Jan. 1 1922 161.4	Feb. 1 1921 176.3	July 1 1920 204.5	(1914) 100

The three index numbers marked with an asterisk are compiled by Mr. Richey, as follows: Fares Index is average street railway fare in all United States cities with a population of 50,000 or over, except New York City, and weighted according to population. Street Railway Materials Index is relative average price

of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motor-men and conductors on street and interurban railways in the United States.

Valuations All Protested in New York

Tentative Figures Presented by New York Transit Commission as Basis for Negotiations in Pooling Arrangement Are Regarded as Ridiculously Low by Companies

The Interborough Rapid Transit Company, the Brooklyn Rapid Transit Company, the Manhattan Elevated Railway and the Third Avenue Railway notified the Transit Commission on March 20 that the valuations recommended by commission experts are too low to provide a basis for the inclusion of these roads in the citywide reorganization plan offered by the commission.

DISCLOSURE of the attitude of the companies took place at a hearing of the commission at which the forty companies involved in the reorganization project were requested to submit criticism of the valuations.

The total valuation of the forty companies was placed by the commission appraisers at \$465,680,154. This sum covered privately owned properties only and did not include the city's expenditure of approximately \$300,000,000 in subways. The figures were summarized in the *ELECTRIC RAILWAY JOURNAL* for Feb. 25, page 333.

The Interborough letter, requesting a redetermination of values by an "impartial board," said that the \$174,221,056 estimate by the commission appraisers fell far short of a proper allowance. Instead, the communication held, the present worth of the I. R. T. properties is at least \$300,000,000, while the commission appraisal "would not be sufficient to pay par on the outstanding bonds and notes, thus leaving nothing whatever for the stock."

In revising the I. R. T. valuations, at least in some particulars, the road seeks to have another board set the figure, pointing out that the commission should not do this, as "it is not consistent with fairness to permit a party to be the judge of its own case."

The communication from a committee of holders of Interborough-Metropolitan collateral trust bonds announced its disapproval of the valuations because they left nothing for I. R. T. stock, which is the security for the bonds in question.

In opening the hearing on March 20 Chairman McAneny pointed out that the proposed valuations are subject to revision if the commission comes to the belief that changes should be made.

The position of the bondholders of the Brooklyn Rapid Transit Company against the valuations was brought out in a communication presented by Paul D. Cravath. The contention on behalf of this company is referred to elsewhere in this issue. There was also a letter from Lindley M. Garrison, receiver for the Brooklyn system, in which he did not give his views for the reason that the receiver, only a temporary official, has no authority in the premises. In refraining from submitting criticism of the valuations Mr. Garrison said he felt this was his proper course, "however well founded the same might be."

The Third Avenue Railway submitted its answer in a letter signed by President S. W. Huff, who characterized the

valuation of its system as "absurdly low." The Third Avenue valuation by the commission experts was just under \$34,000,000, which, according to Mr. Huff's letter, is about half what it should be.

The attitude of the Manhattan Elevated Railway the lines of which are operated by the Interborough under a 999 year lease at a yearly rental of millions of dollars, was disclosed in a letter from President Alfred Skitt, who said the security holders would not accept the proposed appraisal of only \$57,374,205 as against a company book value of more than \$113,000,000.

The communication from Mr. Skitt characterized the Manhattan valuation as "grossly inadequate" and said that an attempt to take the property at that figure would amount to confiscation in violation of the rights of security owners. Terming the proposal of the commission to give quasi public bonds in exchange for the road "unsatisfactory," the Manhattan official said his company would require cash or its equivalent as compensation if the lines of that company were included under the unification plan which the commission has advanced.

Job Hedges, receiver for the New York Railways, the Interborough's surface subsidiary in Manhattan borough, sent a letter in which he said he had no authority in the valuations matter and, therefore, did not give his views. It was said that the problem was one for the security holders of the road to decide and a letter from them is expected to follow the lines indicated by the parent corporation.

In the course of its protest the Interborough Rapid Transit Company said:

The law authorizes the commission to value the property at the "fair reconstruction cost of the property less depreciation." It is respectfully submitted that the fair reconstruction cost of the property contributed by this company to the development of the new subways and elevated improvements would be at the present time a sum equal to at least 115 per cent, of the net cost in money just as the contract contemplates, and that after making reasonable deductions for theoretical depreciation, if any, which is not conceded, and discount, the sum remaining would be in excess of the par of the outstanding bonds and notes issued by the company to aid the city in its rapid transit projects of 1913.

To ask investors who within the past three years have bought \$38,144,400 of the company notes, and within the five years prior to that bought \$162,106,000 of bonds, to accept less than par and interest savors so much of repudiation by the city of New York that it is inconceivable that the commission will find itself able to adopt the valuations its bureau placed upon the property provided under the contracts of March 19, 1913.

From the foregoing it appears that the present value of the property in question is at least \$300,000,000 instead of \$174,-

221,058 reported by your bureau of valuation. Other assets not appraised by your bureau, but which are represented by the capital stock of the company increase the present value of the entire assets of the company to a sum greatly in excess of \$300,000,000. Yet your reported valuation would not be sufficient to pay par on the outstanding bonds and notes, thus leaving nothing whatever for the stock.

The letter from the Interborough Metropolitan bondholders, signed by Grayson M. P. Murphy, chairman, said:

We regret to find that none of the valuations of the properties of the Interborough and the Manhattan companies proposed by your valuation bureau would furnish a basis for the issue of sufficient securities to protect present holders.

Connected indirectly with the valuation and the fare matters in New York is the question of the attempt by the Interborough to secure changes in the terms of the lease under which the Manhattan Elevated Railway is operated by the Interborough. Seven per cent annuum is guaranteed by the I. R. T. on the stock of the Elevated, which has come to be regarded as a white elephant. Alfred Skitt, president of the Manhattan Railway, and George Welwood Murray, its counsel, as well as James L. Quackenbush, counsel of the Interborough, said a few days ago that there had been no new developments in the situation. It was learned that an almost daily interchange of views was being made between officials of the companies and the committee of security holders of the Manhattan Railway, of which Alvin W. Krech is chairman.

An authority who refused to permit his name to be used said:

The Manhattan Railway is not the only obstacle. The Manhattan is willing to make concessions, but the other side must make concessions, too. The matter of scaling down the 7 per cent stock guarantee is not to be the only basis of change. The Interborough has made millions out of this lease and has found it to be profitable. In the situation demands change, the entire burden is not going to fall upon the Manhattan stockholders.

It was reported that the Interborough would like to have the 7 per cent reduced to 4½ or 5 per cent, but it was said that this would not be likely to be satisfactory to all the Manhattan stockholders. The records of the Transit Commission show that on June 30 last the following were among the large stockholders:

Jay Gould estate, \$8,130,100; H. J. Cammann, \$2,289,000; General Education Board, \$1,451,400; Bertrand Cutler, \$1,144,000; University of Chicago \$1,100,000; J. M. Amory & Son, \$1,000,000; Rockefeller Foundation, \$990,000.

Tentative Agreement Reached

General Manager H. H. Couzens of the City of Toronto (Ont.) Transportation Commission has reached a tentative agreement with the union under which the prevailing rate of wages will be maintained for another year. The men's request for two weeks' holiday with pay was not given serious consideration. The wage schedule of the commission gives car men 55 cents an hour for the first six months, 57 cents for the next three months and 60 cents an hour thereafter.

Termination of Receivership in Sight

Early release of the receivership under which the Des Moines (Iowa) City Railway has been operating since 1919 was hinted at recently when Judge Martin J. Wade of the federal court signed an order at Ottumwa permitting the company to exercise its corporate powers to borrow money with which to pay its debts. The court order was in response to an offer by the company to assume and pay the debts incurred by the receivership and also to pay some of the long past due accounts of the company itself, if it were again placed in control of its own property and the receivership lifted.

The offer states that the company in the strength of the franchise granted Nov. 29, 1921, has arranged to pay its debts if it can now get its property under its own control. According to the offer it is proposed to liquidate approximately \$1,000,000 at this time by means of long term notes. The company agrees in its offer to assume, as part of the receivership expenses, the bill for the cost of the special franchise election and the advertising incident to it. It also announces that it has arranged with the holders of the debentures now outstanding to accept the company's promissory notes in lieu of claims for interest on the debentures, and that it has arranged for an extension of credit on the notes held by those creditors whose claims are most pressing. Among these claims is one of the Harris Trust & Savings Company for \$58,182, one of the Western Water, Light & Traction Company for \$332,497. W. Harris and others hold personally notes aggregating \$161,951.

Judge Wade's order allows the Harris Trust & Savings Bank, the North American Railway Construction Company, the receivers and intervenors, including the city, until March 23 to file objections to his accepting the offer, and permits the company in the meantime to proceed with its arrangements for credits to fulfill its agreement.

Deferred Dividends All Paid

The last of the deferred dividends on the common stock of the Montreal (Que.) Tramway will be paid on March 28. The next regular dividend will be on May 1. Dickinson & Walbank, who specialize in the stock of the company, say:

The repayment of 17½ per cent deferred dividends (deferred before the new franchise had demonstrated its present satisfactory characteristic) is, we believe, unique in Canadian stock market history. No doubt the thirty-odd years of uninterrupted dividend payments had a sentimental influence upon the broad policy of the repayments adopted by the administration. In twenty-four months the company has paid in dividends an aggregate of 37½ per cent on the stock, or 18½ per cent per annum. This achievement has two-fold significance. It demonstrates remarkable earning capabilities; and it indicates, better than words, the liberal dividend disposition of the board.

With all the deferred dividends paid off, the company can look forward to the terms of the prospective new capital stock issue, which we anticipate will be on a basis to

represent from \$10 to \$12 per share on the stock.

Tramway stock is quoted at 146 to 147, at which price the 10 per cent dividend will yield 6.80 per cent per annum.

For a full-year period from date, purchasers before the close on March 20, should receive an aggregate return approximating 15 per cent on the investment, and henceforth for thirty-one years, or more a return of at least 6.80 per cent per annum.

\$247,132 Net in Honolulu

The Honolulu Rapid Transit & Land Company, Honolulu, Hawaii has reported gross earnings for 1921 amounting to \$960,992 with operating expenses at \$635,998 against \$580,028 in 1920.

According to the manager this advance in expenses is due to higher wages paid and a greater number of car miles operated. The net earnings were \$247,132, an increase of \$48,264 over those of the previous year. The company carried 19,202,083 passengers during 1921 of which 4,215,819 were transfer passengers. The total passenger traffic shows an increase of 25 per cent over 1919 and an increase of 12½ per cent over 1920.

Holding Company Sells Stock

The United Light & Railways Company, with headquarters in Grand Rapids, Mich., between October, 1920, and October, 1921, sold more than \$1,000,000 of its 7 per cent prior preferred stock to 3,733 subscribers or customers in the seventeen different communities served by its subsidiary companies. The company operates in Iowa, Illinois, Indiana, Michigan and Tennessee. The stock was first offered on Oct. 1, 1920, to employees of the company. The response was very gratifying. Employees of three operating companies subscribed 100 per cent, six showed percentages ranging from 91½ to 99.2, and one electric railway took 82 per cent. The stock was then offered to the public through employees of the company for cash at par or on the installment plan with a payment down of \$10 and installments of \$7.50 per month, plus interest on the unpaid balance.

Schools of instructions were conducted for the employees to familiarize them with stock selling methods. After the team organization had been maintained for about three months, it was decided to organize a separate department of the company to be known as the securities department. Prizes were offered for the best records.

The plan followed was to take a list of the lighting and power customers in the city concerned and to have a committee of employees having the broadest acquaintance among the customers eliminate names of those who probably would not be interested. Then the others were seen personally. The company agrees to take back stock for resale, but does not guarantee to sell it at par. The salesmen were instructed to sell stock only to those who expected to be able to keep it as a permanent investment. In connection with the sale a newspaper advertising campaign was conducted.

Court Approves Bond Payment by Receivers

Receivers Fagan, George and Tone of the Pittsburgh Railways have been directed on petition of President Thompson of the Philadelphia Company, holding company of the traction concern, by the United States district court to file a report on the receivership not later than April 1. This is the first legal step toward reorganization of the railway in accordance with the contract between the city of Pittsburgh and the Philadelphia Company.

The court at the same time, taking up two other angles of the situation, confirmed absolutely the 1921 accounting of their stewardship of the Pittsburgh Railways filed by the receivers, and approved the settlement, at more than \$1,000,000, which former Judge Henry G. Wasson, as master, recommended the receivers should make with the Southern Traction and United Traction companies, two of the three big underlying companies of the Pittsburgh Railways for bond and mortgage interest payments, these questions had been in litigation several years.

The Southern Traction and United Traction settlements, as recommended by former Judge Wasson, as master, proposed to pay the trustees of mortgages held on the lines of the Southern Traction Company, the West End lines, \$700,000 in interest, less \$100,000 already paid on account; \$75,000 to the Union Trust Company, trustee under these mortgages, for service and expenses, and to the holders of bonds of the United Traction Company, \$480,400, as interest. The total payments recommended, and approved by the court, are \$1,155,400.

This settlement disposes of a threat, in the case of the Southern Traction Company, to foreclose on its mortgages on the properties, take the West End lines out of the Pittsburgh Railways system and operate them separately.

Utah Property Lists Assessment Charges

The Salt Lake & Utah Railroad, Salt Lake City, Utah, has made its report for assessment purposes to the Utah state board of equalization, showing a total this year of \$2,087,591. Last year the company paid taxes on a valuation as finally fixed by the state board of \$2,397,905. The state board will revise and probably amend the figures presented this year. The main reduction in values claimed by the company is in that given to trackage and right-of-way, which the company says is worth this year \$1,520,700, of which \$868,980 is in Utah County and the remainder in Salt Lake County. Last year the company paid taxes on \$1,837,710 under this heading, \$1,034,300 being in Utah County. The company enters a value of \$100,000 for its franchise, but explains that it is not claiming this amount, and has doubts as to its legality, but is willing to let the figure of last year stand.

Bondholders Promise to Rehabilitate

No bids were received by Receiver George Whysall on March 18, when the properties of the Springfield, Troy & Piqua Traction Company were put up for sale the second time at the courthouse in Springfield, Ohio. As a result, announcement was made by Judge Merle N. A. Walker, Indianapolis, and G. L. V. Emerson, Chicago, representing the bondholders, that the bondholders will proceed at once to carry out the original agreement with the court to take steps to rehabilitate the properties. The line which runs between Springfield and Troy, has not been in operation for several months, except for a shuttle car operated between Springfield and Maitland, a distance of 2 miles, for the benefit of employees of the Victor Rubber Company. With the announcement of the bondholders, however, it is expected that service will be resumed within the near future.

Judge Walker announced that definite action would be taken within the next thirty days. Judge Walker, who is a brother of Guy M. Walker, New York City, trustee of the bondholders, said that he had been called into the case recently and that after a thorough investigation he found citizens of Springfield and other communities on the line were doing their part in the attempt to save the road. These citizens raised a fund of \$75,000 in return for which they were to receive bonds to that amount. However, after this fund had been raised, no action could be secured on the part of the bondholders and so the first sale of the road to the bondholders for \$300,000 was set aside by the court and the property ordered to be again offered at public auction March 18.

The upset price for the property was fixed by Judge John E. Sater of federal district court at \$135,000. The receiver was ordered by the court not to consider any bid under that figure and also to require a cash payment of \$25,000; one half of the remainder in thirty days and the other half in sixty days.

Reorganization Being Planned

Plans for the reorganization of the Syracuse & Suburban Railroad, Syracuse, N. Y., recently purchased by a committee representing the bondholders is soon to be laid before the Public Service Commission for approval. The financial end of the reorganization provides for the issuance of \$750,000 of income bonds. The new company will also issue \$300,000 in common stock. The new corporation will be known as the Syracuse & Eastern. The outstanding bonded indebtedness of the old company was \$550,000.

It is expected that a new manager will be appointed for the road as C. Loomis Allen, former vice-president and general manager, is now president of the L. R. Roberts Typewriter Company, Stamford, Conn.

Financial News Notes

Noteholders Depositing Their Securities.—The holders of 90 per cent of the three-year gold notes of the American Railways, Philadelphia, Pa., due on Feb. 1 last, have deposited their notes for extension of three years.

H. C. Beatty a Director.—Harold C. Beatty has been appointed a director of the Syracuse-Northern Railway, Syracuse, N. Y., succeeding Ernest I. Edgecomb, who resigned upon election to the bench of the Supreme Court.

Common Stock Dividend Passed.—The Porto Rico Railways, Ltd., San Juan, Porto Rico, which controls the Porto Rico Railway, Light & Power Company, has passed the dividend on the common stock, due at this time. The rate during 1921 was 1 per cent quarterly.

Loan Secured.—The Eighth Avenue Railroad, New York, N. Y., has secured a new mortgage loan of \$800,000 from the Farmers Loan & Trust Company. The proceeds will be used for improving the block front on the west side of Eighth Avenue between Forty-Ninth and Fiftieth Streets and for other corporate purposes.

Interurban Sold to Representatives of Bondholders.—R. M. Stinson and Thomas Conway, Jr., of Philadelphia, representing eastern bondholders, have purchased the Aurora, Elgin & Chicago Railway at foreclosure sale in Wheaton, Ill. on a bid of \$1,000,000 above their holdings, which consist of \$4,735,000 refunding mortgage bonds.

Application for Lease Before Commission.—The application by the Easton Transit Company and the Lehigh Valley Transit Company, operating in Allentown, Easton and Bethlehem, for the approval of a lease of all the property and franchises of the former corporation by the latter, is being considered by the Public Service Commission. The lease is for ninety-nine years, and stipulates the lessee must carry out all the obligations of the lessor.

Bondholders Organize to Protect Valuation.—A committee has been formed to represent bondholders of the Columbus & Ninth Avenue Railroad, New York, N. Y., and it is urged that holders of the bonds deposit them with the Columbia Trust Company before April 1, on or about which date hearings of the Transit Commission regarding the valuation of this and other traction properties is to take place. The committee states that in its opinion the valuation prepared by the Transit Commission is too low.

Sale Approved.—The sale of the defunct Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio, to the Wilkoff Company, First National Bank

Building, Pittsburgh, Pa., has been approved by Judge J. M. Killets of Toledo. The approval is conditional on protests that may be filed within ten days. A certified check of \$10,000 was deposited by the Wilkoff group, recently, with G. Ray Craig, Norwalk master commissioner of the railway. The price of the property fixed by the federal court is \$60,000.

North American Company Dividend Policy Announced.—In order to clear up any uncertainty respecting the dividend declared on Feb. 28, the North American Company, New York, N. Y., has issued the following statement: "The dividend was a quarterly dividend of 2½ per cent payable April 1, of which 1½ per cent is payable in cash and 1 per cent in preferred stock. The 1 per cent payable in preferred stock was not an extra dividend and the company expects to maintain dividends on its common stock at the rate of at least 2½ per cent quarterly in the future."

Supplementary Opinion in Columbus Case.—In a supplementary opinion by Judge Kinkead of the Court of Common Pleas of Franklin County, Ohio, on the final entry and judgment in the Columbus Railway, Power & Light Company suit against the Clarks, judgment for the whole amount of \$1,079,726 is rendered against C. M. Clark and E. V. Clark & Company, jointly and severally. Secondary liability has not been found against other members of the board. The items included in the judgment were reviewed in the account of the decision of the court which appeared in the ELECTRIC RAILWAY JOURNAL of Jan. 28, page 168.

Sale of Lafayette Property Approved.—Judge A. B. Anderson in the federal court at Indianapolis has approved the sale of the Lafayette (Ind.) Service Company's property which was held by Lafayette as the result of foreclosure proceedings brought by the Real Estate Trust Company, Philadelphia, as trustee on behalf of bond holders. The court set March 31 as the date on which the transfer of the property should be made to the purchasers. R. W. Leving, of Lafayette, has been acting as receiver of the company. The details of the sale were recorded in the ELECTRIC RAILWAY JOURNAL of March 1, page 423.

\$30,000,000 in Bonds of French Company.—Kuhn, Loeb & Company are offering \$30,000,000 of a \$40,000,000 issue of 6 per cent external sinking fund government bonds of the Paris-Lyons-Mediterranean Railroad. They are offered at 100 to yield 7.35 per cent to the date of maturity, which is Aug. 15, 1958. The entire issue may not be redeemed before Feb. 15, 1932, and if called the yield gradually increases to a maximum of 8.78 per cent. If any bonds are redeemed by the sinking fund before Aug. 15, 1929, the yield reaches a maximum of 9.22 per cent. The proceeds are to be used for purchasing rolling stock, for electrification of several lines and for other improvements.

Traffic and Transportation

Connecticut Fares Again Problem

Commission Seeking to Determine What Shall Be Done Following Close of Five-Cent Trial Period

Hearings are being held by the Public Utilities Commission of Connecticut in various parts of the State to inquire into the fare situation on the lines of the Connecticut Company. It will be recalled that tests with a radial 5-cent fare are in progress in Bridgeport and Norwalk for trial periods under the commission's rulings. It is with the aid in mind of determining what shall be done in the future that the commission met in Norwalk on March 21 and Bridgeport on March 22.

At the hearing in Bridgeport Mayor Fred Atwater and members of the mayor's transportation committee asked that the present radial 5-cent fare be continued, with the benefits of a reduction through the token system to be allowed for riders in communities on the outskirts of Bridgeport.

Judge Carl Foster appearing for the manufacturers' Association, Chamber of Commerce, Business Men's Association and various organizations in Bridgeport, Fairfield, Stratfield and Stratford, asked for a unit 5-cent fare within the limits that were established by the old 10-cent fare, with a 2-cent transfer.

President Lucius S. Storrs of the Connecticut Company briefly stated that the company was not "earning enough to function in civic growth and civic necessity," and claimed that a comparison of revenues under the 5-cent fare with revenues last year meant nothing because jitney competition had been reduced in the meantime. He said that "until the time comes when the transportation corporation can be delegated for the sole medium of transportation, the community must suffer through higher fares."

The financial statement of the company for the period of the test fare, read into the record of the hearing by Chairman Higgins follows:

GROSS OPERATING REVENUE	
November	\$52,911
December	166,475
January	164,906
February	146,396
Total	\$530,688
OPERATING EXPENSES	
November	\$55,139
December	165,084
January	146,666
February	130,849
Operating expenses	\$497,738
Taxes	20,464
Total	\$518,203
Net operating income	\$12,485

For the period from Dec. 1, 1920, to March 1, 1921, the gross passenger

revenue of the company on the Bridgeport lines amounted to \$427,930 as compared with \$463,881 for the period from Dec. 1, 1921, to March 1, 1922. During the former period the flat 10-cent fare was in effect and the trolleys were in competition with unregulated jitneys.

The representatives of the public in attendance at the meeting in Norwalk all pleaded for a continuation of the 5-cent fare on the experimental 1-mile shuttle line and its extension to all of the local lines.

Chairman Higgins prefaced the hearing with a reading of the financial statement of the company for the Norwalk division from Nov. 6, when the 5-cent fare was put into effect on the West Avenue line, until Feb. 28. This statement follows:

GROSS OPERATING REVENUE	
November	\$17,931
December	24,952
January	25,061
February	23,140
Total	\$91,084
OPERATING EXPENSES	
November	\$17,217
December	20,667
January	19,287
February	17,499
Total	\$76,670
OPERATING INCOME	
November*	\$370
December	2,888
January	4,912
February	4,836
Total	\$12,266
*Deficit.	

President Storrs declared that figures were not available for the new lines on which it was sought to make a test of the 5-cent fare, but he declared that he doubted if it would be a success because most of the lines were in sections thinly populated and there would not be the possibility of increasing the revenue through very material increases in traffic.

Special Car Charges Increased

The Pennsylvania Public Service Commission has received a new schedule of passenger tariffs effective April 15, 1922, from the Scranton, Montrose and Binghamton Traction Company, operating between Scranton and Montrose. In the schedule filed the special car charges increased are as follows:

One-way extra car attached to regular increased from 80 cents to \$1.00 per car mile. Minimum charge from \$12 to \$20 Round trip extra minimum \$12 to \$25. One-way special car from 80 cents a car mile to \$1.50 a car mile for all distances in excess of 10 miles. Minimum charge increased from \$15 to \$25. Round trip special car is increased to \$1.00 car mile with minimum charge at \$30.00. Minimum charge for running cars beyond scheduled destination is increased from \$5 to \$10 and the rate is changed from \$5.00 per hour to 80 cents per mile.

Washington Fare Troubles Again

Associations Demand a Twenty-Cent Rate for Three Tickets as Well as Forty-Cent Rate for Six

Although the Public Utilities Commission of the District of Columbia established a new rate of fare in the National Capital effective on March 1, there is continued agitation over the fare question. This is due to the demand of various citizens' associations that the public be allowed to purchase three tokens for 20 cents, contending that some persons are unable to purchase six for 40 cents, and have to pay the 8-cent cash fare. The Citizens' Association Federation petitioned the commission to establish this 20-cent rate, but it has been held in abeyance by the commission to see how the present fares operate on the company's revenue. The Washington Railway & Electric Company opposed the three for 20 plan on the ground that it would reduce its revenues this year by \$100,000. It suggested in lieu of all present fares a straight fare of 7-cents cash.

Because of the disparity in revenues of the two companies operating in Washington, the Washington, Railway & Electric making less than the Capital Traction Company, Congressional committees on District affairs are considering a tax proposal to equalize the revenues of the companies by imposing a graduated tax on their revenues. The matter was the subject of a hearing Monday before the Senate District Committee, at the request of the Capital Traction Company whose revenues would be more largely affected. A bill for merging the companies has again been introduced, as noted elsewhere in this issue.

Prepare for One-Man Cars

While citizens of Joliet, Ill., were storming against the installation of one-man cars by the Chicago & Joliet Electric Railway, city officials practically agreed that it would be impossible, except by expensive litigation, to force the company to keep to two-men service. At the same time, employees signed an agreement accepting the new type of car and providing an increase in pay of 5 cents an hour for operators.

The following wage scale will be made effective according to the agreement:

	Cents an Hour
City lines	55
Lockport and Lyons	57
EXTRA MEN	
First three months	51
First nine months	53
One year	55

The agreement also states that the employees who operate one-man cars will be paid for 15 minutes time in which to get their cars ready.

Petitions have been circulated requesting the City Council to re-enact the two-man car ordinance.

Service Withdrawn in Augusta

Failure of the City Council to Regulate Unfair Jitney Competition Prompts Local Railways to Withdraw All Cars from Service

Electric railway service was suspended in Augusta, Ga., on March 16. It was still suspended on March 24. More than likely the cars of the Augusta-Aiken Railway & Electric Corporation will remain in the carhouses for some time to come, for on the evening of March 21 the Council of Augusta, ignoring the demands of all the constructive forces in the city, decided by a vote of thirteen to six to stick to its action of March 6 in refusing to grant relief as requested by the railway from the unfair, unregulated jitney competition.

AFTER the meeting of the Council on March 21 the company had nothing to say. There really was no statement for it to make. The officers had previously outlined their position at considerable length, and as long as the Council remains obdurate and refuses to heed the plea of the company it must of necessity stick to the course upon which it has entered.

NEGOTIATIONS BEGUN LAST FALL

Negotiations looking toward a settlement of the matter started last fall. According to the Mayor, the Council will so regulate the jitney traffic as to prevent congestion on any street occupied by the railway and will agree not to permit any jitney to take or discharge passengers on any street occupied by the railway if the railway will reduce its fares to 7 cents and continue to transport school teachers and school children at 5 cents and maintain a fifteen-minute headway on all city lines.

The Mayor feels that the offer of relief proffered by the Council in its resolution of March 6 is as far as that body can go.

This does not satisfy the company. Its position is plain. It is not antagonistic to a jitney service or to jitneys. It has stated publicly that a jitney line properly regulated as a public utility on streets not already occupied by trolley lines and one or two blocks removed therefrom would confer upon the public a new and real transportation service. Then each line would serve the riding public without very material interference with the other within the zone of its own operation, and the public would have two efficient and properly regulated public carriers.

For more than three months the company, backed up by the leading citizens of Augusta and by every civic body in the city, has been appealing to the City Council to recede from what the railway submits is a suicidal policy, taken in heat, and now seen to be fatal to the public service of the electric railway company.

COMPANY ADOPTS CONCILIATORY ATTITUDE

In a final effort to induce Council to keep the jitneys off the streets occupied by the car lines and forbid them to take on or discharge passengers within two blocks of the company's lines, the company agreed, if Council would do this, to concede a 7-cent fare to the general public, a 5-cent fare to school

children and teachers, and require a 10-cent fare to the casual rider only, who fails or refuses to buy tokens at 7 cents in multiples of five or more.

This proposition was agreed upon between the company and the sub-committee of the general jitney committee of Council, and was reduced to writing in the shape of a letter addressed by the general manager to the sub-committee.

The sub-committee presented this letter to the general committee with the recommendation that the proposed agreement contained therein be reported to Council for adoption. But the general committee declined to do so and instead adopted a report that Council require as a condition precedent to any regulation of the jitneys a 7-cent straight fare for the general public, including the casual rider, and a 5-cent fare for school children and teachers, the city to "keep the jitneys off the streets now occupied by the street railway lines, with permission to cross intersections at which points they are not to take on or discharge passengers."

The jitneys committee made its report to the City Council March 6, 1922, setting forth its recommendation, as above outlined.

Thereupon the City Council passed a resolution adopting the report of the general committee as its final action, discharged the committee, and ordered the company be given one week within which to accept the city's proposition. While under this proposal the jitneys would not be permitted to take on or discharge passengers on streets occupied by the railway, or at the precise point of intersection of streets cross the same, they would be permitted to take on and discharge passengers anywhere else on all cross streets, even though it be within a few feet of the intersecting streets. The contention of the railway was that this practically defeated the very purpose of any regulation. Anxious to reach an agreement with the Council, however, the company finally signified that if Council would pass the resolution at once, the company would try to operate with the jitneys removed only one block from its lines.

In the meantime, however, the Council as noted previously had passed a resolution adopting the report of the general committee as its final action, had discharged the committee and ordered that the company be given one week in which to accept the city's proposition. The reply of the company

to this notification received on March 8 was to the effect that "the company could not under the terms proposed earn even its operating expenses, and, therefore, must decline the city's proposition." At the expiration of the time limit set by the Council for acceptance of the proposal of that body the railway withdrew service as its answer to the ultimatum of the Council.

These briefly are the happenings which have shaped the course of recent events. They are all bound up, however, with the situation that developed as a result of the war. At first the Railroad Commission allowed the company a 6-cent fare, and then to avoid disaster, it allowed a 7-cent fare; and although by the actual trial, it was demonstrated that the company was in sore straits the commission, doubtless hoping for some improvement, refused a higher rate than 7 cents.

Thereupon, the company, alleging that the rate allowed by the commission was so low as to be confiscatory, applied to the United States courts to enjoin the commission from enforcing the rate which it had fixed and to allow the company to put in a higher rate. After a hearing in this high tribunal, at which the fact was disclosed that the receipts under a 7-cent fare failed to yield even operating expenses, the court authorized the company to put in a fare not exceeding 10 cents per ride. The company, however, adopted an 8-cent token fare for the general public, a 5-cent fare for school children and teachers and a 10-cent fare for the casual rider only, who might not desire to buy tokens.

It was hoped by the company and doubtless by the courts, that this increase would produce a revenue sufficient to enable the company to continue service without falling below the actual cost of operations, disregarding for the present, all consideration of any return upon the investment.

The city at once adopted measures that called into existence a competitive jitney service, and so encouraged and fostered it that between a third and a half of the revenue normally and legitimately flowing into the railroad has been taken away from it.

The bulk of the riding that is being done by the public in Augusta is on the jitneys, although private automobiles are helping out by giving lifts now and then. In an effort to alleviate the situation as far as possible, the Council has attempted to direct by ordinance the distribution of the existing jitney service.

The constructive elements in the community are of course in sympathy with the railway. They deplore the unfavorable attention which the withdrawal of service has attracted to the city of Augusta.

The suspension of service is particularly unfortunate for the employees, inasmuch as it has been impossible for the company to absorb any of the railway help into other departments.

Fare Increase Denied I. R. T.

New York Rapid Transit Line Had Asked Commission for Temporary Rate Pending Settlement of Permanent Fare

The Interborough Rapid Transit Company, New York, has been denied an increase in fare. This action was taken by the New York Transit Commission following the signing of the Simpson-Jesse bill by Governor Miller on March 23. There was nothing else left for the commission to do under the circumstances, even if it had been kindly disposed toward the appeal of the railway for relief, for the new bill, which amends the transit act of 1921, forbids any increase of fare to any company which refuses to come into the proposed unified system under the Transit Commission's reorganization plan.

Another amendment to the transit act signed by the Governor gives the Transit Commission the right to order the operation of cars over lines of other companies. This is an emergency bill calculated to correct the situation which might arise should the Interborough Rapid Transit Company and the Manhattan Elevated Railway come to the parting of the ways over the matter of amending the lease between them, now urged by the I. R. T. to be unduly burdensome.

The Interborough Rapid Transit Company, through its counsel, George L. Quackenbush, has appealed to the Governor for a hearing on the bills. To this appeal the Governor replied:

I am surprised to learn of your action in filing a petition for an increased fare at the very time when you were asking me to withhold approval of a bill to prevent increases of fare fixed by contract, franchise and the like, except as a part of or as provided by the plan of reorganization. I do not share your fears either that the hands of the commission will be improperly tied or that any cloud will be put on the securities to be issued. I take it for granted that before the final consummation of any plan and the actual exchange of securities thereunder it will be necessary to secure a final adjudication of the validity of the plan. The act undoubtedly ties the hands of the commission to the extent of preventing increases of fare of companies refusing to come in under the plan. That is precisely what was intended.

The application was for an "immediate, reasonable, temporary increase in the existing rates, fares and charges, pending a final determination." It was made to the Transit Commission at its hearing on March 22 by Frank Hedley, president and general manager of the Interborough Rapid Transit Company. The application said:

The Interborough Rapid Transit Company alleges that the maximum fare of 5 cents, now chargeable by it has been for more than three years, and now is, insufficient to yield reasonable compensation for the service rendered, and has been and is unjust and unreasonable.

The Interborough's fare application pointed out that final adoption of the commission's plan for the unification of the transit lines in New York will consume considerable time, and therefore requested the commission to fix a rate that will yield a reasonable average return on the property actually used by the Interborough. In addition to

this request the Interborough asked for the immediate temporary increase.

To support this contention the application set forth that the Interborough's property was valued by the Transit Commission's own bureau on Jan. 30, 1921, at \$228,515,261. The Interborough claims that its property is worth \$300,000,000. After showing its return for the years 1918-21, the application alleged that a reasonable average rate of return on its property would be at least 8 per cent a year. Its present return and for the past four fiscal years, has been insufficient to procure a return of 8 per cent, the application said.

When the application had been presented, Clarence J. Shearn, counsel for the commission, advised the commission to reject it on the ground that it had no relation or relevancy to the present proceedings. George McAneny, chairman of the commission, said the commission would take notice that the application had been presented and have it filed with the secretary.

It was further alleged in the application that to provide

Safe, adequate, and efficient service, and for the preservation of its present system as an entity, the public interest requires an immediate, reasonable, temporary increase in the existing 5-cent rate of fare, now chargeable by the Interborough Rapid Transit Company, pending the final determination of the rate, as herein prayed for.

Such a reasonable, temporary increase would enable the Interborough Rapid Transit Company to avoid a receivership; to pay its fixed charges when the same became due; to restore its cash and credit position, and thereby permit it to make arrangements for the extension or refunding of certain of its securities and obligations which fall due in the near future. Such a reasonable temporary increase would also permit additional service to the traveling public and enable the Interborough Rapid Transit Company to provide additional equipment in rolling stock for its lines as and when the same are needed.

Who Should Assume Jurisdiction?

Seattle's bus problems again came before the State Supreme Court at Olympia recently, when Chief Justice E. N. Parker issued an original writ of mandate requiring Judge Walter M. French to appear before the Supreme Court on March 31 to show cause why he, as judge of the Superior Court of Kings County, should not assume jurisdiction in the matter of the application of the Seattle & Rainier Valley Railway, Seattle, Wash., for an injunction to prevent the further operation of automobile busses by H. E. Knowles, in competition with the railway's operations inside the city limits of Seattle. Judge French recently refused to assume jurisdiction in the case brought by the railway, which charges that Knowles, operating a stage line between Seattle and Renton under a certificate of public convenience and necessity from the department of public works, is operating only a few trips each day through to Renton, but is running cars on a schedule closely paralleling the railroad's operation between the downtown terminal and the Seattle city limits. Judge French held that this was a matter for the department of public works to handle.

Says Buses Financially Irresponsible

Electric railway service is superior to bus service, in the opinion of F. H. Wilson, receiver for the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, and remains superior even though it charges a higher rate. The receiver stated that buses are free from financial obligations to the state, while railways must pay specified amounts in taxes. The maximum amount charged a bus owner by the state is \$72, according to the horsepower of the engine of his car. He need take out no indemnity bond and is not financially responsible in case of a civil action for damages, said Mr. Wilson.

On the other hand, Mr. Wilson pointed out, the bus operator uses the terminals maintained by the traction companies as a starting point for his route, and therefore wins passengers from the railway. Mr. Wilson denied that freight hauling by truck was less expensive than such service by railway. He stated that in the long run the citizens paid so much for the upkeep of the highways that it made the actual cost of shipment exceed that by electric railway.

Saginaw Forces Track Removal

By unanimous vote the City Council of Saginaw, Mich., on March 21 adopted an ouster ordinance directing the bankrupt Saginaw-Bay City Railway and its receiver to remove all trackage, overhead construction and other property from the city streets within ninety days. If the ordinance is not complied with, under its terms the city attorney is instructed to proceed in the United States District Court to secure permission for the city to do the work.

As stated in the *ELECTRIC RAILWAY JOURNAL*, issue of March 11, this action is a result of a controversy over paving work. The city claims that the railway company has not co-operated with the city in paving work, but that the work has been delayed because of the poor financial condition of the company. The Saginaw-Bay City Railway operates an interurban service between Saginaw and Flint.

Agreement Reached.—Fares will be reduced in Pine Bluff, Ark., as a result of an agreement reached between a committee of the City Council and officials of the Pine Bluff Company. Cash fares will be 6 instead of 7 cents, while books of fifty-fare tickets will be sold for \$2.50 instead of \$3. An ordinance providing for the new schedule of rates was to be presented to the City Council on March 20, and it is thought that it will be enacted and made effective without delay. The date for the beginning of the lower fares has not yet been decided upon. It is possible that wages of motormen will also be reduced, as it is estimated that the new schedule will mean a \$10,000 loss to the company.

Fare Order Expected

Chicago Surface Lines Put in Their Case—Newspapers Predict New Rate

Another order in the fare case of the Chicago (Ill.) Surface Lines is expected to be entered in the near future by the Illinois Commerce Commission. Lawyers for the city closed their evidence on March 17, and the companies will have their turn on March 28. It has been hinted by some of the newspapers that an order will be entered early in April with a view to its effect in the primary elections of April 11.

Whether this order will be another attempt to fix a 5-cent fare, or a slighter reduction from the 8-cent fare, is uncertain.

Federal Judge Carpenter on March 17 announced that Master in Chancery Morrison would take evidence in the proceedings to determine whether the present injunction against the 5-cent fare order of the commission shall be made permanent. The city insisted that the courts fix a rate of fare, but Judge Carpenter said this responsibility lies with the commission and that he would only have authority to enjoin a confiscatory rate.

During the week ended March 18, Joseph V. Sullivan, assistant to the president of the Surface Lines, was called as a witness by the city. He produced tables showing wages for trainmen and rates of fare in a large number of cities. These showed that the Chicago company has the highest wage scale of any surface railway, fixed under a contract which is being continued from month to month while negotiations are progressing with the union. It was also shown that there were practically as many increases as there were decreases in rates of fare since last November, although the city had contended that all rates were going down.

E. H. Morgan, superintendent of schedules, was another company employee introduced as a witness for the city. He was examined at length on working conditions and their bearing on time tables. He showed that the most onerous of present conditions on the surface lines had been fixed by arbitrators and said he could not tell how the terms fixed in other cities would work out in Chicago.

Among the witnesses for the city was R. A. Cahn of the United States Bureau of Labor Statistics. Mr. Cahn stated that cost of living had decreased 19.7 per cent in Chicago since June, 1920. Representatives of the trainmen's union attended all sessions and it is expected they will ask to be heard before the case closes.

598 Cities Have Increased Fares

The average rate of fare charged by electric railways, based on rates in effect in 275 cities of more than 25,000 population, was 7.37 cents on March 1, 1922. In December, 1917, the average rate of fare was 5.09 cents; in Decem-

ber, 1918, 5.72 cents; in December, 1919, 6.25 cents; in June, 1920, 7.23 cents, and in November, 1921, 7.46 cents. These figures are based on statistics compiled by the information bureau of the American Electric Railway Association. A summary of compilation of cities in which fares have been changed brought down to March 1 follows:

SUMMARY OF COMPILATION OF CITIES IN WHICH FARES WERE CHANGED

Group		Number of Cities	Total Population	Average Population
*1	Ten-cent cash fare	140	8,602,869	61,449
2	Nine-cent cash fare	6	257,500	42,917
*3	Eight-cent cash fare	83	8,032,505	96,777
4	Eight-cent fare, one-cent transfer charge.....	26	1,741,124	66,966
5	Seven-cent zones..	7	333,684	47,669
6	Six-cent city zone, 1-cent charge for rides outside....	1	45,393	45,393
7	Six-cent city zone, Six-cent fare outside zones, 2-cent transfer charge.....	10	469,275	46,927
8	Seven-cent cash fare.....	169	8,996,529	52,233
9	Six-cent zones....	1	41,763	41,763
10	Six-cent zones, average length, 2 miles.....	1	60,203	60,203
11	Six-cent cash fare	103	5,656,255	54,915
12	Two five-cent zones	2	195,900	97,950
13	Five-cent city zone, five cents outside.....	14	312,362	22,312
14	Five-cent fare, additional charge for transfers....	7	7,212,754	1,030,393
15	Five-cent straight fare, reduced rates eliminated	21	777,135	37,007
16	Five-cent fare reduced from higher fare.....	7	184,157	26,308
	Total after deducting cities included in more than one group..	598	42,919,408	71,772

* The city of Chicago is included in both of these classes, the fare on the elevated lines being 10 cents and the surface lines 8 cents.

Transportation News Notes

Skip Stops Abandoned in Toledo.—The skip-stop plan will be abolished on the lines of the Community Traction Company, Toledo, Ohio, Commissioner Cann told the street railroad board of control at its monthly meeting on March 15. Cars will then stop at every street intersection except in a few instances where intersections are very close together. Signs will be put up to indicate just where cars stop at such points.

Issues Booklet of Schedules.—The Fort Wayne (Ind.) Service Corporation has issued a handy booklet of schedules on all its lines. It is so arranged that the reader may estimate at what time cars are due at any given point. Points of general information which will aid both passenger and company are included in the guide, the transfer system is explained, and the method of loading and unloading of passengers clarified. Fort Wayne is a city of 86,000. The weekly pass is in use in Fort Wayne.

Indianapolis Program Curtailed.—All that is left of the Indianapolis (Ind.) Street Railway re-routing and speeding

up program which the Board of Public Works undertook six weeks ago is the cross-town line in Thirty-fourth Street and Fairfield Avenue and the new route of the Riverside cars. The Board of Public Works lopped off another innovation recently when it ordered abandonment of twenty-minute cross-town service in Washington Street between Irvington and Mt. Jackson. The Indianapolis Street Railway submitted figures to show that in nine days there was an average of only thirty passengers a day on the line.

No Reduction in Fares.—At a recent hearing in Aberdeen, Wash., by the Public Service Commission, it was announced that no reduction in fares in either Aberdeen on the Grays Harbor Railway & Light Company, the local property, or Montesano would be ordered, or for intercity travel. The fare is 10 cents, or three tickets for a quarter for either city rides or intercity transportation. The hearing was called upon request of the Aberdeen City Council. E. V. Kuykendal, director of public works department, stated that there was indisputable evidence showing that there was a loss of \$36,000 in 1921, and on this showing an order for lower rates, if contested in the courts, would be set aside.

Springfield Crosstown Line Disputed.—A controversy has arisen in Springfield, Mass., over the location of the trolley approaches to the new Connecticut River bridge soon to be opened for use. The Springfield Street Railway has petitioned for a loop around Court Square Extension as the most feasible means of handling traffic without congestion of the business streets, and this proposal has the support of many business men. It is opposed by those who assert that it interferes with the plan to create a beautiful civic center. Several other plans are proposed. The company stresses the necessity of some means of connecting its East Side and West Side lines for through traffic.

Sale of Passes Increases.—The weekly pass system which has been inaugurated on the Fort Wayne city lines by the Indiana Service Corporation seems to have caught on well with the traveling public. During the first week 2,967 passes were sold and during the second week 3,546 passes were sold, making an increase of 579. The corporation has now made arrangements whereby the passes are on sale Saturdays, Sundays and Mondays by the operators of the cars. After Mondays the passes are on sale at local stores and at the light and power department of the company in the Utility Building. Some confusion has developed relative to transfers since the weekly pass was put into effect. It has, therefore, been announced by the company that transfers will not be issued to pass-holders and it is absolutely necessary that all passengers paying cash or tokens must request their transfers when they board the car. Otherwise transfers are not issued.

Personal Mention

A. E. Potter Is Club President

President of United Electric Railways
Heads New England Street
Railway Club

Albert E. Potter, president and general manager of the United Electric Railways, Providence, R. I., was elected president of the New England Street Railway Club on March 23. Mr. Potter is steeped in railway history and in railway management. He lives, eats and sleeps railway doings. And now as president of the New England club he will crowd more duties into an already active life.

And there is this to say about Mr. Potter. He will find time, in some superhuman way, even if to all unbelievers there is none. Moreover, he will do all his work with the left hand, so to speak, easily, nonchalantly, and lead you to believe that he has an hour or so to loaf with you.

It all amounts to this, that Mr. Potter



A. E. POTTER

is alive every minute. Whereas others may mentally die, and need to slough off their old skins, Mr. Potter is perpetually animated. He can, therefore, do twice as much in half the time.

For thirty-odd years Mr. Potter has been connected with the railways of Rhode Island. For the most part he has been officiating as general manager or president. In 1914 he was elected president of the Rhode Island Company, after serving as general manager of the company from 1906. In 1921, when the Rhode Island Company was reorganized, after more than a year of receivership, into the United Electric Railways, Mr. Potter was made president and general manager.

Mr. Potter showed his capabilities during the period that the Rhode Island Company was in the Slough of Despond. For then the public was criticizing the company and the Mellon control. But Mr. Potter's attitude was universally admired, and throughout the trouble he kept the public with him.

His father, who had been president of the traction lines for many years, had the same ability to work with the public. The names of Albert T. Potter and Albert E. Potter stand for right leadership to the people in territories which the lines serve.

Albert E. Potter has proved this fair-minded attitude over and over again in his association with the railway. He started his work in the track department of the Union Railroad, turned switches, directed cars in the congested areas, was everywhere at once to make the transportation system work efficiently. Then he was made superin-

E. J. Burdick Is Vice-President

General Manager of Detroit United
Railway Elected to Board
of Directors

Announcement of the appointment on March 11 of Ellsworth J. Burdick as vice-president and general manager of the Detroit (Mich.) United Railway will be received with great pleasure by his hosts of friends in the railway and engineering world. The advancement of Mr. Burdick again exemplifies the old saying that there is always room at the top for the hard and intelligent worker and doer.

Mr. Burdick received his early electrical training with the Brush Electric Manufacturing Company, Cleveland, Ohio, which he joined in 1889. Later he went to the Westinghouse company. In 1895 he went to Detroit to erect the electric machinery for the Everett-Moore syndicate, which was then entering the Detroit transportation field through what is commonly referred to in Detroit as the Pingree 3-cent lines.

Shortly after this came the consolidation of the railway systems in Detroit and Mr. Burdick was retained as one of the force in charge of the electrical and power distribution systems. In this work he came under the direct notice of such men as J. C. Hutchins, Albert H. Stanley and F. W. Brooks. These men were so impressed with Mr. Burdick's natural ability that he was used in special investigation work, particularly in the taking over of the many interurban lines that became a part of the extensive Detroit United System of nearly 1,000 miles of track.

In 1901 Mr. Burdick became superintendent of power and in the years that followed he continued the investigation of many of the problems arising in the company, so that his knowledge of his own particular field became supplemented by a fund of information of all the departments. In 1916 he was made assistant general manager, and gradually relieved Mr. Brooks, then president, of many arduous details, par-

tendent of conductors and motormen in 1895, and established his record for squareness. In 1900 he became superintendent of transportation, the first one to hold the office just created. As some one expressed it not long ago, all the superintendent of transportation has to do is everything the general manager doesn't do, and in addition, hire and discharge all employees, supervise operation of the roads, handle emergencies and keep the cars to schedule time. In 1906 he took R. I. Todd's place as general manager, and had his own chance to look at the superintendent's job from a different angle. After that, it was but a step to the president's chair, increased responsibilities, greater service, and more and more honors. And thus he became president of the New England Street Railway Club.

ticularly during the later years when Mr. Brooks' health began to fail.

At the annual meeting of the stockholders of the company in February of this year, when a considerable revision was made in the directorate of the company, Mr. Burdick was the unanimous choice for general manager of the prop-



E. J. BURDICK

erties. This appointment has since been followed by his election to the board of directors and to the vice-presidency. He remains general manager as well. The recent honors conferred on Mr. Burdick are not only gratifying to his many railway and engineering friends throughout the country but are particularly pleasing to his fellow workers in the Detroit United Railway.

Mr. Burdick has taken active part in the work of the American and the Central Electric Railway Associations. He is past-president of the Detroit Engineering Society, a member of the American Society of Mechanical Engineers and is a registered mechanical and electrical engineer in Michigan.

While Mr. Burdick is a tremendously vigorous worker, he is also a firm believer in recreation, which he finds at his summer home on Briggs' Lake, a two hours drive out of Detroit. There behind his house is his garden, while in the waters in front the finny tribe abounds.

B. R. T. Makes Appointments

John Weigel, Charles Johnson, Harry Dittmar Are Made Division Superintendents

The appointment of three division superintendents of the Brooklyn Rapid Transit Company, New York, N. Y., has been announced. John Weigel, assistant superintendent at DeKalb Avenue Depot, has been appointed division superintendent of Crosstown Division to take the place of J. J. Riley, who resigned on Nov. 30, 1921. Charles Johnson, assistant superintendent at Franklin Avenue Depot, has been raised to the rank of division superintendent of Franklin Avenue Division. Harry E. Dittmar, supervisor of the Power Saving Department, has been made division superintendent of DeKalb Avenue Division.

John Weigel, the new superintendent

assistant superintendent in charge at DeKalb Avenue Depot.

Charles Johnson, who was appointed division superintendent of Franklin Avenue Division on Jan. 15, has been in the employ of the company for nearly twenty-nine years and more than twenty-seven years of this time he has spent in one depot, Bergen Street, in various capacities. He entered service at Bergen Street Depot as a conductor in March, 1893. He was successively motorman, register taker, inspector and chief inspector of the Central Division. He also held the posts of night depot master and day depot master and just before his new position, he had that of assistant superintendent of Franklin Avenue Depot.

Harry E. Dittmar, division superintendent of DeKalb Avenue Division, has been with the company for more than sixteen years. His first position was

sociation of Claim Agents. The association has as members claim agents of steam railroads, electric railways and power companies.

L. T. Peck, for many years president of the Honolulu Rapid Transit & Land Company, Honolulu, H. I., has retired from that position. A. L. Castle, formerly secretary of the company, has been elected president to succeed Mr. Peck. Mr. Peck continues with the company as chairman of the board.

E. G. Connette, president of the United Gas & Electric Corporation, was recently elected a director of the White Oil Corporation. W. B. Emmert, a vice-president of the United Gas & Electric Engineering Corporation, of which Mr. Connette is also president, was elected a director of the White Oil Company at the same time. George Bullock, who is connected with the



H. E. DITTMAR



JOHN WEIGEL



CHARLES JOHNSON

at Crosstown, is a man of wide and varied experience in street railroading. He started upon his career as a railroader in 1896, when he went to work as a motorman at Fifty-eighth Street Depot. By the end of 1897 he became an inspector and in the following year he was made general inspector for the whole Surface Transportation Department.

In 1899, Mr. Weigel was appointed assistant superintendent of Canarsie Depot and a year later he was made chief of the time-table department, a position he held for more than fifteen years. In 1916 he resigned to enter the employ of the United Gas & Electric Engineering Corporation, Manhattan. For this corporation he spent one year in traveling to inspect the various properties in which the corporation was interested. One of its properties was the International Railway, which operates in Buffalo, Niagara Falls and Lockport, and in 1917 Mr. Weigel was made general superintendent of this company with headquarters in Buffalo.

Mr. Weigel, after severing his connection with the United Corporation and its properties in 1920, spent six months doing special work for various railway companies, among them the Lancaster Railway, the Elmira Railway and the Boston Elevated Railroad.

From September, 1920, to his present appointment, Mr. Weigel has been

that of motorman at Maspeth Depot, in 1905. Four years later he became a register inspector and in 1912 a special inspector and was assigned to the Timetable Department.

Mr. Dittmar was made supervisor of headways in 1920, and later that year he was made assistant superintendent in charge at Maspeth Depot. On Jan. 1, 1921, he was appointed supervisor of the power saving department, in which capacity he was serving when his recent appointment as division superintendent at DeKalb Avenue Division took effect.

Col. H. H. Dean has been appointed district counsel of the Georgia Railway & Power Company, Atlanta, Ga. He has been with the company for several years, and will now have charge of cases in the northeastern Judicial Circuit.

Marion B. Bracken, assistant to the chief of the claim department of the United Railways, St. Louis, Mo., has been with this department of the company for twenty-five years. Members of the company gave a banquet in his honor recently to celebrate his excellent service.

L. F. Wynne, general claim agent of the Georgia Railway & Power Company, Atlanta, Ga., was recently elected vice-president of the Southeastern As-

United Gas & Electric Company, was made a director also.

J. C. Walter is now master mechanic of the Danville Street Railway & Light Company, Danville, Ill. He has been with the Illinois Traction System, Peoria, which owns the Danville company, for eleven years, beginning as freight car repairman. He became successively chief freight car inspector and general foreman of the passenger car department.

Obituary

Edward H. Ives, assistant general superintendent of the Detroit (Mich.) United Railway, died on March 19 as a result of injuries received when an interurban train of the Detroit United Company struck the automobile which he was driving.

E. H. Sellers, for many years chairman of the tramways committee of Huddersfield, England, died recently. His position on the board of aldermen as chairman of the tramways committee placed him practically as the operating head of the Huddersfield Corporation Tramways. During the war his duties were extremely arduous.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Census Bureau's First Report on Lumber Prices

The first report on mill prices of lumber was issued the middle of February by the Bureau of Census of the Department of Commerce. It gives an average of the prices of actual sales of lumber at the mills. The reports were obtained by the Bureau of the Census directly from the mills. Each item price published is a simple average of the prices reported on that item.

The 1919 average, the 1920 average

began early in May and was completed in August, these being the first meters to be placed in use having the car-inspection dials of the present design. An article on this installation appeared in the ELECTRIC RAILWAY JOURNAL for Feb. 19, 1921.

From the experience on this one division over a period of eighteen months' operation, the company was convinced by October, 1921, of the value of the meters and was ready to extend their use over the entire system. But

AVERAGE MILL PRICES PER THOUSAND FEET

	Southern Pine		Douglas Fir		No. 2 V. G. Flooring
	No. 1 Common 2 in. x 4 in. x 16 ft. SISIE	B and Better Flat Grain Flooring 1 in. x 4 in.	No. 1 Common 2 in. x 4 in. x 12 ft.—14 ft. SISIE		
1919 average.....	\$38.51	\$49.82	\$22.48		\$48.27
1920 average.....	48.41	73.56	26.73		62.64
1921 October.....	25.55	43.93			
November.....	29.50	47.80	11.72		49.84
December.....	29.91	49.01	13.36		50.58

	Northern Pine		Red Cypress	Hemlock
	No. 1 Common 2 in. x 4 in. x 12 ft.—16 ft. SISIE	No. 1 Common Flat Grain Flooring	No. 1 Common Flat Grain Flooring	No. 2 Common
1919 average.....	\$43.33	\$59.75	\$49.50	\$32.24
1920 average.....	44.33	73.33	65.83	42.94
1921 October.....	24.00	65.00		20.34
November.....	28.83	65.63	43.50	22.65
December.....			43.38	

and October, November and December, 1921, figures are given for ten representative items of Southern pine, Northern pine and red cypress, respectively; for nine items of Douglas fir and three of hemlock.

Hardwood prices as given are from Northern mills only, the majority of which are located in Wisconsin and Michigan.

P. R. T. Buys 2,181 More Meters

The Philadelphia (Pa.) Rapid Transit Company has contracted with the Economy Electric Devices Company for what is probably the largest single order for power-saving devices ever placed. This comprises 2,181 Sangamo Economy watt-hour meters having the power-saving and car-inspection dials. It will provide a complete equipment for all the surface cars and principal utility cars owned by the company.

The study of power-saving devices by this company began as far back as the fall of 1917. This led up to a forty-five-car competitive test in the spring of 1919. The savings which were effected on this occasion evidently satisfied the company as to the merit of the watt-hour meter, for an order for 310 meters was placed in February, 1920. These meters made a complete equipment for the cars of the Callowhill division. The installation of the meters

to make sure that there were no new developments which could better the showing made by the meters, another competitive test was conducted on two representative routes with different groups of cars on each route. The devices were masked and normal figures of power consumption were first obtained. Then the power-saving test was started early in December and lasted until Christmas. The test satisfied the company as to the efficiency of the Economy meter in inducing savings under the severe operating conditions imposed by Christmas traffic and winter weather, as the order for the complete equipment of the entire system followed.

Proposed Merger of Machine Tool Manufacturers

A rumor has been rife for several weeks of the merger of several leading machine tool manufacturing companies. It is now possible to announce that the plans for the merger have finally been completed, and while the name of the new corporation has not definitely been decided upon an official announcement will probably be made shortly. The new company will be not only one of the largest machine tool organizations, but one of the largest mergers of machinery manufacturing concerns that has ever been formed.

The companies included in the merger

are the Lodge & Shipley Machine Tool Company, the Carlton Machine Tool Company, Newton Machine Tool Works, Inc., Betts Machine Company, the Colburn Machine Tool Company, Hilles & Jones Company, Modern Tool Company, and Dale Machinery Company.

Bulletin on Coal Supply Issued

The Coal Bureau of the Natural Resources Department of the Chamber of Commerce of the United States recently issued a bulletin giving an analysis of the coal situation, the purpose of which is to give business men information regarding possible fuel supplies in the event of a strike of miners on April 1. The bulletin concludes with a summary of statements from 648 typical retail dealers showing the days' supply of coal usually carried by them on April 1 and also in the hands of various classes of consumers.

Pacific Electric Purchases New Equipment

President Paul Shoup of the Pacific Electric Railway, Los Angeles, Cal., has advised the California Railroad Commission that he had ordered fifty new cars required by the commission at the time of the readjusted fares. The cars ordered are of all-steel construction and will have center entrances. Each will have a seating capacity of sixty-five passengers.

The cars will be used exclusively on the Hollywood line in accordance with the commission's order. They will supplant cars of the old type. The equipment has been ordered from the St. Louis Car Company and the Westinghouse Manufacturing Company and will cost \$800,000. The contracts call for delivery within four months and the cars will be put in service as soon as they are received and equipped for operation.

With the cost of new equipment just purchased, cost of the new subway construction and acquisition of additional rights-of-way for this improvement, the Pacific Electric Railway will during the year 1922 have made a capital expenditure of approximately \$3,000,000 in additions and betterments to its service.

Metal, Coal and Material Prices

Metals—New York		March 21, 1922
Copper, electrolytic, cents per lb.....		12.875
Copper wire base, cents per lb.....		14.125
Lead, cents per lb.....		4.725
Zinc, cents per lb.....		5.037
Tin Straits, cents per lb.....		29.00

Bituminous Coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.....		\$4.575
Somerset mine run, Boston, net tons.....		1.875
Pittsburgh, mine run, Pittsburgh, net tons		2.00
Franklin, Ill., screenings, Chicago, net tons		1.925
Central, Ill., screenings, Chicago, net tons		1.75
Kansas screenings, Kansas City, net tons		2.50

Materials		
Rubber-covered wire, N. Y. cents per lb....		5.90
Weatherproof wire base, N. Y., cents per lb.		15.50
Cement, Chicago net prices, without bags...		1.94
Linseed oil, (5-bbl. lots), N. Y., cents per gal.		89.00
White lead, (100-lb. keg), N. Y., cents per lb.		12.25
Turpentine (bbl. lots), N. Y., cents per gal.		85.00

Rolling Stock

Savannah (Ga.) Electric & Power Company has ordered thirty one-man cars, planning to reduce its operating expenses.

Southern Pacific Company, Portland, Ore., has just received twelve new electric cars which cost approximately \$400,000. These are being assembled at the Beaverton shops and will be used for service on the Southern Pacific electric lines in Oregon.

Interstate Public Service Company, Indianapolis, Ind., has ordered from the Cincinnati Car Company the five light-weight, one-man, interurban cars referred to in the ELECTRIC RAILWAY JOURNAL for March 11. These will be used to give suburban service between New Albany and Jeffersonville, Ind., and Louisville, Ky.

Track and Roadway

Brockton & Plymouth Street Railway, Plymouth, Mass., within the next few weeks expects to rebuild two miles of track.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col., will rebuild three to five miles of track using new ties and rails.

Meridian Light & Railway Company, Meridian, Miss., is extending its East End Thirteenth Street line from Sixteenth Avenue north to connect with the Ninth Avenue line.

Savannah (Ga.) Electric & Power Company is planning to spend \$375,000 in improvements during 1922. Last year the company spent about \$120,000 in extensions and improvements.

Eastern Wisconsin Electric Company, Sheboygan, Wis., has been granted permission by the city to extend its track on the south side of the city. About a mile of line will be installed.

Calgary, Alta.—The street railway department in charge of the local municipal railway has applied to the City Commissioners for authority to call for tenders for thirty-five tons of steel rails to be used on Centre Street.

Tri-City Railway, Davenport, Iowa, will soon start in on its Fifteenth Street paving project and will put in new rails. The improvement will cost more than \$100,000. At the same time the city will start work on its part of the paving program.

Chicago & Joliet Electric Railway, Joliet, Ill., expects to rebuild 5,700 ft. of double track, paved with brick, on its interurban line through the city of Lockport within the next ninety days. No material has as yet been purchased for this job.

Pacific Electric Railway, Los Angeles, Cal., expects soon to authorize the double tracking of its line on Broadway between Olive and Bonito Avenues. The tracks will cross those of the Salt Lake

Railroad. The company will begin soon to negotiate for a franchise covering this improvement.

Cape Fear Railways, Inc., Fayetteville, N. C., expects to start work on the extension to Camp Bragg soon, in order that construction may be completed by June 1. Cross ties and rails have already been purchased and construction has been started at the Camp Bragg end.

Trenton & Mercer County Traction Corporation, Trenton, N. J., proposes to lay a spur track from its power house on Lincoln Avenue and place cables underground. This will affect thirteen land owners who own the strip, 40 ft. x 20 ft., which is desired by the company. Justice Trenchard in the New Jersey Supreme Court has appointed three commissioners to appraise this strip of land, located on Seward Avenue.

Arkansas Valley Interurban Railway, Wichita, Kan., is making track connections at Hutchinson with the steam roads, at an expenditure of about \$25,000 and involving about $\frac{3}{4}$ mile of track. Track connections are also being made at Sedgwick at an expense of several thousand dollars. A new steel concrete bridge is to be built soon, at a cost of about \$5,000, which will make practically every bridge on the line steel concrete.

Power Houses, Shops and Buildings

Ohio Electric Railway, Lima, Ohio, will have to construct substations at Yoder, New Hampshire and Huntsville owing to a change in the cycle of current.

Philadelphia, Pa.—The Director of City Transit has announced that sealed proposals for "cable connections for Power Feed and Negative Return, Contract 644" and for constructing an "Addition to the Car Inspection Shop in the Bridge Street Yard, Contract 648" for the Frankford Elevated Railway will be received at the Director's office until Thursday, March 30.

Arkansas Valley Interurban Railway, Wichita, Kan., is constructing a new brick concrete station at Halstead, which with some track connections will cost about \$8,000. Contract has been let for this improvement. The company is also proposing to build an addition to its shops during this summer, also putting in some six miles of additional feeder wire from one of its substations.

Los Angeles (Cal.) Railway has placed orders for new electrical equipment to be used in two new substations involving an expenditure of approximately \$250,000. The substations will be located in the southwest section and northwest area respectively. The new stations will operate automatically like the Vernon and Garvanza stations, which have been referred to previously. The machinery will be furnished by the General Electric Company.

Trade Notes

McClellan & Junkersfeld, Inc., New York, N. Y., have been engaged as engineers and constructors for the new power plant which the Union Electric Light & Power Company is building on the Illinois side of the Mississippi River, south of the city limits of East St. Louis.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has appointed C. E. Skinner, manager research department, as assistant director engineering in that company. His duties as assistant director will cover research, standards and other work along these lines. He will be located in the main engineering offices at East Pittsburgh.

E. C. Stockdale, general sales manager of Page & Hill Co., with offices in Chicago, recently resigned. It is understood that the sales of the company will be directed from the home office in Minneapolis in the future. W. D. Schneider has been appointed manager of the Chicago office of the company with sales jurisdiction over Illinois, Indiana and Ohio, and the southern half of Wisconsin.

Diamond Power Specialty Corp., Detroit, Mich., has taken over the business and plant of the Diamond Power Specialty Company, which formerly conducted the Diamond Soot Blower business. Norman L. Snow, formerly of the Terry Steam Turbine Company, has been elected president and treasurer of the new company. Mr. Snow is a graduate of Yale Scientific School and Massachusetts Institute of Technology, and has been in the power plant field for the past eighteen years.

Daniel E. Costigan, late captain and inspector of police in New York, who recently retired from the Police Department, has established a private detective agency in the Mills Building, 15 Broad Street, New York. Captain Costigan has been recognized as a man of exceptional ability by such police commissioners as the late Theodore Roosevelt, General Bingham and General E. V. Greene, and his cognomen in New York has been "Honest Dan." He is prepared to undertake public utility business.

New Advertising Literature

The Martindale Electric Company, Cleveland, Ohio, has issued a new four page circular on Commutator Grinding and Slotting, which fully describes its Imperial Commutator Stones and other devices for undercutting mica.

Century Wood Preserving Company, Pittsburgh, Pa., has just issued a bulletin on storing and seasoning railway ties. This gives information on air and steam seasoning and the factors influencing the type of seasoning used. Information is also given in connection with the handling of ties in storage.

PEACOCK BRAKES

Needed for New Cars

It's not so much the car itself as the equipment on it, that makes or mars the maintenance records. Because the modern car must be lighter, more efficient and more economical to maintain, it follows that every piece of equipment must be specified with technical discrimination.

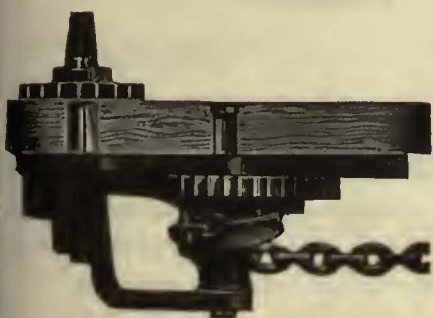
We are in a position to know what hand brake is best suited for any particular type of car. For over eighteen years we have been making just one thing—a leading class of hand brake equipment for steam and electric railways.

Every Peacock Brake has those three essential qualities of a suitable brake fully developed—*most rapid action, great power and ample capacity*. The Peacock Staffless, our especial development for the safety car, has three times the power of the ordinary hand brake, occupies less platform space, and is an absolute assurance of real safety for emergency use.

The lower maintenance of Peacock Brakes is in itself sufficient incentive for their use. Investigate—then specify.



Peacock Staffless



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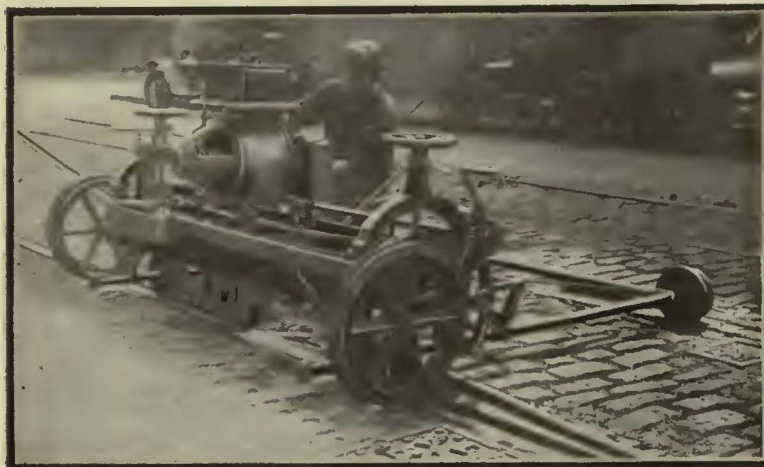


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A 155 lb. high capacity resistance welder, especially designed and built for efficient maintenance of railway track.

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*Don't delay that track rehabilitation
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ATLAS Rail Grinder

An efficient rotary grinder, high speed, light and suitable for working under heavy traffic conditions.



RECIPROCATING Track Grinder

Unsurpassed for removing all trace of corrugations from straight and curved track.

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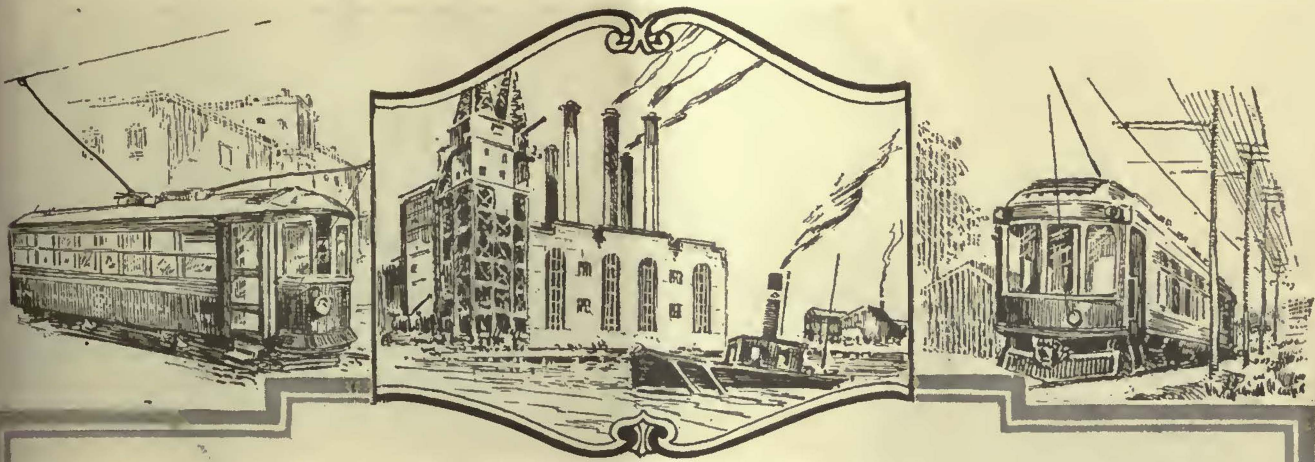
Chas. N. Wood Co., Boston.

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AGENTS:



Which Came First the Chicken or the Egg?



MANY cracker box philosophers have wrangled this deep question with no solution.

HERE'S ANOTHER ONE—

Which comes first,—the lubricating oil or the machine that uses it?

The answer is: It depends.

In the old hit or miss days of lubrication, a machine was erected, and then there was a scurrying around to find an oil that would work on it.

Unfortunately some of this primitive practice exists today.

But because of the evolution of Lubrication Engineering (and with due modesty we say this) largely through the example set by the alert body of men who comprise the staff of Texaco Lubrication Engineers, the old way is passing.

You may be interested to know that often—very often we co-operate with equipment or

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We give them scientific advice. We tell them the right grade of Texaco Lubricating Oil to use—even before the unit is built.

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From the very first we give you the proper lubricant, in the right amount, for every bearing, gear or mechanism—on rolling stock—or in power plant or sub-station.

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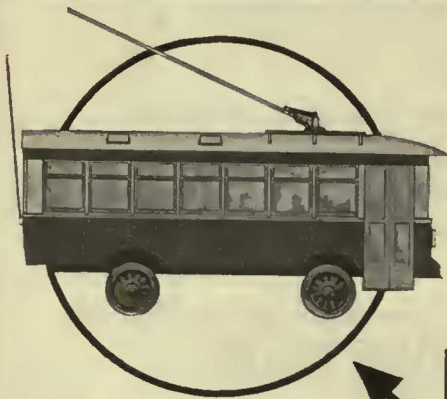
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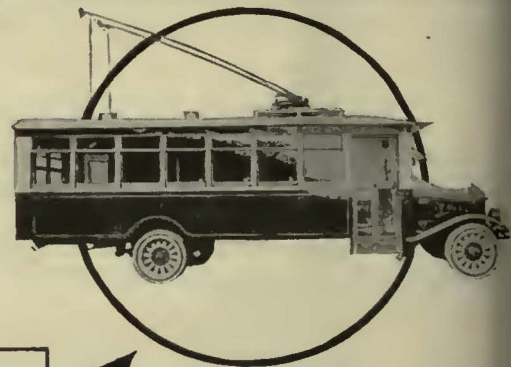
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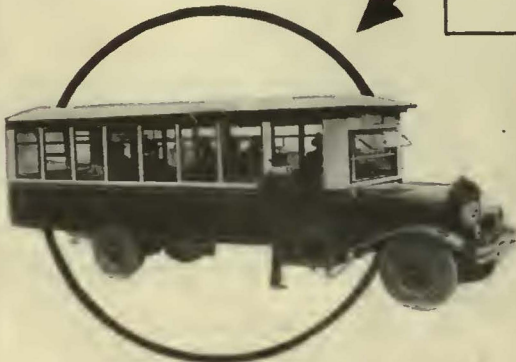


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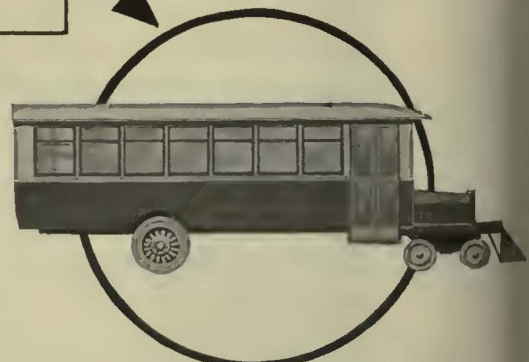


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St. Louis Car Co.
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*Birthplace of the
Safety Car*

Write for Bulletin No. 99.



Gas motorrailcar

Gehennah



Buddhism holds that the man who kills a fish is doomed to Gehennah's fanciest punishment.

That's what happens when *fish* and *flesh* have gone *a-foul*.

They don't stipulate what the punishment is, but it is probably something like this:

Man is placed at machine operating sweetly with Morganite brushes

—man higher up says "we've got to buy cheaper brushes"—and does

—then operator is told that he must operate machines just as sweetly with cheap brushes

—well, of course, it can't be done, so that's the heluvit.

Morganite Brush Co., Inc.

Main Office and Factory:
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Fifty Years of Service is a Conservative Expectation.

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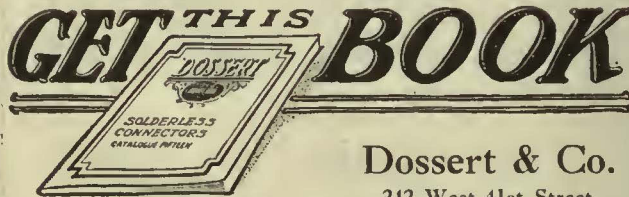


Making solderless connections 2-way, showing detail

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The Dossert Solderless, is the standardized method of making electrical connections—because the Dossert Tapered Sleeve principle is the accepted method of giving better conductivity at the joint than in the wire itself.

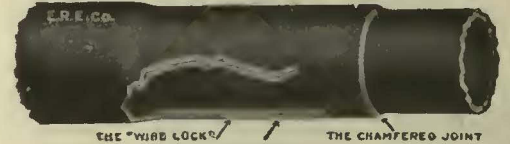
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COMBINE

Lowest Cost **Lightest Weight**
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Catalog complete with engineering data sent on request.

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Manufacturers of
Electric Wires and Cables of all kinds;
also Cable Terminals, Junction Boxes, etc.

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Single-track block-signal protection
Double-track spacing and clearance signals
Protection at intersections with wyes
Proceed signals in street reconstruction work

United States Electric Signal Co.
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Rail Bonds and Trolley Line Specialties

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Electrical
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Peirce Forged Steel Pins with Drawn Separable Thimbles

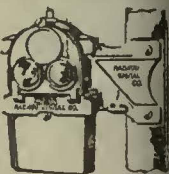
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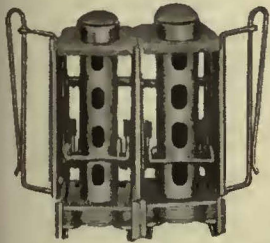
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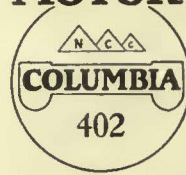
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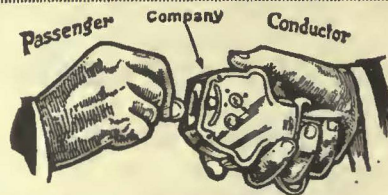
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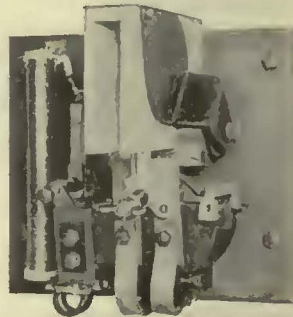
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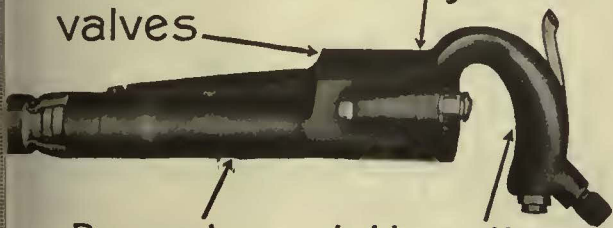
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Westinghouse E. & M. Co.
Compressors, Air
Allis-Chalmers Mfg. Co.
General Electric Co.
Ingersoll-Rand Co.
Westinghouse Tr. Br. Co.
Concrete Reinforcing Bars
Cambria Steel Co.
Midvale Steel & Ordnance Co.
Condensers
Allis-Chalmers Mfg. Co.
General Electric Co.
Ingersoll-Rand Co.
Westinghouse E. & M. Co.
Connectors, Solderless
Dossert & Co.
Frankel Connector Co.
Westinghouse E. & M. Co.
Connectors, Trailer Car
Consolidated Car Heating Co.
Electric Service Sup. Co.
Controllers or Parts
Allis-Chalmers Mfg. Co.
Automatic Reclosing Circuit Breaker Co.
Columbia M. W. & M. I. Co.
General Electric Co.
Westinghouse E. & M. Co.
Controller Regulators
Electric Service Sup. Co.
Controlling Systems
General Electric Co.
Westinghouse E. & M. Co.
Converters, Rotary
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse E. & M. Co.
Conveying and Hoisting Machinery
American Bridge Co.
Columbia M. W. & M. I. Co.
Copper Wire
Anacanda Copper Min. Co.
Cord Adjusters
Nat'l Fibre & Insulation Co.
Cord, Bell, Trolley, Register, etc.
Brill Co., The J. G.
Electric Service Sup. Co.
Internat'l Register Co., The
Roebing's Sons Co., J. A.
Samson Cordage Works
Silver Lake Co.
Cord Connectors and Couplers
Electric Service Sup. Co.
Samson Cordage Works
Wood Co., Chas. N.
- Couplers, Car**
Amer. Steel Foundries
Brill Co., The J. G.
Ohio Brass Co.
Westinghouse Tr. Br. Co.
- Cranes**
Allis-Chalmers Mfg. Co.
Cross Arms (See Brackets)
Crossing Foundations
International Steel Tile Co.
Crossing Signals (See Signals, Crossing)
Crossings, Frog and Switch
Wharton, Jr. & Co., Wm.
Crossings, Track (See Track, Special Work)
Crushers Rock
Allis-Chalmers Mfg. Co.
Calverts
Canton Culvert & Silo Co.
- Curtains and Curtains Fixtures**
Brill Co., The J. G.
Electric Service Sup. Co.
Morton Mfg. Co.
St. Louis Car Co.
Cutouts
Johns-Manville Inc.
Dealers' Machinery
Archer & Baldwin
Electric Equipment Co.
Derailing Devices (See also Track Work)
Wharton, Jr. & Co., Wm.
Destination Signs
Columbia M. W. & M. I. Co.
Electric Service Sup. Co.
Detective Service
Wish Service, P. Edward
Dogs, Lathie
Williams & Co., J. H.
Door Operating Devices
Con. Car Heating Co.
Nat'l Pneumatic Co. Inc.
Doors and Door Fixtures
Brill Co., The J. G.
General Electric Co.
Doors, Folding Vestibule
Nat'l Pneumatic Co., Inc.
Draft Rigging (See Couplers)
Drills, Rock
Ingersoll-Rand Co.
Drills, Track
American Steel & Wire Co.
Electric Service Sup. Co.
Ingersoll-Rand Co.
Ohio Brass Co.
Dryers, Sand
Electric Service Sup. Co.
Electrical Wires and Cables
Amer. Electrical Works
American Steel & Wire Co.
Roebing's Sons Co., J. A.
Engineers, Consulting, Con-tracting and Operating
Alison & Co., J. R.
Archbold-Brady Co.
Arnold Co., The
Beeler, John
Byllesby & Co., H. M.
Day & Zimmermann
Engel & Hevenor, Inc.
Feustel, Robert M.
Ford, Bacon & Davis
Gould, L. E.
Hemphill & Wells
Holst, Englehardt W.
Jackson, Walter
Kelley, Kocic & Co.
Parsons, Klapp, Brinkerhoff & Douglas
Richey, Albert S.
Sanderson & Porter
Sangster & Matthews
Smith & Co., C. E.
Spooner & Merrill
Stoos & Webster
White Engineering Corp., The J. G.
Witt, Peter
Engines, Gas, Oil or Steam
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Ingersoll-Rand Co.
Westinghouse E. & M. Co.
Fare Boxes
Cleveland Fare Box Co.
Economy Elec. Devices Co.
Johnson Fare Box Co.
National Ry. Appliance Co.
Fences
Cambria Steel Co.
Midvale Steel & Ordnance Co.
Fences, Woven Wire and Fence Posts
American Steel & Wire Co.
Fenders and Wheel Guards
Brill Co., The J. G.
Cleveland Fare Box Co.
Electric Service Sup. Co.
Fibre and Fibre Tabling
Continental Fibre Co.
Johns-Manville Inc.
Nat'l Fibre & Insulation Co.
Westinghouse E. & M. Co.
Field Collis (See Coils)
Fire Extinguishers
Johns-Manville Inc.
Fluoridights
Electric Service Sup. Co.
Flooring Composition
Amer. Mason Safety Tread Co.
Johns-Manville Inc.
Western Electric Co.
Floor Plates
Amer. Abrasive Metals Co.
Frog
Cambria Steel Co.
Columbia M. W. & M. I. Co.
Midvale Steel & Ordnance Co.
Standard Steel Works Co.
Williams & Co., J. H.
Frogs, Track
(See Track Work)
- Funnel Castings**
Wharton, Jr. & Co., Wm.
Fuses and Fuse Boxes
Columbia M. W. & M. I. Co.
Consolidated Car Heating Co.
General Electric Co.
Johns-Manville Inc.
Westinghouse E. & M. Co.
Williams & Co., J. H.
Fuses, Refillable
Columbia M. W. & M. I. Co.
General Electric Co.
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Ohio Brass Co.
- Gaskets**
Johns-Manville Inc.
Power Specialty Co.
Westinghouse Tr. Br. Co.
- Gasolene Torches**
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- Gas-Electric Cars**
General Electric Co.
- Gas Producers**
Westinghouse E. & M. Co.
- Gates, Car**
Brill Co., The J. G.
- Gear Blanks**
Cambria Steel Co.
Midvale Steel & Ordnance Co.
Standard Steel Works Co.
- Gear Cases**
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Electric Service Sup. Co.
Westinghouse E. & M. Co.
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General Electric Co.
National Ry. Appliance Co.
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Too Steel Gear & Pinion Co.
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General Electric Co.
- Generators**
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General Electric Co.
Westinghouse E. & M. Co.
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Railway Track-work Co.
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- Guards, Trolley**
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Ohio Brass Co.
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- Hammers Pneumatic**
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- Harns, Trolley**
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Electric Service Sup. Co.
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General Electric Co.
Ohio Brass Co.
St. Louis Car Co.
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Consolidated Car Heating Co.
Economy Elec. Devices Co.
Gold Car Heating & Light-ing Co.
National Ry. Appliance Co.
Smith Heater Co., Peter
- Heaters, Car, Hot Air or Water**
Smith Heater Co., Peter
- Heaters, Car (Stove)**
Electric Service Sup. Co.
Smith Heater Co., Peter
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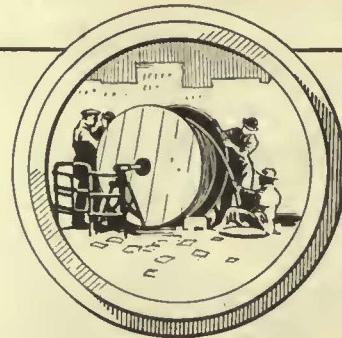
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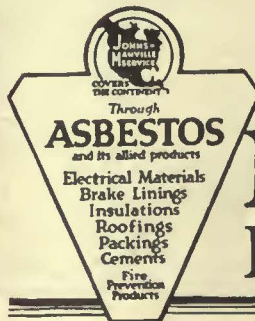
1. The Bond Market is eagerly absorbing Public Utility securities as rapidly as they are offered. Money is no longer difficult to secure for capital expenditures by Central Stations.
2. Many cities are conducting campaigns of public improvement in order to assist in reducing the number of unemployed workers. This municipal work means, in part, new pavements. It is always wise, as a matter of good financial judgment and public policy, to lay extra duct lines before new pavements are placed, so that it will not be necessary to disturb the new street surface for several years.
3. Labor of the type used in underground construction is available at satisfactory rates.
4. Materials used in duct lines are at very low prices. Fibre conduit is back to its 1914 price. Portland cement is approximately at its 1916 price.

This summary of fundamental conditions represents our judgment of the outlook in the underground construction field in 1922. We further believe we should honestly counsel buyers of Fibre Conduit to get their inquiries into the hands of responsible producers as early as possible.

The present low prices of Fibre Conduit and the unusual spring demand now expected make early action a wise course for buyers who will require prompt service.

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 General Electric Co.
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 Ohio Brass Co.

Lanterns, Classification
 Nichols-Lintern Co.

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 Ohio Brass Co.
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 Electric Service Sup. Co.
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 Hubbard & Co.
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 Ohio Brass Co.
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 Texas Company, The

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 Texas Company, The

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Machine Work
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Manganese Steel Special Track Work
 Wharton, Jr., & Co., Wm.

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 Economy Elec. Devices Co.

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Motor Leads
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 Electric Service Sup. Co.
 Wood Co., Chas. N.

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Omnibuses (See Buses, Motor)

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 General Electric Co.
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 Electric Service Sup. Co.
 Ohio Brass Co.
 Westinghouse Tr. Br. Co.

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 Power Specialty Co.
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 Westinghouse Tr. Br. Co.

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 Electric Service Sup. Co.

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 Hubbard & Co.

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 Bates Exp. Steel Truss Co.
 Electric Ry. Equip. Co.
 Hubbard & Co.

Poles, Trolley
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 Electric Service Sup. Co.
 Nuttall Co., R. D.

Poles, Tubular Steel
 Electric Ry. Equip. Co.
 Elec. Service Supplies Co.

Poles and Ties Treated
 Duncan Lumber Co.

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 Economy Elec. Devices Co.
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 Ingersoll-Rand Co.
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 Ingersoll-Rand Co.

Punches, Ticket
 Bonney-Vehslage Tool Co.
 Internat'l Reg. Co., The
 Wood Co., Chas. N.

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 Rail Welding & Bonding Co.
 Ry Track-work Co.

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 Electric Service Sup. Co.
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 McGuire-Cummings Mfg. Co.
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 Internat'l Reg. Co., The
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 Electric Service Sup. Co.

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 General Electric Co.
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 Electric Service Sup. Co.

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Resistance, Wire and Tube
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 Westinghouse E. & M. Co.

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 Westinghouse E. & M. Co.

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 Columbia M. W. & M. I. Co.
 Electric Service Sup. Co.
 Nichols-Lintern Co.
 Ohio Brass Co.
 St. Louis Car Co.

Sash Fixtures, Car
 Brill Co., The J. G.

Scrapers Track (See Cleaners and Scrapers, Track)

Seating Materials
 Brill Co., The J. G.

Seats, Car (See also Rattan)
 Amer. Rattan & Reed Mfg. Co.
 Brill Co., The J. G.
 St. Louis Car Co.

Second-Hand Equipment
 Archer & Baldwin
 Electric Equipment Co.

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 Hale & Kilburn Corp.
 Pantasote Co.

Shovels
 Allis-Chalmers Mfg. Co.
 Brill Co., The J. G.
 Hubbard & Co.

Side Bearings (See Bearings, Center and Side)

Signals, Car Starting
 Con. Car Heating Co.
 Electric Service Sup. Co.
 Nat'l Pneumatic Co., Inc.

Signals, Indicating
 Nichols-Lintern Co.

Signal Systems, Block
 Electric Service Sup. Co.
 Nachod Signal Co., Inc.
 U. S. Electric Signal Co.
 Wood Co., Chas. N.

Signal Systems, Highway Crossing
 Nachod Signal Co., Inc.
 U. S. Electric Signal Co.

Slack Adjusters (See Brake Adjusters)

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 Anderson Mfg. Co., A. & J. M.
 Columbia M. W. & M. I. Co.
 Electric Ry. Equip. Co.
 Elec. Service Supplies Co.
 More-Jones Br. & Metal Co.
 Nuttall Co., R. D.

Smaketacks, Car
 Nichols-Lintern Co.

Snow-Plows, Sweepers and Brooms
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 Brill Co., The J. G.
 Columbia M. W. & M. I. Co.
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 Frankel Connector Co.

Spikes
 Amer. Steel & Wire Co.

Splicing Composites
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 Amer. Steel Foundries
 Amer. Steel & Wire Co.
 Bemis Car Truck Co.
 Brill Co., The J. G.
 Standard Steel Works Co.
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 Brill Co., The J. G.
 St. Louis Car Co.

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Steels and Steel Products
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 Morton Mfg. Co.

Steps, Car
 Amer. Abrasive Metals Co.
 Amer. Mason Saf. Tread Co.
 Morton Mfg. Co.

Stokers, Mechanical
 Babcock & Wilcox Co.
 Westinghouse E. & M. Co.

Storage Batteries (See Batteries, Storage)

Strand
 Roebbling's Sons Co., J. A.

Structural Steel
 Cambria Steel Co.
 Midvale Steel & Ordnance Co.

Superheaters
 Babcock & Wilcox Co.

Power Specialty Co.

Sweepers, Snow (See Snow Plows, Sweepers and Brooms)

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Switch Stands
 Ramapo Iron Works
 Switches, Selector
 Nichols-Lintern Co.

Switches, Track (See Track Special Work)
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 Electric Service Sup. Co.
 General Electric Co.
 Johns-Manville, Inc.
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Telephones and Parts
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 Elec'l Testing Laboratories
 Testing Instruments (See Instruments, Electrical Measuring, Testing, etc.)

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 Automatic Reclosing Circuit Breaker Co.
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 Railway Utility Co.
 Smith Heater Co., Peter

Ticket Choppers and Destroyers
 Electric Service Sup. Co.

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 Midvale Steel & Ordnance Co.

Ties and Tie Rods, Steel
 American Bridge Co.
 Barbour-Stockwell Co.
 International Steel Tie Co.

Ties, Wood Cross (See Poles, Ties, etc.)

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 Midvale Steel & Ordnance Co.

Tools, Thread Cutting
 Williams & Co., J. H.

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 N. Y. Switch & Crossing Co.
 Ramapo Iron Works
 Wharton, Jr., & Co., Wm., Inc.

Transfer Tables
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 General Electric Co.
 Westinghouse E. & M. Co.

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 Amer. Mason Saf. Tread Co.
 Morton Mfg. Co.

Trolley Bases
 Anderson Mfg. Co., A. & J. M.
 Electric Service Sup. Co.
 General Electric Co.
 Nuttall Co., R. D.
 Ohio Brass Co.

Trolley Bases, Retrieving
 Anderson Mfg. Co., A. & J. M.
 Electric Service Sup. Co.
 General Electric Co.
 Nuttall Co., R. D.
 Ohio Brass Co.

Trolley Buses
 Brill Co., The J. G.
 General Electric Co.
 Westinghouse E. & M. Co.

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 Flood City Mfg. Co.
 Ohio Brass Co.

Trolley Shoe
 Miller Trolley Shoe Co.

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 Ford Chain Block Co.

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Trolley Wheel and Harps
 Flood City Mfg. Co.

Trolley Wire
 Amer. Electrical Work
 Amer. Steel & Wire Co.
 Anaconda Copper Mining Co.
 Roebbling's Sons Co., John A.

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 Bemis Car Truck Co.
 Brill Co., The J. G.
 St. Louis Car Co.

Turbines, Steam
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 General Electric Co.
 Terry Steam Turbine Co.
 Westinghouse E. & M. Co.

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 Allis-Chalmers Mfg. Co.

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 Pery Mfg. Co.
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 Railway Track-work Co.
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Welding Processes and Apparatus
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 General Electric Co.
 Ohio Brass Co.
 Railway Track-work Co.
 Rail Welding & Bonding Co.
 Westinghouse E. & M. Co.

Welders, Rail Joint
 Ohio Brass Co.
 Railway Track-work Co.
 Rail Welding & Bonding Co.

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Wheel Presses (See Machine Tools)

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 Griffin Wheel Co.

Wheels, Car, Steel and Steel Tire
 American Steel Foundries
 Bemis Car Truck Co.
 Standard Steel Works

Wheels, Rolled Steel
 Cambria Steel Co.
 Midvale Steel & Ordnance Co.

Wheels, Trolley
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 Columbia M. W. & M. I. Co.
 Electric Ry. Equip. Co.
 Electric Service Sup. Co.
 General Electric Co.
 More-Jones B. & M. Co.
 Nuttall Co., R. D.
 Star Brass Works

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 Ohio Brass Co.
 Westinghouse Tr. Br. Co.

Wire Rope
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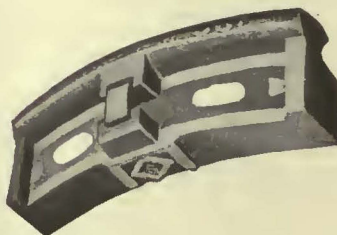
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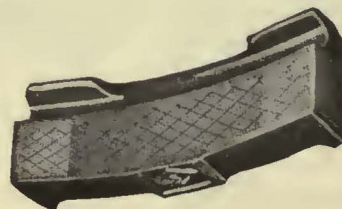
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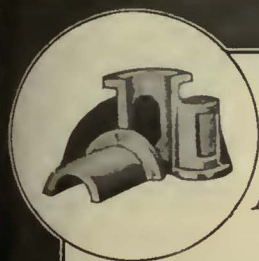


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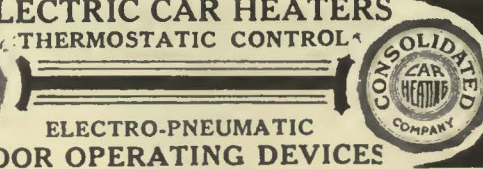
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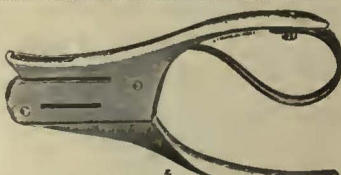
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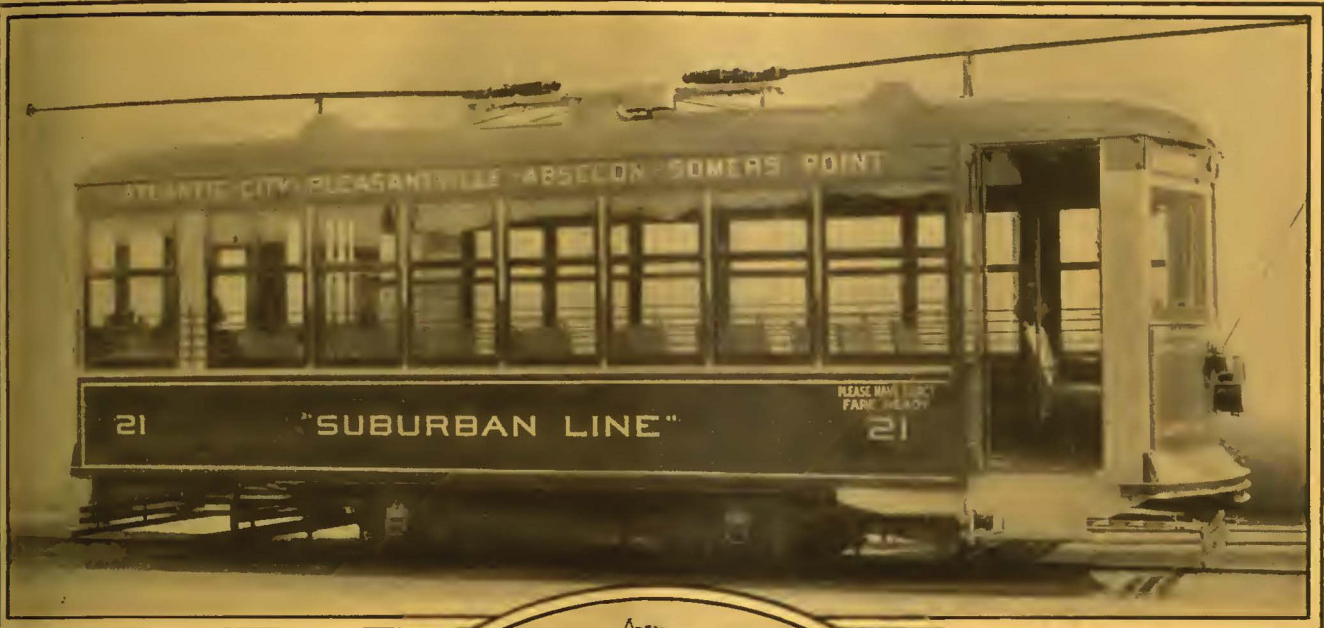
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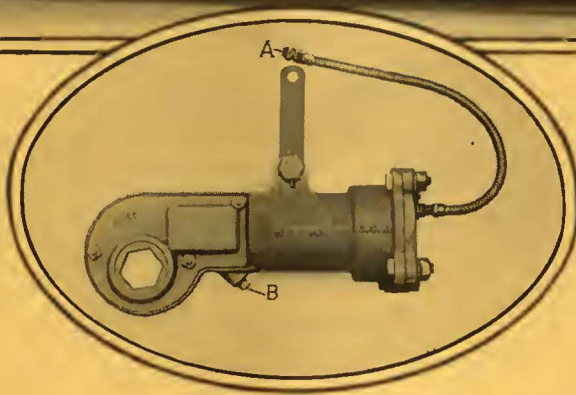
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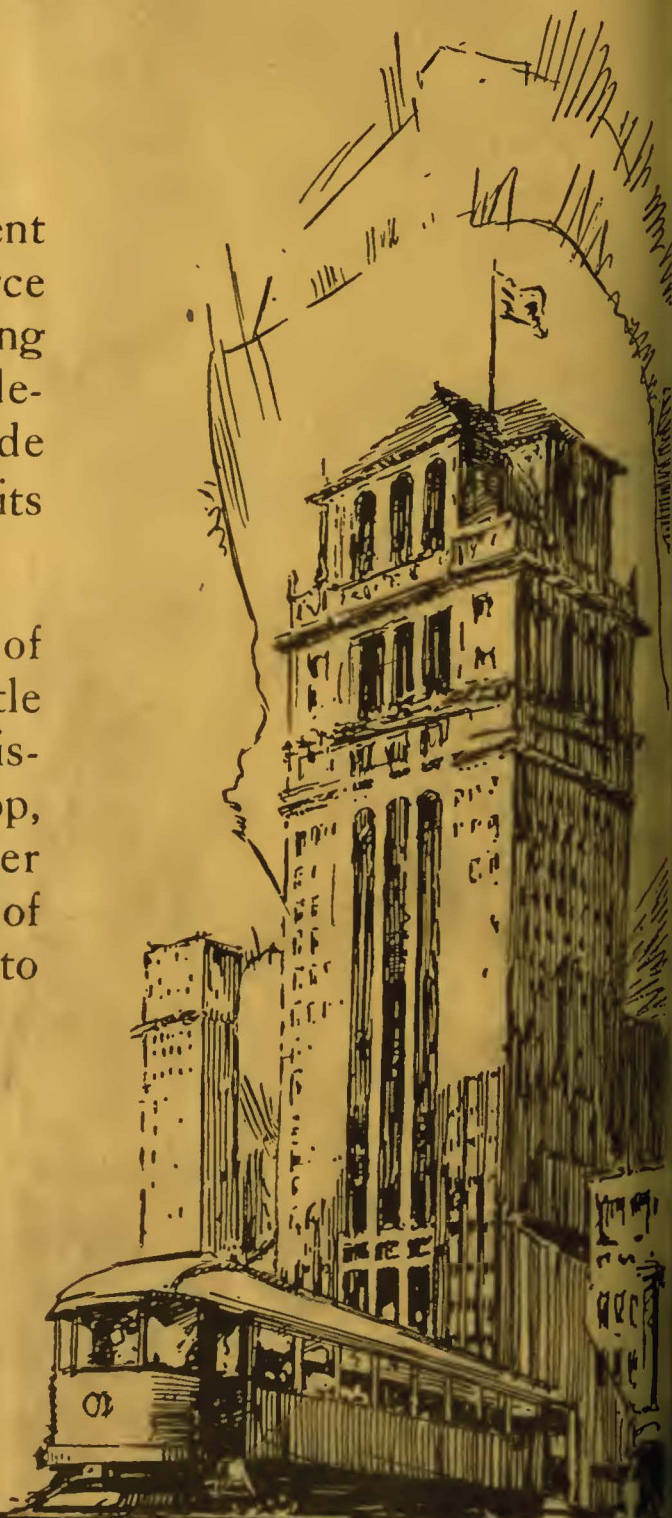
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