

# Electric Railway Journal

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**MILITARY VALUE OF ELECTRIC ROADS** At its Niagara Falls meeting held last week the New York Electric Railway Association concentrated its attention largely upon the ways in which the railways can assist the government in mobilizing troops and supplies. The immediate benefit of this concentration appears in the reports abstracted in last week's issue. Through devotion to a common cause the railways will themselves benefit by reflex action. Whether or not the railways are needed for mobilization purposes in the near future, intensive analysis of facilities at this time will bring out the shortcomings of our electric railway systems, considered as a unit; will show the government what each State has to offer in the way of electric transportation facilities, and will weld together the railway organizations of each territorial division as each company considers itself a component part of a whole. Already it is seen that with the exception of two comparatively short gaps there is a continuous electric railway across New York State in the general direction of the steam railroads and the canal. These gaps should be bridged in the interests of both the State and the nation.

**ARE SUBSIDIES NECESSARY?** In saying this we do not mean to assert that a policy in favor of subsidies for military railways is necessary in this country yet, although such a policy has been followed very extensively abroad. We do believe, however, that the committee on the movement of troops at the New York convention last week has shown conclusively the great assistance which electric railways can be in mobilization and in other military operations, and that for this reason the State or national government could well encourage their construction at certain points and their maintenance in effective condition. This aspect of the use of electric roads has received practically no attention in the past. But if the electric railways, like the steam railroads, are liable to be taken over by the government in time of actual or threatened war, then the government is vitally interested in having them where they are needed and in the condition in which they will be needed. We suggest, therefore, that the committee on military service take under consideration the desirability of formulating a plan for rounding out in peace the electric railway system of the State so that it will be effective in war, and the best means by which this result can be accomplished. Such a plan would make the public realize more keenly the intimate relation which really exists between its members and the electric railways.

**TEN CENT FARES ON OWL CARS** The raising of the owl car fares in Pittsburgh to 10 cents is logical as it is based on the principle that fares should be proportioned to the cost of operation. If there is to be an increase in fares, those passengers whose transportation is the least profitable or those who are carried at a loss should be the first to bear the increased charge. The cars on a city system which run after midnight and before 5 a. m. are rarely filled, yet they require the operation of the power station and much other equipment for the service of a few passengers only. The Pittsburgh Railways claim that the plan inaugurated on midnight of June 22 was not the establishment of a new fare but a return to a plan in use before 1907 and that the only reason for the previous reduction to 5 cents was that it was required by a law which has since been declared unconstitutional. The chief argument during the past week has not been on the propriety of the fare but on the method of its establishment, its opponents declaring that proper notice was not given to the public. Whether there would have been less opposition to the plan if it had been advertised extensively in advance is an open question. It does not seem, however, that there should be any real objection to an increased fare, *per se*, as riders at that time are enjoying a special service.

**A RAY OF HOPE FOR HIGHER FARES** The refusal of the up-State New York Public Service Commission to allow the United Traction Company to increase its rates between Albany and Troy, N. Y., noted elsewhere in this issue, seems to rest upon the belief that the company failed to prove the justice and reasonableness of the proposed increase. Furthermore, the commission felt that the company's losses from operation were not caused by the Albany-Troy line, and that to increase the rates here would involve unjust discriminations. While refusing to sanction the new schedules, however, the commission appears to appreciate the fact that the company needs increased revenue, and a really encouraging feature of the decision is the intimation that under the recent interpretation in the Ulster & Delaware Railroad case by the Court of Appeals the commission has the power to permit urban fares of more than 5 cents, in spite of the old railroad law, if the need for such fares is shown. Moreover, Commissioner Carr in a separate memorandum frankly recognizes that the company, particularly in Albany, is as a whole giving more service than its earnings justify, and suggests a thorough rearrangement of service so as possibly to give better accommo-



dations to the public at a lower cost to the railway. All these points seem to indicate the feeling of the commission that it is the urban fares rather than the interurban fares that need adjustment to increasing costs. Is it too much to hope that a full realization of its responsibility for removing old and unjust legislative restrictions may lead the commission before long to a real settlement of the urban problems of the United Traction Company?

#### INFLUENCE OF TRAFFIC DENSITY ON INVESTMENT

In an article appearing on a later page of this issue D. J. McGrath, research assistant of the Massachusetts Institute of Technology, presents some additional results of the study of the research division of that institution concerning the relation of the investment per revenue passenger to the density of traffic on city lines. Our readers will doubtless remember that the same author contributed an article to our issue of May 8, 1915, in which he suggested for the first time the use of the figure "investment per revenue passenger" as a unit of comparison for judging the relative capitalizations of electric railway companies. The article pointed out some advantages which this unit possessed as a standard over those more commonly used, such as "investment per mile of track" or "per dollar of gross revenue." Mr. McGrath's investigation showed a variation of investment, in the properties considered, ranging from 13 to 32 cents per revenue passenger.

The present article is largely an extension of Mr. McGrath's article of fourteen months ago, and deals with the question of the variation in the investment per revenue passenger as between properties operating under varying conditions of traffic density. His conclusion is that the investment per revenue passenger becomes rapidly greater where the density of traffic is less than 100,000 revenue passengers per mile of single main track. When the density of traffic is greater than 100,000, the chances for profitable operation increase until a certain point, as yet undetermined, is reached. The increasing length of passenger haul per 5-cent fare, the congestion of street traffic, the necessity for heavier and more expensive construction, the requirements for greater current-carrying capacity of the power distribution system, together with many other factors, all combine to increase the investment per passenger.

Studies such as Mr. McGrath has made are extremely interesting because they throw additional light upon the difficult problem of the proper adjustment of fares, particularly in the large cities. While in one sense the new line of investigation has not brought out any additional truths concerning urban transportation economics, it has served to confirm that which is already known. The growth of a city beyond a certain point, instead of working to the advantage of its surface railway system, brings additional financial burdens and decreases profits.

So far as can be seen at the present time, our cities will continue to grow; the average length of haul will increase; congestion in the retail business and financial

districts will become greater; the investment in cars, track and equipment per mile of main track will be increased, and the profits will be adversely affected. As cities grow, there is a progressive decrease in the rate of profit per passenger carried. But the net earnings per revenue passenger of our electric railways must not decrease if the necessary new financing to provide additional facilities is to be successfully accomplished.

It is to be hoped that the Massachusetts Institute of Technology will continue the valuable studies which Mr. McGrath and others have been making. Such scientific work, carried on without bias by our leading educational institutions, will lay the groundwork of scientific fact which must be recognized by commissions and public authorities in dealing with the problems of the electric railways.

#### DEVELOPING THE FREIGHT BUSINESS

Our leading article this week is on the methods of developing freight traffic employed by the Illinois Traction Company, and we believe that it will attract a great deal of attention. In many respects Illinois is well suited for electric railway development. Owing to the topography of the country, construction costs are fairly low, and the population served is prosperous. It would be improper to say, however, that equally favorable conditions do not exist elsewhere, so that the reasons for the successful development of freight on the Illinois Traction System must be attributed more largely to methods and men rather than to environment. But the effectiveness of the men and methods is shown by the fact that during 1915 the company handled approximately 25,000 carloads of freight and earned about \$500,000 in freight revenue on its 460 miles of line.

Of course, such a traffic would not come spontaneously. The management early realized that if it was to do a considerable business in freight it must have the facilities in the way of track necessary for such a service. Where freight rights could not be secured through the towns, or where such transportation in that way did not seem advisable, cut-offs were built. At other points short curves and steep grades were removed, and agreements were made with steam railroads for freight interchange. The population along the route was interested to aid in the construction of grain elevators, and a liberal policy was adopted in the way of installing temporary industrial tracks. This energy in the development of freight was not allowed to interfere with the passenger service, however, as that still constitutes on the Illinois Traction System, as on most roads, the great bulk of its transportation business.

In the words of the Illinois Traction System officials, they have as yet only begun to "scratch the surface" of the company's freight traffic possibilities. Nevertheless, the experience in Illinois is one which can well be commended to the careful consideration of other electric railway managers who see opportunities in their freight business, but are uncertain as to the methods which they should adopt to develop it.



### WHAT KIND OF COMPENSATION INSURANCE SHOULD BE ADOPTED?

After so thorough a review of the various ways of insuring under workmen's compensation laws as that presented before the N. Y. E. R. A. at Niagara Falls last week and published elsewhere in this issue, it would be useless for us to discuss all these plans in detail. The committee report on this subject ably summarizes the characteristic merits and demerits of the respective methods of insurance, although no specific findings are made as to their relative worth. Of course, generalizations on a subject containing so many intricate points and possessing so few experience data are difficult, but it is to be regretted that the committee did not use its extensive knowledge of the subject to draw up more definite conclusions for its report.

For example, in our opinion it could justly have said that of the four possible insurance methods—stock company, mutual insurance, State fund and self-insurance—the first is one that should be clearly recognized as being quite unnecessary for a large unified industry like electric railways. The asserted advantages of this method fall far short of counterbalancing the heavy loading of premiums with acquisition expenses and profits. With the development of the theory of workmen's compensation, other and better methods of insurance have been originated solely to avoid the undesirable and still existing features of stock-company insurance, and the railways should understand that a proper choice need involve a consideration of only the other three methods. As to the relative merits of these, it could well be held that self-insurance is the most desirable form for some of the largest companies, while the remainder of the railways would better begin the development of a mutual group instead of wasting money in stock-company insurance or experimenting with the State fund.

As matters stand now, the issue between mutual trade insurance and the State fund method has not been conclusively threshed out, but the latter method involves too many points of speculation before it can be considered the favorite. The loss ratio of a mutual group and the State fund, under similar conditions, would be the same, but the expense ratio is a doubtful point. The State fund, which began operating at an expense ratio of 15 per cent, has reduced it to 12 per cent, but this figure has almost been equaled by the expense ratio of the Brewers' Mutual Indemnity Insurance Company, a new trade mutual that was organized under the New York compensation act. What is needed, of course, are more exhaustive and exactly comparable data, and these can only be obtained if electric railways make an earnest effort at mutualization while the State fund is trying to prove its efficiency. One cannot yet be certain that the State fund can make the transfer to a self-supporting basis after July 1 of this year without an increase in rates or a curtailment of dividends. An even more important question is whether the State will really continue to reduce the expense ratio—in other words, whether it will in the long run be as dili-

gent in its efforts to reduce expenses as are the mutual companies or will go the way of practically all other governmental attempts at business-like operation. Actual experience over a reasonably long period of years will afford the only authoritative answers to these questions, but in the meantime electric railways need not be passive.

The hesitancy of electric railways thus far in adopting the mutual form of insurance has undoubtedly been due in large part to the lack of an experienced medium. A proposition has now been made, however, whereby electric railways may join the Utilities Mutual Insurance Company, which was originally organized for gas and electric lighting utilities of the State. Although in theory such a union of interests might not be desirable, the plan of participation provides for such proportionate control in the board of directors and for such separation of experience records as render the proposal a practical and commendable one. When to these features there is added the fact that this mutual company has been in successful operation for more than eighteen months, it is evident that the railways no longer have an excuse for not taking quick and concerted steps toward the mutualization of their industry under the compensation law.

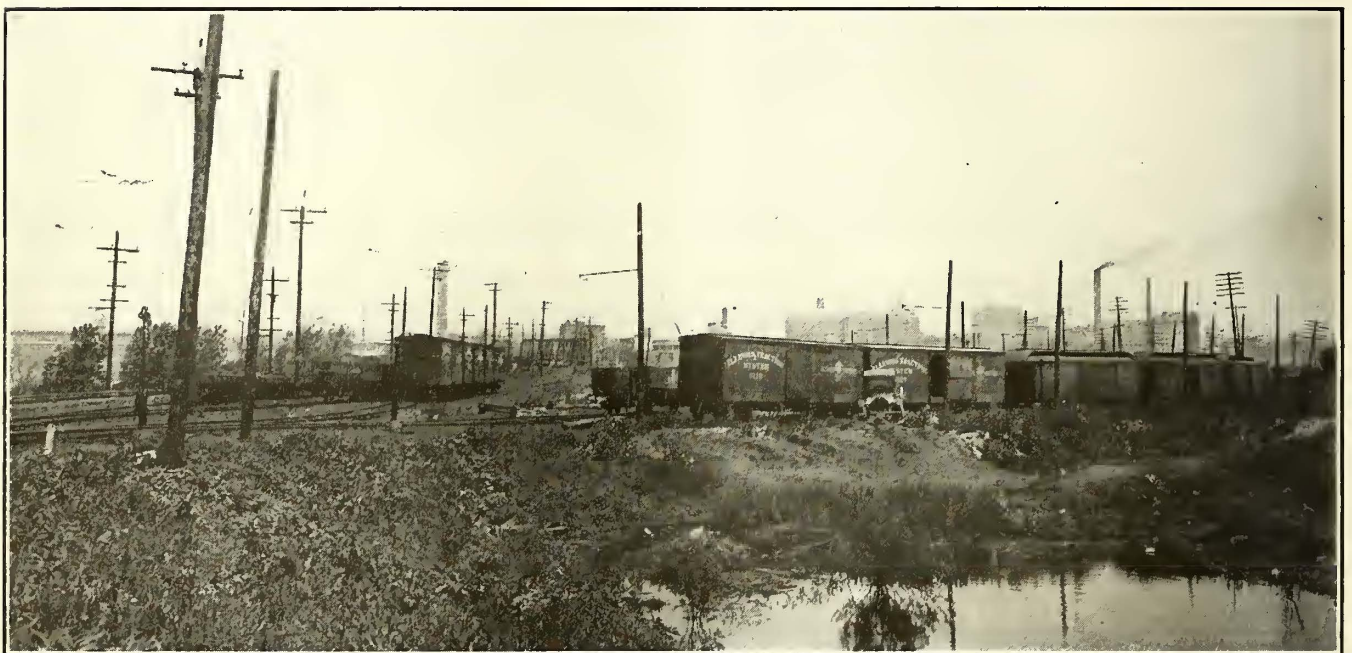
While the mutual plan, with its exact experience and equitable division of burdens, is one that well deserves trial by electric railways, there are, as we said before, some companies which, on account of their magnitude, will find their ends served best by the self-insurance plan. It has been said that the low cost of self-insurance thus far should be considered in the light of the fact that no catastrophe burdens were present and, in another instance, that sooner or later the inability of some self-insured company to handle a catastrophe would result in the prohibition of self-insurance. It should be noted, however, that the catastrophe hazard for electric railway employees is almost negligible as compared to that in industrial plants and similar institutions where all the employees work together or in large groups. Moreover, the height of development in safety, claim and medical work that has been reached by many electric railways in the normal course of their business makes it possible for them to assume the compensation risk of employees with practically no additional work. When a large electric railway has convinced the State authorities that it is financially capable of carrying its own risk, has deposited in bonds one-half of the State-fund annual premium, and thereafter has annually reported its financial showing, little ground exists for fear that the company's surplus will not cover deferred or continued compensation payments and the small catastrophe hazard. Under self-insurance, insurance cost becomes simply accident cost, with adequate protection for the future comparable to the mutual or State-fund reserves if the State examiners do their work properly. In the case of companies financially sound, self-insurance is not a gamble, and we do not believe that those using this method will change to another.



# Developing Carload Freight Traffic on Illinois Traction System

Article Outlines How This Large Interurban Railway System Made Its Freight Traffic Earn More Than \$500,000 Annually and Also Describes Its Relations with the Industries and Steam Railroads, Both of Which Made Wholesale Freight Transportation Possible

During the year ending Dec. 31, 1915, the Illinois Traction System, Peoria, Ill., handled approximately 25,000 carloads of freight and earned about \$500,000 in freight revenue. This freight earning represents about 20 per cent of the gross income of the Illinois Traction System's interurban lines, and the freight transported amounted to 734,483 tons. In connection with freight transportation, 3,154,313 revenue freight car-miles were run, and the results for 1915 show an increase of 115 per cent over that obtaining in 1908. The foregoing figures give an inkling of what this 460-mile interurban railway system is doing in the way of developing its freight business.



ILLINOIS TRACTION CARLOAD FREIGHT—FREIGHT YARDS AT EAST PEORIA, BRIDGE AND ENTRANCE INTO PEORIA IN BACKGROUND

**M**ORE and more are electric interurban railways realizing the folly of trying to make ends meet with earnings from a strictly passenger traffic. Many roads, from their inception, have devoted attention to the development of an express or less than carload freight business, which is handled in equipment resembling passenger cars. Franchise restrictions have prohibited the handling of standard freight cars and freight trains through the city streets on a number of lines, and very little has been done to lift these unwarranted embargoes against the handling of a general freight business. Those companies that have entered the bulk or carload freight business have found it more profitable than other classes of traffic, and there is a marked tendency on the part of many other companies at the present time so to equip their lines and correct the physical errors that they can handle carload freight on an unlimited scale. Early in its history the Illinois Traction System was confronted with the same obstacles which have prevented many other electric interurban lines from going into the general freight business.

This company, however, realized the tremendous possibilities of freight traffic and inaugurated a consistent campaign to remove the physical barriers and obtain relief from the franchise restrictions. Where this was not possible belt lines were built around the cities.

## *Chronological History of Freight Development*

Illinois, perhaps, afforded as favorable an opportunity for the successful construction and operation of an electric railway as any other State in the Union. In general, construction costs were within reason because the topography is but slightly rolling and traffic possibilities were almost ideal, and because the State is rich in natural resources, containing large deposits of high-grade bituminous coal, fertile prairies and navigable waterways. Statistics show that Illinois leads all other States in the yearly area and yield of corn and oats, and in the number and value of horses. It also leads in extent and value of farm implements manufactured, meat products marketed yearly, and the extent and



value of yearly crops produced. All of these factors, together with a number of thriving industrial centers with populations ranging from 30,000 to 100,000 people, situated at intervals of from 30 to 50 miles along the Illinois Traction lines, furnished local markets for the products of the farm and the mine. Natural lines of intercommunication which could be highly developed also afforded favorable prospects for passenger traffic. Such promising territory has had everything to do with the stability of the railway earnings of this property, and the management had in mind almost from its inception a character of construction and equipment which would permit the handling of all classes of traffic. In case there is a lull in the output of the mines, the quantity of traffic is sustained by handling the products of the farm, and vice versa, when the agricultural season is unfavorable, the coal industry assists in counteracting this loss of revenue.

During construction this electric interurban line, like many others, made the mistake of operating over the

removing sharp curves and steep grades at other points. The removal of these physical limitations and the relief from franchise restrictions permitted the Illinois Traction System to handle a general freight traffic from Champaign, Ill., to St. Louis, and from Springfield to Peoria, as well as from Peoria by way of Bloomington to Decatur. These improvements alone, however, did not expand this class of business beyond such local freight as originated and was delivered on the Illinois Traction's lines. During the period of construction connections were made with steam railroads at various points, but under contracts permitting only company material for construction purposes to be delivered over them. At a few points the railway company's lines connected with coal mines, and the first carload freight shipments largely consisted of this commodity. These coal mine connections, however, were made primarily to obtain coal for the railway's generating station, and the sale of coal to consumers along its lines was merely incidental.



ILLINOIS TRACTION CARLOAD FREIGHT—FREIGHT YARDS AT EAST PEORIA, SHOWING "BROADSIDE" VIEW OF DIFFERENT TYPES OF CARS

streets of villages and cities under contracts which, in many cases, limited the quantity and character of traffic, particularly as it related to freight. Moreover, in so doing, physical restrictions were frequently necessary, such as sharp curves and steep grades which would permit the handling of freight only in specially designed cars. As the freight business grew and interchange relations with steam railroads were arranged, these physical and contractual limitations became serious obstacles in the way of a rapid development, and as early as 1906 this company began to remove many of the physical obstructions. Sharp curves and steep grades on private rights-of-way were first eliminated, and, in many instances, private rights-of-way were purchased through villages and towns in order to straighten the line and obtain relief from franchise restrictions. In the larger cities where it was inadvisable to disturb franchise conditions, private rights-of-way were purchased and belt lines were constructed.

At the close of the year 1911 approximately \$1,000,000 had been expended in the construction of freight belt lines, and about the same sum had been spent in

Even with the favorable sites afforded on the belt railways around Decatur, Springfield, Edwardsville and Granite City, industries could not be induced to locate their plants on the electric line unless a steam railroad connection was also to be had. Confronted with this obstacle, the management decided that the success of the freight business depended upon a full interchange with steam railroads. Applications to the State commission for physical connections and freight interchange failed to obtain relief, but the favorable locations for industries afforded along the belt lines influenced different commercial organizations to take up the question of interchange between steam and electric lines with the State commission. In some instances they were successful in obtaining an order for track connections and interchange contracts. On the other hand, the first interchange contract consummated by the traffic department of the Illinois Traction System was that made through a friendly arrangement with the Chicago & Eastern Illinois Railroad and the Rock Island System. A physical connection was made with the former railroad at Glover, Ill., and less than carload freight was



ILLINOIS TRACTION CARLOAD FREIGHT—DESCRIPTION OF FREIGHT MOVED AND TONNAGE

Description of Freight Moved and Tonnage (Company Material Excluded)	DECEMBER, 1915-1914				DECEMBER, 1913-1912			
	Month December, 1915	Comparative Same Month Last Year	Cumulative from Jan. 1, 1915	Cumulative Period 1914	Month December, 1913	Comparative Same Month Last Year	Cumulative from Jan. 1, 1913	Cumulative Period 1912
PRODUCTS OF AGRICULTURE								
Grain	7,483	4,951	63,306	45,007	1,299	4,716	26,428	34,474
Flour	252	207	2,774	2,790	224	230	1,888	2,235
Other mill products	171	242	2,821	3,051	159	138	1,707	2,141
Hay	153	167	2,424	2,824	193	182	2,039	1,656
Tobacco	15		148	2				5
Cotton	55		55					
Fruits and Vegetables	148	262	3,769	5,265	172	78	1,520	2,295
Other products of agriculture			6	277		9	47	217
PRODUCTS OF ANIMALS								
Livestock	41	85	668	1,707	77	226	2,790	3,656
Dressed meats	27	34	480	651	54	5	292	130
Other packing house products	14		246	3,444	23	4	73	200
Poultry, game, fish	37	20	109	61	8	11	19	57
Wool			5	19				22
Hides and leather	4	4	41	40		14	124	139
Dairy products	11		25	1			6	2
Other products of animals		2	61	1,066	51	2	187	282
PRODUCTS OF MINES								
Anthracite coal		5	20	42	2	1	51	32
Bituminous coal	43,057	34,546	373,364	258,914	29,504	33,141	274,938	305,448
Coke	441	60	2,237	1,180	31	3	493	1,193
Orea								26
Stone, sand, etc	1,485	2,207	72,130	92,829	2,275	5,220	74,207	87,318
Other products of mines	652	2,917	43,134	52,390	21	1,274	7,694	16,844
PRODUCTS OF FOREST								
Lumber	605	619	6,487	8,222	293	578	8,264	5,617
Other products of forest	4,186	4,729	31,981	22,553	2,840	1,329	14,876	19,190
MANUFACTURES								
Petroleum and other oils	109	173	1,525	2,435	148	124	1,871	1,315
Sugar	57	63	954	1,395	81	14	494	331
Naval stores								2
Iron pig and bloom							80	
Iron and steel rails	27	72	1,484	1,228	15	106	428	1,074
Other castings and machinery	580	248	5,184	5,272	98	203	2,577	1,978
Bar and sheet metal	37	34	527	1,062	82	48	334	502
Cement, brick and lime	1,103	1,121	38,460	22,768	963	1,611	14,930	19,207
Agriculture implements	225		314	488	3	14	242	560
Wagons, carriages and tools	66	10	329	269	29	16	298	311
Wines, liquor and beer	268	204	3,951	3,587	101	238	1,811	2,539
Household goods and furniture	242	226	3,383	3,543	286	281	4,021	3,618
Other manufactures	2,070	905	17,935	13,990	979	1,498	12,675	20,051
Other commodities under 2000 lb. lots	4,453	2,997	54,146	116,670	16,705	9,195	173,703	107,865
Total tonnage	68,076	57,110	734,483	675,042	56,716	60,509	631,119	642,522

ILLINOIS TRACTION CARLOAD FREIGHT—FREIGHT AND MILEAGE STATISTICS

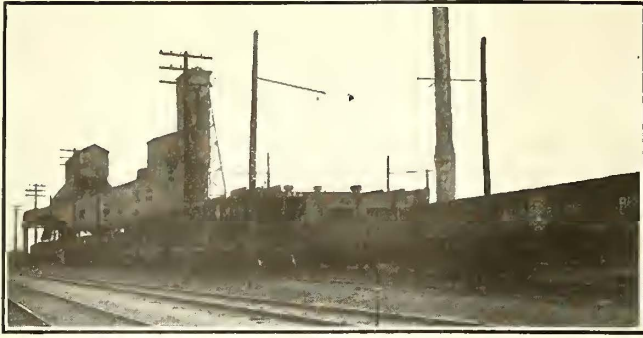
Freight Traffic	DECEMBER 1915-1914				DECEMBER 1913-1912			
	Month December, 1915	Comparative Same Month Last Year	Cumulative from Jan. 1, 1915	Cumulative Same Period 1914	Month December, 1913	Comparative Same Month Last Year	Cumulative from Jan. 1, 1913	Cumulative Same Period 1912
Number of tons of revenue-earning freight carried	68,076	57,110	734,483	675,042	56,716	60,509	631,119	642,522
Tonnage company freight					279	238	4,592	3,790
Total tonnage—all freight	68,076	57,110	734,483	675,042	56,995	60,747	635,711	646,312
Number of tons carried 1 mile—revenue	3,024,054	3,229,589	35,431,307	35,667,477	3,338,816	3,120,314	34,141,510	32,857,012
Number of tons carried 1 mile—company	501,976	540,382	5,016,000	2,519,056	13,467	12,953	247,292	203,835
Total mileage—all freight	3,526,030	3,769,971	40,447,307	38,186,533	3,352,283	3,133,267	34,389,802	33,060,847
Number of tons carried 1 mile per mile of road (revenue)	8,297	8,871	95,171	89,851	7,856	7,342	80,333	77,311
Number of tons carried 1 mile per mile of road (all freight)	8,297	8,871	95,171	89,851	7,888	7,372	80,915	77,790
Average distance haul of 1 ton (revenue), miles	51.80	66.01	55.07	56.57	58.87	51.57	54.09	51.14
Average distance haul of 1 ton (all freight), miles	51.80	66.01	55.07	56.57	58.82	51.58	54.10	51.15
Total freight revenue	\$45,450.58	\$37,124.48	\$477,147.31	\$482,011.73	\$41,759.04	\$43,342.19	\$483,401.52	\$464,197.66
Average amount received for each ton of freight	\$0.66	\$0.65	\$0.65	\$0.71	\$0.74	\$0.72	\$0.77	\$0.72
Average receipts per ton per mile	\$0.015	\$0.011	\$0.013	\$0.014	\$0.013	\$0.014	\$0.014	\$0.014
Miles of road operated in freight service	425	425	425	425	425	425	425	425
Freight revenue per mile of road	\$106.94	\$87.35	\$1,122.70	\$1,134.15	\$98.26	\$101.99	\$1,137.42	\$1,092.23
Freight revenue per loaded car-mile	\$0.2511	\$0.2331	\$0.2445	\$0.2475	\$0.2427	\$0.2504	\$0.2446	\$0.2388
Revenue from switching service	\$3,218.10	\$1,855.22	\$24,129.48	\$17,542.17	\$1,226.75	\$1,308.07	\$16,006.48	\$16,212.40
LOCOMOTIVE MILEAGE								
Freight locomotive miles	21,848	20,082	233,281	222,127	17,387	16,967	210,535	203,198
Passenger locomotive miles	211	6	678	556	12	201	8,283	4,497
Switching locomotive miles	11,999	9,861	113,914	124,723	11,461	4,766	123,911	46,690
Total in revenue service	34,058	29,949	347,873	347,406	28,860	21,934	342,729	254,385
CAR MILEAGE REVENUE SERVICE								
Freight car-miles:								
Loaded	180,866	159,242	1,951,486	1,946,871	172,047	173,098	1,976,361	1,943,582
Empty	90,732	85,534	923,624	940,761	84,037	75,973	889,909	868,479
Caboose	27,591	20,171	279,203	231,758	17,848	14,820	222,456	163,228
Total	299,189	264,947	3,154,313	3,119,390	273,932	263,891	3,088,726	2,975,289

Statistical Data Showing Character and Tonnage of Freight Moved, and Mileage

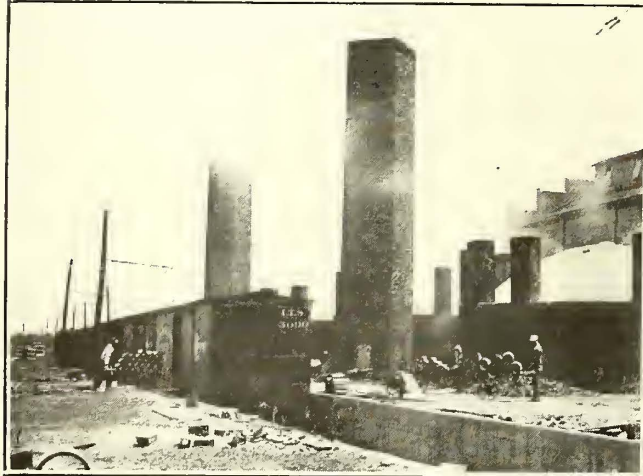








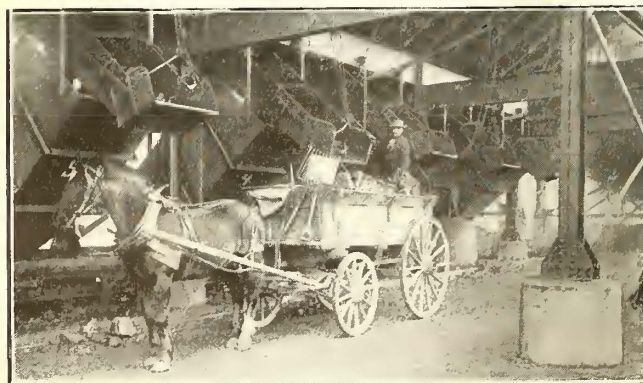
ILLINOIS TRACTION CARLOAD FREIGHT—CARS SET AT COAL MINE



ILLINOIS TRACTION CARLOAD FREIGHT—LOADING TILE INTO I. T. S. BOX-CARS



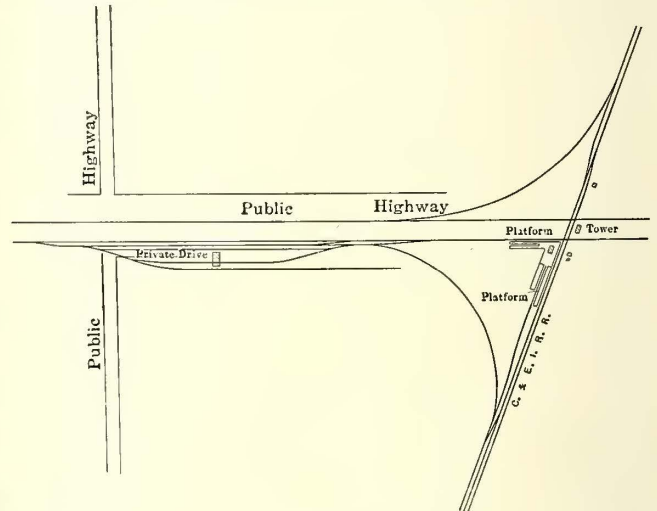
ILLINOIS TRACTION CARLOAD FREIGHT—FREIGHT HOUSE AT PEORIA



ILLINOIS TRACTION CARLOAD FREIGHT—ST. LOUIS RETAIL COAL DELIVERY PLANT

ing arrangements have been made with the St. Louis Terminal Railway Association, with a connection at Granite City, and with the Southern Railroad, which has a connection at Venice, Ill. Through these two connections the Illinois Traction System has access to all steam railroads operating out of St. Louis, Mo., and East St. Louis, Ill. It also interchanges with the Wabash Railroad at Decatur, Springfield, Mount Olive, Staunton and Tilton, with the Chicago & Alton Railroad at Shelbytown and Anderson, with the Illinois Central Railroad at Springfield and Decatur, and with the Peoria Railway Terminal at Peoria, thus giving a connection at that point with the Chicago & Alton Railroad and the Chicago, Rock Island & Pacific Railroad. Through tariffs are in effect with the Rock Island and the Minneapolis & St. Louis Railroads, and interchange contracts with these railroads also provide for full working arrangements with both the steam and the electric line for all classes of traffic.

A complete set of rates to all Illinois points is in effect with the Chicago & Eastern Illinois Railroad. The Wabash Railroad System is also open to the electric line from Buffalo, N. Y., to Omaha, Neb., with both class and commodity rates and reciprocal switching arrangements at the connections. The switching rate is based on 10 cents per ton, with a minimum charge of \$2 and a



ILLINOIS TRACTION CARLOAD FREIGHT—GLOVER INTERCHANGE TRACKAGE

maximum charge of \$4 per car. Similar arrangements have been made with the Chicago & Alton Railroad and the Chicago, Peoria & St. Louis Railroad. A decision by the Interstate Commerce Commission forced the Peoria & Pekin Union Terminal Railway at Peoria to open up its terminal track facilities to the Illinois Traction System. This gave it access to all the industries in Peoria, a privilege for which the traction line pays a terminal switching charge.

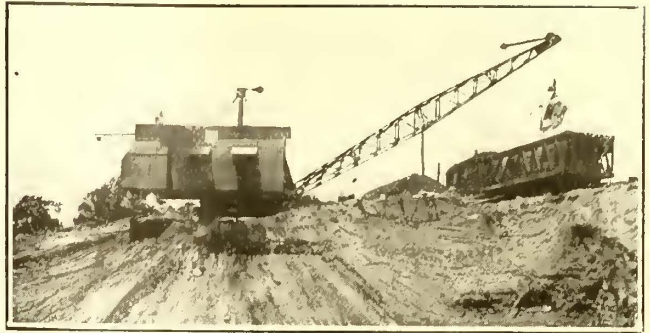
Interchange with the Illinois Central Railroad was only obtained through a ruling of the Public Utilities Commission, brought about by complaint of Springfield manufacturers and the Springfield Chamber of Commerce. This company also has physical connection with the Big Four Railroad, the Litchfield & Madison Railroad and the Baltimore & Ohio Southwestern Railroad. Recently joint rates on several commodities have been filed to govern shipments from and to the Illinois Traction System to points on the Baltimore & Ohio Southwestern Railroad. In all, the Illinois Traction System connects with eighteen steam and electric railroads and has access to all points in Missouri, Illinois, Indiana, Iowa, Michigan, Minnesota, and North and South Dakota. It also has combination rates and services with boat lines



on the Mississippi River, the Illinois River and Lake Michigan. Unquestionably these interchange contracts with foreign lines have been of more value to the traction system as a traffic accelerator than perhaps any other one factor, unless it is these contracts taken in conjunction with the facilities for industries afforded by the four belt lines. Since these interchange contracts became effective, the traction company has had no difficulty in locating industries on its lines.

*Other Sources from Which Carload Freight Is Secured*

Among the first carload freight revenue-producing industries located on the lines of the Illinois Traction System was a gravel-washing plant at Mackinaw, Ill. At this point the traction company owned several acres of right-of-way underlaid with excellent deposits of sand and gravel. This tract was leased to private parties after the railway company had completed ballasting its line, and a gravel-washing and screening plant was



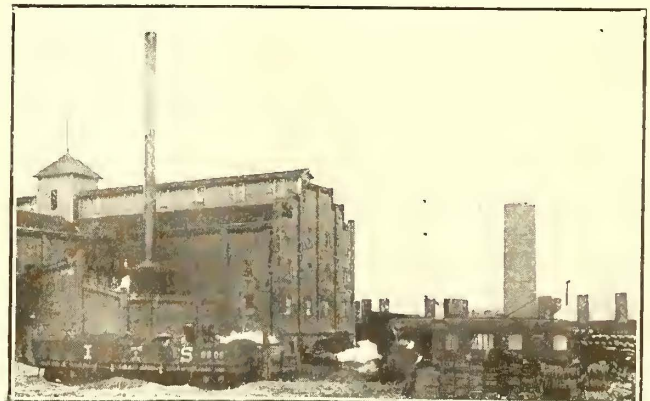
ILLINOIS TRACTION CARLOAD FREIGHT—SHALE MINING ON SPRINGFIELD BELT



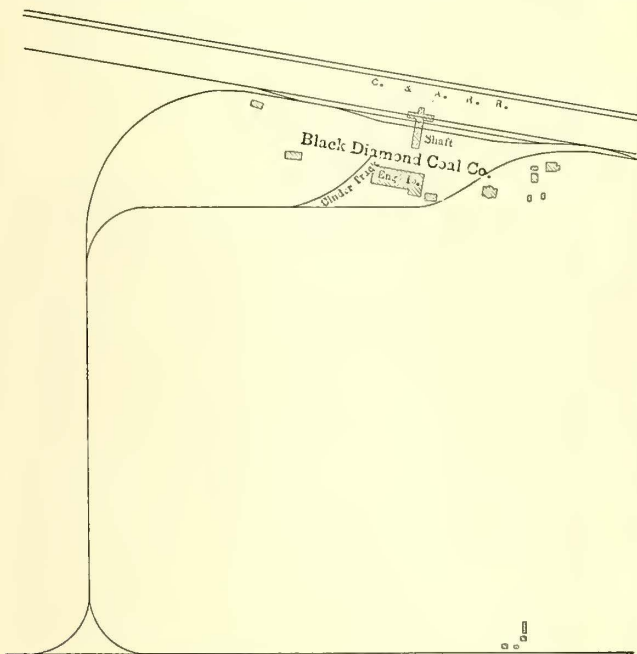
ILLINOIS TRACTION CARLOAD FREIGHT—LOADING EMPTY MILK CANS AT SPRINGFIELD



ILLINOIS TRACTION CARLOAD FREIGHT—ARRIVAL OF MILK TRAINS IN ST. LOUIS



ILLINOIS TRACTION CARLOAD FREIGHT—FREIGHT TRACK TO DRAIN TILE PLANT



ILLINOIS TRACTION CARLOAD FREIGHT—PLAN OF LARGE COAL MINE CONNECTIONS

installed. The lease was made on a royalty basis, and it has now been in operation about eight years. During the construction season of the year this pit ships as many as forty cars a day over the electric line, and averages twenty cars a day. Gravel deposits are scarce in central Illinois, hence a good price is paid for this material and quite a long haul is to be had by the railway. A view of this pit is shown in one of the accompanying illustrations.

At the present time the Illinois Traction System serves ten coal mines and nine paving-brick plants. Aside from these a number of other industries requiring in-bound shipments of raw materials and out-bound shipments of manufactured products have been located along this railway's lines. To give some idea of the amount of freight which one of these brick companies delivers to the electric line, it may be of interest to state that the Decatur Brick Manufacturing Company, which has its brick kilns on the Decatur belt railway and mines its shale and clay on the Springfield belt railway, shipped 785 cars of shale, weighing approximately 50 tons each, from Springfield to Decatur during 1915. In addition this company, during the same period,



shipped to points on the electric line eighty carloads of brick and received thirty-five carloads of coal and eight carloads of sand. The Springfield Paving Brick Company, another large concern located on the Springfield belt railway, shipped 250 carloads of brick over the electric line during 1915. One of the larger coal mines to which a track connection has been made ships about 2000 cars of coal over the electric line annually.

### *Terms of Contracts for Industrial Track Service*

All industrial tracks which extend beyond the electric railway's right-of-way are arranged for by contracts with the industries which receive the service. Generally these contracts provide that the railway company lease the right-of-way from the industry on which the track is laid and that it build the railway track. The industry, in turn, does the grading and pays for all material necessary to construct the track and overhead. It is also specified that the industry shall pay the railway company the estimated cost of the material within sixty days after the contract is signed, and if the estimate is

period of five years. This latter provision is required by the Interstate Commerce Commission to preclude any evidence that might be considered as a case of rebating. In every instance the ownership of the track remains with the railway company, and when the contract expires or is annulled, the railway company is permitted to remove the track. This form of contract is practically the same as that used by steam railroads, so that, as a rule, industries desiring locations do not quibble over the terms.

### *Installing Team and Farm Side Tracks*

Whenever a request for a side track is made and the industrial agent's investigation shows that the probable traffic is sufficient to pay interest on the company's investment the track is built. Many of these farm and team sidings have been installed at various points along the company's lines, and in the majority of instances have proved to be profitable sources of revenue. In some instances industries express the desire to locate on the railway company's right-of-way, and this is arranged



ILLINOIS TRACTION CARLOAD FREIGHT—VIEW OF TYPICAL FREIGHT TRAIN

in error an adjustment is made at the completion of the work. In most instances the railway company supplies all the material for the track and overhead, and it charges the industry for its transportation from the point of origin to the point of delivery. During the period of construction the industry is required to carry liability insurance, and the contract remains in effect until the operation of the industry is abandoned. During the term of the lease the industry maintains the track and overhead, but the work is usually done by the railway company at the industry's expense. Special provision is also made for accidents in the operation of the track, and both parties are responsible for their own employees.

As soon as shipments are delivered to the railway company it reimburses the industry at the rate of \$2 per car on all cars from which it receives at least a minimum freight charge of \$10. These payments cease, however, when the industry has been fully reimbursed for the money it expended in constructing the track. Monthly settlements between the railway company and the industry are also provided, and the contract states that the railway shall continue to refund the industry until the tracks are fully paid for unless the freight received does not permit full reimbursement within a

for under leases. In connection with these arrangements the Interstate Commerce Commission ruled in 1912 that carriers could not lease their right-of-way in industries for a nominal sum but should receive a compensation equivalent to 6 per cent on the value of the property so leased. Since that time the Illinois Traction System has conformed to this ruling. The Illinois Public Utilities Commission has also issued an order to the effect that these industrial-spur contracts shall contain a sixty-day cancellation clause. This commission held that such a clause was necessary to protect the public's interest.

In many instances requests for the team and industrial sidings have been voluntary, and in others the installation has been entirely due to the work of the traffic department. Many of the spurs for the sale of coal and gravel have been put in because the traffic department has interested parties in different localities in selling these products. Dealers are secured and a portion of the company's right-of-way leased to them for installing coal, sand and gravel bins. In this manner quite a large coal and gravel traffic has been developed on all divisions of the system. In connection with the coal business, the traffic department has done much to stimulate it by keeping in touch with the coal jobbers at



different points along its lines, particularly in the fuel contracting season. As shown in the statistical data, coal and gravel make up an important item in the total quantity of freight tonnage shipped.

Temporary team tracks for handling construction materials have also proved to be quite a factor in stimulating carload freight traffic. Steam railroads, as a rule, refuse to install temporary team tracks at points convenient to large construction jobs unless the tonnage is very large, and this has opened quite an attractive field for the electric line. These temporary team tracks are installed under contract, and since the Illinois Traction System now has connections with all steam railroads, it not only delivers materials originating at industries along its lines but it also shares in part of the freight earnings from materials originating on connecting lines. The policy of installing these temporary industrial spurs has been of particular value of late in connection with the good-roads movement, because it has permitted the Illinois Traction System to handle large quantities of materials used for road construction purpose. A number of temporary side tracks have also been installed to deliver materials to large building construction jobs at various points along this company's lines. In almost every instance the contracts for these spurs are on the basis that the parties for whom they are installed pay the entire cost of constructing them and taking them out when the work is completed.

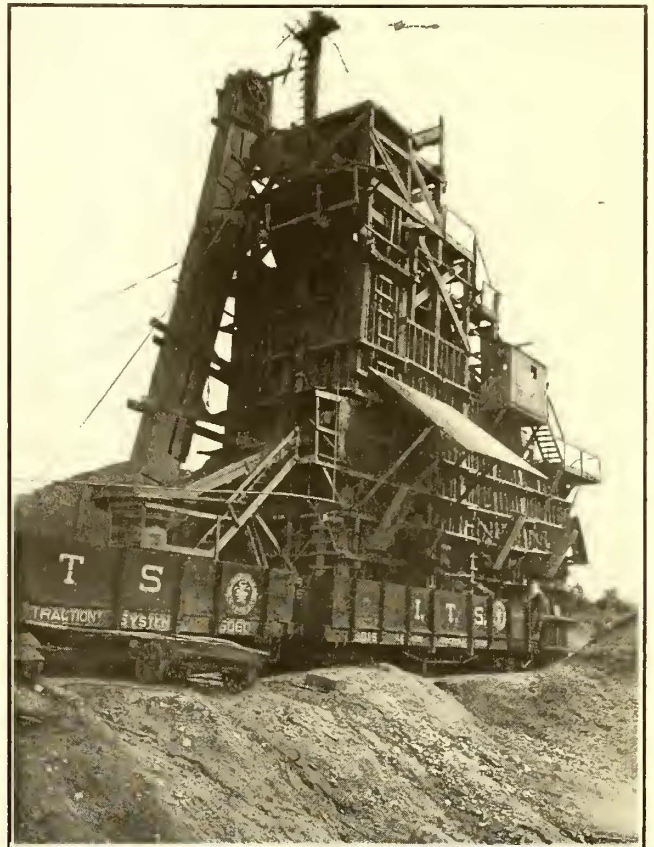
### *Good Return from Installing Side Tracks*

To give some idea of the money expended for these team and industrial side tracks annually, it may be of interest to state that during 1914 approximately \$10,000 was expended in this way. In 1915 more than \$18,000 was spent for freight side tracks, and for the first two months of 1916, more than \$6,000 has already been spent for this purpose. These amounts, of course, do not include the cost of the track beyond the railway company's right-of-way, but simply represent the expense which the railway company must bear. A few examples of expenditures for side tracks and the returns expected are as follows: \$2,850 was expended for a siding to an elevator which, it was estimated, would develop at least 100 cars of grain annually. For an expenditure of \$800 for a track connection to a brick company, the traction company received a revenue of \$1,050 during the first ten months it was in operation. In six months a grain elevator, which was erected beside a siding already installed, delivered to the traction company eighty-three cars of grain, returning a total revenue of \$3,820. It was estimated that this grain elevator would ship approximately 150 cars a year.

A track connection was built to a large cartridge manufacturing plant which was arranged for switching cars from foreign lines, and at the same time the electric railway furnished a special service for the employees. This plant employed between 350 and 500 men, and most of them had to be transported to the factory site. In two months the traction company also switched 226 cars from connecting lines and received a switching revenue of approximately \$700. Aside from the switching service, 147 carloads of freight originating on the electric line were delivered to this plant, returning a total revenue of \$3,100. The securing of this plant on the electric line also resulted in a steam railroad's agreeing that the electric line should do the switching which, of course, meant that it would receive the switching revenue. These figures are largely for construction materials, and it is expected that when this plant is in operation that the traffic will be divided between the

electric line and the steam road as far as freight is concerned, and in addition the electric railway will have a 6-mile haul for the plant's employees.

Aside from the team tracks installed at practically any point along the company's lines, upon request and evidence that they will be productive of sufficient business to make them a paying proposition, team tracks are also installed at way stations, and in many locations the railway company has provided wagon scales. Usually these team tracks, unless the carload freight business is heavy, also serve as house tracks with an elevated freight platform on the freight-room side and a driveway on the team side. This plan of construction



ILLINOIS TRACTION CARLOAD FREIGHT—LOADING CARS AT GRAVEL PIT NEAR MACKINAW

permits a single track to serve for both less than carload and carload shipments.

Several of the accompanying diagrams and views have been reproduced to illustrate the plans used in making these industrial plant connections.

### *Freight Service Increases Power Requirements*

As the freight business grew and the length of the freight trains increased from four or five cars to thirty or forty cars, additional substation capacity became necessary, and as a substitute for increased feeder capacity, the trolley voltage was raised from 550 to 650. This necessity for increased substation and line capacity was not entirely due to the freight traffic but largely so. On the other hand, as the quantity of freight increased, particularly that of carload freight, more and more of the trains were scheduled for night runs when the passenger cars had handled the evening traffic peak. A number of new substations were added to the system in 1909 and 1910, and the standard substation equipment of one 300-kw. rotary converter was, in many



ILLINOIS TRACTION SYSTEM									
REPORT OF CARS ON HAND AT <i>Springfield</i> 8:00 A. M. <i>Apr 21</i> 191 <i>6</i> .									
Note—Numbers and Initials must be taken from the cars and not from way-bills. This report is to be made in triplicate DAILY EXCEPT SUNDAY up to 8:00 A. M. One copy to be sent to Car Accountant, one copy to Chief Dispatcher and one copy for Station File. Forward on first passenger train									
INITIAL	NUMBER	KIND	CONTENTS	Date Loaded	Date Unloaded	Date Delivered	CONSIGNEE	STATE CAUSE OF DELAY OR IF WANTED FOR LOADING	
	Loaded	Empty							
	1177	Y							
	1188		Mase						Weather Condition Raining P.R.S.
	1066		M						
	1103	X							
	506		Hay						
			1/8 <sup>th</sup> St						
			1/8 <sup>th</sup> St						
			Castleman						

ILLINOIS TRACTION CARLOAD FREIGHT—GENERAL CAR DISTRIBUTER RECORD FORM

instances, doubled, or a 500-kw. machine was substituted for the 300-kw. machine. At the present time the average distance between substations is 9.8 miles, the total number of substations is thirty-eight, and the total number of rotary converters is forty-four. These provide a total kilowatt capacity of 22,600 kw., or the equivalent of approximately 51 kw. per mile of track.

Scheduling Freight Trains

All freight trains handling carload freight are operated on night schedules, except in two cases, one of these being of necessity a day run in order to complete deliveries, and the other a short run on a branch line where there is practically a store-door delivery. Freight service between Springfield, Ill., and St. Louis, Mo., includes two trains each way daily, which pick up and set out loaded cars en route. The other train is known to the service as a drag, or a dead-freight train, and besides handling what is termed "rough freight" or freight in carloads, this train does all the miscellaneous switching en route. All freight trains are scheduled to leave the freight terminals, but they run as extras, with rather liberal running time so that they will have ample time to do the road work. The usual freight train from St. Louis to Springfield averages about thirty loaded cars and four empty cars. The train making the run in the opposite direction is somewhat lighter, consisting of an average of about seven loaded and fifteen empties. The merchandise train out of St. Louis to Springfield averages about eight loaded cars daily, and the merchandise train running in the opposite direction averages about four loaded and six empties daily. Aside from these two there are also two trains operating over part of this same division, which usually con-

sist of seven loads of freight out-bound from St. Louis, and the in-bound train usually averages about two loaded and six empty cars.

A typical weekly report of the total amount of freight handled by the Illinois Traction System on the three divisions is as follows:

EASTERN DIVISION

422 loads of coarse freight handled.  
Sixty-eight loads of merchandise handled.  
One load of coarse freight received from C. & E. I.  
Six loads of merchandise received from C. & E. I.  
Twenty-four loads of coarse freight delivered to the C. & E. I.  
One load of grain transferred at Glover.

NORTHERN DIVISION

514 loads of coarse freight handled.  
218 loads of merchandise handled.  
Fifty-seven loads delivered from P. & P. U.  
Five loads received from P. & P. U.  
Nine loads delivered to P. R. T.  
Nine loads of grain delivered to Wabash at Decatur.

SOUTHERN DIVISION

235 loads of merchandise handled.  
377 loads of coarse freight handled.  
Eighty-eight loads of merchandise out of St. Louis.  
Two cars of stock.  
Nineteen loads of cinders.  
Sixty-one loads received from the M. B. T.  
Seventeen loads delivered to the M. B. T.  
Twenty-four loads received from the Southern.  
Two loads delivered to the Southern.

Distributing Freight Cars

No small part of a successful carload freight handling business is the promptness and fairness of distributing empty cars. These must not only be sent promptly, but it is often necessary to distribute empties in proportion to the needs when there is a car shortage. In that case considerable diplomacy is necessary in order to eliminate friction. Cars to the various side tracks and industries are distributed by the division superintendents through the dispatchers. Records of interchange of cars between divisions as well as of the distribution of cars to the industries over the entire system are kept at the office of the assistant general manager by a general car distributor. In order to get a line-up on the car situation daily all way-station agents are required to make car reports to the division superintendents. "Blind" sidings or sidings between stations are checked by the first train crews over the road each morning, and these crews report to the division superintendents through the dispatchers. As soon as this information is in the hands of the division superintendent he arranges for the car distribution which is executed by the dispatcher, who also reports over the telephone to the general car distributor as to what he has done. In general there are seldom more than 10 or 15 per cent of foreign cars on the system at any one time, so that the work of distributing empties is that of handling the company's own equipment. On the

ILLINOIS TRACTION SYSTEM																																			
Report of Equipment, 24 hours ending 1:00 p. m. 19__																																			
No.	Stations	ON HAND										WANTED					HAD ORDER								FOREIGN CARS			REMARKS							
		Trailers		Box Cars		H. C. Coal Cars		F. B. Coal Cars		Flat Cars		Trailers	Box Cars	H. C. Coal Cars	F. B. Coal Cars	Flat Cars	Trailers	Box Cars	H. C. Coal Cars	F. B. Coal Cars	Flat Cars	Initial	Number	Kind	Contents	In Transit									
		Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty	Loaded	Empty		
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AC	AD					
C. B. & D. DIVISION																																			
1	Decorah shops																																		
2	Decorah																																		
3	Decorah Truck to Johnson, Incl.																																		
4	Clinton																																		
5	Decorah to F. C. Comm., Incl.																																		
P. B. & C. DIVISION																																			
6	Bloomington																																		
7	Decorah to Farm Creek, Incl.																																		
8	Peoria																																		
P. L. & S. DIVISION																																			
9	Cash																																		
10	Summit to Niles, Incl.																																		
S. & N. F. DIVISION																																			

ILLINOIS TRACTION CARLOAD FREIGHT—WAY STATION AGENTS' CAR REPORT FORM



other hand, foreign cars are kept moving in order to keep the per diem charges at a minimum. The forms employed by the station agents in reporting the checked cars to the division superintendents are shown in the accompanying illustrations, as well as the general form used by the car distributor in distributing cars over the entire Illinois Traction System.

### Quantity and Kind of Freight Handled

As mentioned earlier in the article, freight traffic during the past seven years has increased 115 per cent, and the earnings from freight now represent about 20 per cent of the gross earnings of the interurban lines. Freight revenue is received from two sources, namely, revenue for transporting freight and revenue from switching service rendered to industries and connections. Earnings from these two sources for the last seven years are as follows:

Year	Freight Revenue	Switching Revenue
1909	\$271,389.20	\$10,280.97
1910	357,873.20	14,057.50
1911	372,443.97	13,437.27
1912	462,055.83	16,446.66
1913	485,084.35	16,122.88
1914	483,060.76	16,396.73
1915	475,696.84	24,186.06

Another table of statistics on page 50 indicates the sources of the tonnage and shows the growth of freight traffic beginning in 1912 and ending Dec. 31, 1915.

Regarding the future the management of the Illinois Traction System believes that it has only begun to "prick the surface," so to speak, of its freight traffic possibilities. Only within the past few years has this company been able to offer attractive inducements to industries to locate on its lines and belt railways, and during the present year contracts already executed and others in process will add a number of other important industries to those already using the electric railway freight service. While connections, through rates and reciprocal switching arrangements have been made with steam railroads, they have as yet not fully opened their doors to the electric railway traffic, but there is no longer any doubt that they will realize the error of their ways in the past, and full interchange and through routing of freight will be in effect with all connecting steam railroads.

## Massachusetts Commission Issues Report

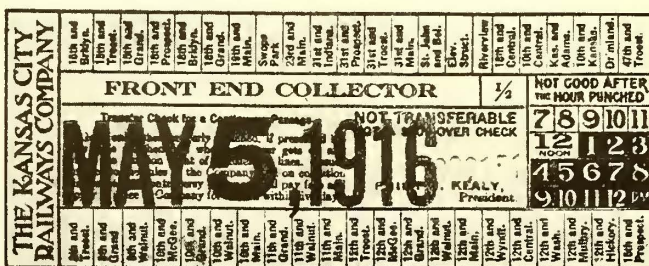
The third annual report of the Massachusetts Public Service Commission has been issued, the first volume from the press covering reports and orders and including 185 pages of introductory reports and general statistics and 648 pages of orders, special reports and exhibits, with the usual maps of steam and electric railways in the State. Among the special reports of interest to electric railways, which have in the main been abstracted in the ELECTRIC RAILWAY JOURNAL at previous times, are a twenty-four-page review of the jitney bus situation in Massachusetts and elsewhere, prepared by Charles E. Mann, executive secretary of the commission; street railway power requirements in Massachusetts; important decisions in the fare cases of the Blue Hill Street Railway, New Bedford & Onset Street Railway, and Norfolk & Bristol Street Railway; an investigation of safety conditions on the Boston rapid transit lines, and an eighty-eight-page report by the commission to the Legislature on metropolitan transportation problems at Boston.

## Front-End Collector's Transfer

The Adoption of This New Transfer Has Simplified the Collectors' Work and Accelerated Traffic 15 Per Cent

THE Kansas City Railways on May 1 adopted a special transfer for "front-end collectors," which eliminates the necessity of these conductors handling several different transfers. Heretofore the front-end collectors, in serving each car, have had to use the transfer of its particular line, and the delay in selecting and punching these various transfers has been a serious retardant in the movement at congested corners. The new front-end collector transfers have in the margins the names of about forty boarding points where front-end collectors are customarily used, and before he starts work the collector punches the designation of the corner where he is to collect. The conductors on any lines where the transfer may later be used have then only to note that the passenger is not being carried back to his starting point.

These transfers are punched for hour periods, instead of for fifteen-minute periods as are the ordinary transfers, removing more of the burden from the front-



TRANSFER FOR FRONT-END COLLECTION—THE PUNCH INDICATES BOARDING POINT, NOT TRANSFER POINT

end collectors. A note on the back of the transfer instructs the collector to punch the printed location nearest his actual working place, in case such place is not included in the list. The Kansas City Railways use ordinarily forty to fifty front-end collectors. During the "Billy" Sunday revival ten or fifteen more were used, where attendants at the services boarded the cars homeward bound. It is estimated that the use of these transfers will save four to six seconds on each car taking passengers at these boarding points.

Heretofore the collections of front-end men have been averaged and estimated among the various lines served at the corners where they were stationed, and credited to those lines. The new transfers will not allow of quite such close reckoning, but the same system of estimating as is used for discovering the course of a transfer over various lines, based upon occasional record-taking by conductors, will be employed. Eventually a coupon system may be adopted in order to attain accurate records of origin of travel and course of transfers. The front-end transfers constitute usually about 2 per cent of the 6,000,000 or 7,000,000 transfers issued every month, but it is estimated that their use makes a difference of more than 15 per cent in the expedition of traffic.

A ticket office has been opened in the American Trust Building on the Public Square, Cleveland, Ohio, for the accommodation of patrons of the Lake Shore Electric Railway and the Cleveland, Southwestern & Columbus Railroad, the cars of which are compelled to stop there for passengers instead of in front of the interurban depot.



# Investment per Revenue Passenger and Density of Traffic

The Author Analyzes the Relation Between Electric Railway Investment and Traffic Density on the Basis of His Suggested Unit of Investment per Revenue Passenger

—Charts Based on Statistics of Existing Properties Are Also Presented

By D. J. McGRATH

Research Assistant Massachusetts Institute of Technology

IN dealing with the relation of the capitalization of street railways to the fair value or the actual investment, a unit of comparison called the "investment per revenue passenger" was suggested by the author in an article appearing in the *ELECTRIC RAILWAY JOURNAL* for May 8, 1915. It was pointed out at that time that while this unit was not by any means a fixed quantity, or capable of exactly defining a standard of reasonable capitalization for all transportation companies, it seemed to have certain advantages over the more commonly used standard units such as the "mile of track" or the "dollar of gross revenue." Some ten examples which were considered fairly typical were given. The figures in these particular cases varied from a minimum investment of 13 cents per revenue passenger to a maximum of 32 cents. Some of the reasonably probable causes of this variation were outlined in the article.

During the past year, in connection with the investigation which is being made of the electric railway fare and traffic problem, the research division of the Massachusetts Institute of Technology has acquired a considerable amount of additional data along the lines of the actual investment in various street railway companies and has reduced these data to the revenue passenger unit.

As a result of this form of analysis it has been found that while there is a certain natural and proper variation in the costs of constructing and equipping different

street railways, there appears to be, if the data available may be considered fairly representative, a reasonably consistent relation between the investment per revenue passenger and the density of traffic.

In considering the following discussion and statistics, it must be remembered that they are applicable only to ordinary street railways which are wholly, or almost wholly, engaged in passenger business at small unit fares such as 5 or 6 cents. The curves were derived from the data of thirty-five different street railways, more than half of which are in the State of Massachusetts, where the capitalization of the companies has always been limited to the actual investment of money in the property and has been under the supervision of a State commission. The remainder of the companies included in this study were ones for which reliable engineering appraisals were available in which the investment or the reproduction value had been determined. Systems serving various classes of territory were included, city suburban and rural lines all being treated alike, but the high-speed interurban type of electric railway, which corresponds more nearly to the steam railroad type of service, was excluded. No company was included which rented or leased any considerable part of the track or cars which it operated, unless the investment represented by such rented property could be determined and included. On the accompanying plots, the data are specially indicated for companies which purchase all or most of their power, and so have little or no investment in power plant. The figures are practically all from reports of the years 1914 or 1915.

The principal relation is shown in Fig. 1. The curve which has been drawn in is merely intended to guide the eye to the approximate average location of the points and not to represent any arbitrary standard. Granting that the data used are fairly typical of street railway conditions generally in this country, it may be concluded from this plot that the average investment per revenue passenger decreases as the density of traffic increases up to a certain point, after which higher traffic densities fail to cause any material decrease in the investment per passenger. This seems to indicate that in the larger cities, the traction companies have to put in so much more investment in heavier track, better cars, more power plants and the added track and equipment required for long hauls that any advantage which might be gained from increasing density of traffic is offset.

An example of this is shown by the two points which are considerably above the average curve, one near 400,000 and the other near 750,000 revenue passengers per mile of single main track. These points represent the investment in two very large cities where long hauls are given for the single fare and where there is a material amount of unusually expensive construction.

The points for companies which do not own their

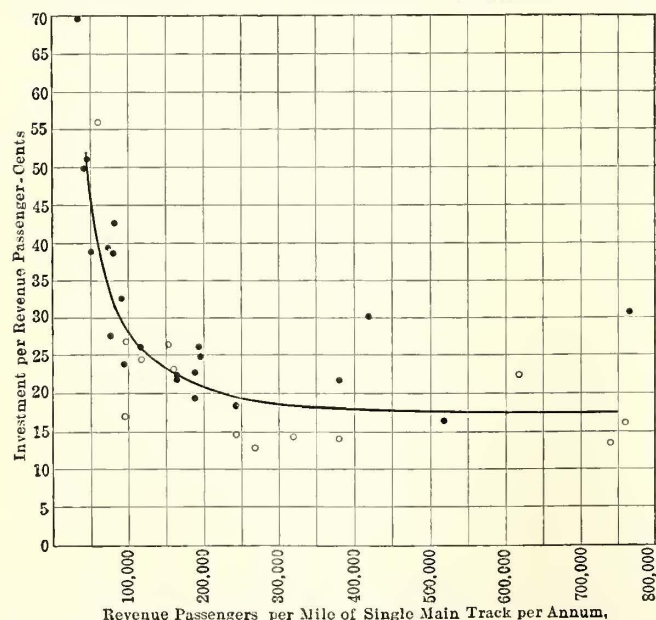


FIG. 1.—RELATION BETWEEN TOTAL ANNUAL COST OF PERMANENT PROPERTY PER REVENUE PASSENGER PER ANNUM AND DENSITY OF TRAFFIC FOR THIRTY-FIVE TYPICAL STREET RAILWAYS

In this diagram the cost of parks and similar non railway property is excluded. Circles indicate companies which have little or no investment in power plants; dots, companies having power plants.



power plants are shown by the hollow circles as distinguished from the other solid dots. The former are generally somewhat lower on the curves than the others, as would naturally be expected.

It is plain that the investment per revenue passenger is subject to some considerable variation on different systems even at approximately the same densities of traffic, but this form of analysis seems to give somewhat more consistent results for comparative purposes than a mere scattering of investment data without reference to any of the limiting conditions.

Where the density of traffic is less than 100,000 revenue passengers per mile of single main track, the investment per revenue passenger becomes rapidly greater. In fact, these statistics indicate that operation is not so likely to be profitable at 5-cent fares where the density of traffic is much less than 100,000 per mile of track.

When the investment per passenger gets to be 30 cents or more, as it evidently does at these low densities, an average rate of return of, say, 7 per cent on investment, requires 7/100 of 30 cents, or 2.1 cents at least, out of each passenger's fare. Since a low density of traffic also means higher operating expenses per passenger, there is little likelihood of 2.1 cents being available for return on investment after the nickel fare has been "split" for the other expenses. A 7 per cent average return is used here merely as an illustration; it is not intended to stand as an arbitrarily selected "fair" rate.

The general precept may be laid down that the more revenue passengers per mile of track, the better are the chances for profitable operation. However, a practical limit is reached along this line in the operation of street railways in very large cities where the length of passenger haul for the 5-cent fare becomes so great as materially to reduce the earnings per car-mile. Moreover, when any part of the trackage becomes so congested that the company has to resort to the building of subway or elevated lines to handle the traffic, then the investment will be abnormally increased.

In Fig. 2 there is shown that part of the investment which is devoted to the construction of road and track, exclusive of power plant buildings, power equipment and rolling stock. The curve is similar in shape to the total investment curve shown in Fig. 1 but of course it is somewhat lower on the scale. All the companies included in making up Fig. 1 were not included in the

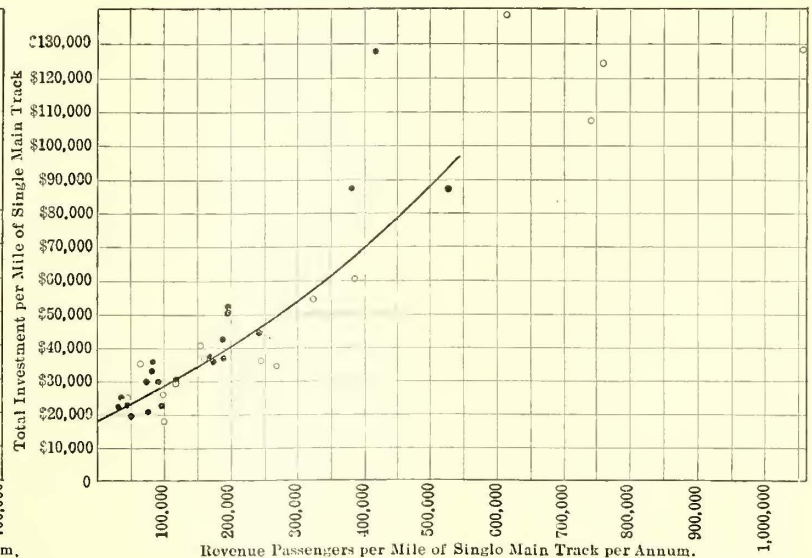
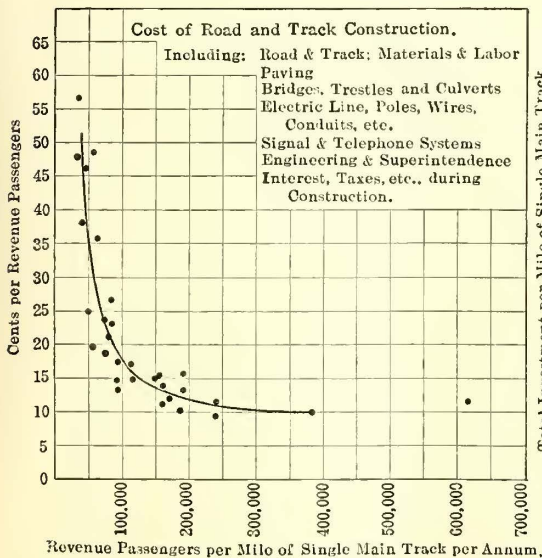


FIG. 2—RELATION BETWEEN COST OF ROAD AND TRACK CONSTRUCTION AND DENSITY OF TRAFFIC. FIG. 4—RELATION BETWEEN TOTAL INVESTMENT PER MILE AND REVENUE PASSENGERS PER MILE

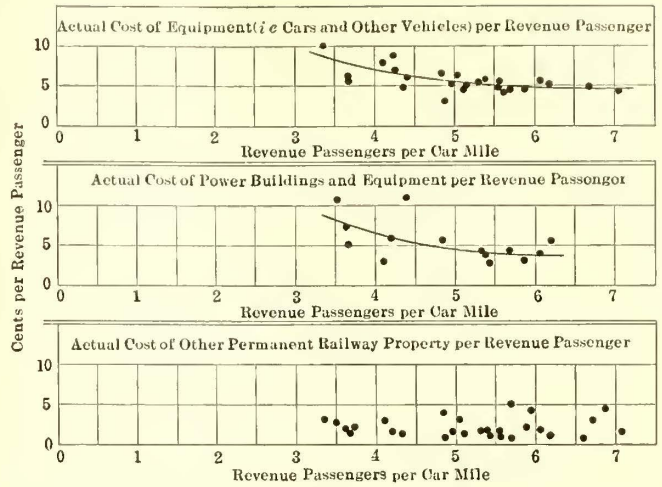


FIG. 3—RELATIONS BETWEEN ACTUAL COSTS OF EQUIPMENT, ETC., PER REVENUE PASSENGER AND REVENUE PASSENGERS PER CAR MILE

construction of the following charts because the more specific data required were not available.

In Fig. 3 the other elements which go to make up the total investment are compared with density of traffic. These elements, however, seemed to be somewhat more closely related to the density of traffic expressed in terms of revenue passengers per car-mile, rather than per mile of track, although the same general form of relation naturally holds true in both cases.

The old unit, investment per mile of track, is also capable of analysis with respect to the density of traffic as is shown in the plot marked Fig. 4, which should prove generally useful when considering statistics in this form of comparison. The reasons for the increase in investment per mile of track as the density of traffic increases are not difficult to explain. In the first place track built for dense traffic is generally, and should be, of heavier and more expensive construction. The electric line for distributing the power along the track must be of greater current carrying capacity and consequently requires more copper. These railways with dense traffic are almost always in the large cities and towns where expensive paving is required which is not necessary in rural districts. Fully as important is the fact that the denser traffic requires more cars and power plant equipment for each mile of track operated.



It is not to be supposed that these general statistics can be used to make any definite or final decision as to whether a given company's capitalization represents a fair investment value or not. Obviously there can be no absolute statistical standard for determining investment or fair value.

If in any given case the unit capitalization falls above the average curve it is by no means a proof of over-capitalization. All the conditions and local circumstances as well as the past history of the up-building of the system must be given due consideration. Indeed, the mere fact of the data falling exactly upon the average curve is not in itself a demonstration that a company is not over-capitalized for the actual amount, condition and kind of property it has on hand.

The statistics of any one particular year are not always a safe criterion to rely upon in these comparisons. A company may have been obliged to make a

large investment in an extension or improvement, which investment is included in its capitalization for a certain year before the extension or improvement has been put into use. This would naturally raise the investment per revenue passenger somewhat above its normal level and it might take one or two years before the extension or addition began to receive its normal share of the traffic.

In general, however, it would seem that these average curves should be of service in broad general considerations of the cost of street railway service and the determination of reasonable systems and rates of fare. They show clearly the general nature of the effect of density of traffic upon the investment in street railway property used for the transportation of passengers. These statistics may also prove useful in making rough comparisons of the capitalization of any particular street railway with others of a similar nature.

# Workingmen's Compensation Insurance

## Report on Different Plans Followed in New York State and Their Advantages, Disadvantages and Costs as Regards Electric Railway Operation

By J. P. BARNES (Chairman)

W. H. COLLINS, C. L. STONE, THOMAS PENNY and ERNEST GONZENBACH

THE workmen's compensation law of the State of New York became effective on July 1, 1914, and it became necessary for each of the employers to designate prior to July 1, 1914, which of the forms of insurance, (1) stock company, (2) mutual company, (3) state fund, or (4) self-insurance, it elected for its protection. In most instances arrangements covering the full term of one year were made. Agitation in the Legislature for amendment to the law was active during the session of the Legislature following the effective date of the law, but material amendments were not enacted until the legislative session of 1915-1916.

During the last few months figures have been made available showing the experience of insurers and carriers under the various plans, and it is intended in this report to set forth briefly some of the figures which have been made available to your committee. Considering the four alternatives, we find certain inherent advantages and disadvantages in the various forms which may be briefly summarized as follows:

### (1)—STOCK COMPANY INSURANCE

The insurer in the stock company is protected under a form of policy, not only against those injuries entitling the workman to compensation under the compensation law, but also against other classes of injuries to workmen, insuring to the employer that the expenditure of his insurance premium definitely protects him against all claims of workmen for injuries, provided that the company in which he insures is sound and stable. The insurer is relieved of the negotiations of settlement of claims, appearances before the commission at hearings upon claims and defence of suits arising therefrom.

The rates of insurance under the policies of the stock companies are, for urban operation, \$3.24 per \$100 of payroll and for interurban operation, \$5.18 per \$100 of payroll. There is no refund or dividend to apply in reduction of these rates, but we understand that policies may be obtained at a lower rate by insurers who have fulfilled certain requirements as to the appointment of

safety committees, safeguarding of hazardous machinery, locations, etc.

### (2)—MUTUAL INSURANCE

The mutual company is in effect a pool entered into by employers in a similar class of business, under the terms of which expense and hazard are shared between those participating in the pool, so that if the mutual company includes all or nearly all of the companies in a certain class of industry, the experience of the mutual company will, over a term of years, reflect the true experience of the industries, equitably dividing the burdens of that industry among all employers participating.

The insurance rates are the same as for stock company insurance, but the unexpended portion of premiums paid is returnable as dividends after the establishment of a sufficient reserve fund, and arrangements may be made for distribution of dividends on a basis of pro-rating, which will recognize comparative merit claims to consideration of the various insurers. This feature is distinctly valuable and should be emphasized, as it makes possible an equitable distribution of the burden of insurance of an industry and does this without over-burdening the well-managed company for the faults of another company in the same pool not so well or skillfully handled.

The policyholders in the mutual company are able, by choosing directors suitable to them, to administer the funds of the company and assure themselves that the business of the mutual company is carried on along lines of policy agreeable to the policyholders. This influence over the manner of settlement and handling of funds is not had by the policyholder either in the stock company or in the state fund, although the individual has even greater latitude under the plan known as "self-insurance" than under any of the other three.

Under the plan of mutual insurance the extreme or catastrophe hazard is shared generally throughout the industry and may be further guarded against by re-insuring of the catastrophe hazard on the part of the mutual company. Many mutual companies reinsure against liability in excess of, say \$15,000 or \$20,000 aris-

\*Abstract of report presented at annual meeting of New York Electric Railway Association, Niagara Falls, N. Y., June 27-28, 1916.



ing out of one accident, thus minimizing the catastrophe hazard to their policyholders.

(3)—STATE FUND

Insurers in the state fund pay a lower initial rate than in either stock or mutual insurance (\$2.50 for urban and \$4.75 for interurban, as contrasted with \$3.24 and \$5.18). Under the provisions of the law a separate group may be established in the state fund for any particular industry, and dividends based upon the experience of the group may be had, the benefit of the favorable experience not being shared with employers in other industries. The general conduct of the business of the state fund is similar to that of the mutual company, except that the administration of the funds is in the hands of officers appointed by the commission and is not subject to any control on the part of the insurers in the fund. Up to July 1, 1916, the administration expenses of the state fund have been paid by the state, but after this date these expenses will be borne by the state fund, which will increase the cost of this form of insurance. Insurers in the state fund are not protected against catastrophe losses of other insurers in that fund, the catastrophe hazard of all lines of industry being shared by all insurers in the fund, at least to the extent of their premium payments. The manager of the state fund is authority for the statement that insurers in the state fund are not subject to any assessment liability. The commission, however, has authority to revise rates from time to time. The State Industrial Commission has ruled that it has no right or authority under the law to assess the state fund policyholder, which ruling has been confirmed in an opinion by the attorney-general. On the other hand, the members of the mutual company incur an assessment liability of 100 per cent of their premium and do not secure release from liability to pay compensation as do insurers in the state fund.

(4)—SELF-INSURERS

Employers may elect to settle compensation claims directly upon presentation of satisfactory evidence to the commission of their ability to meet these obligations. In this connection the commission requires the deposit of an approved security in an amount equivalent to six months' premium at the rate of the state fund, and in addition a cash deposit from which claims are paid, it being the duty of the employer to keep this fund always at the amount specified by restoring thereto any amount that may be withdrawn by the payment of claims. The self-insurer pays the least for his compensation insurance of any of the classes, but on the other hand, bears alone the burden of his catastrophe hazard. The commission is authorized to require payment by the self-insurer of an amount estimated by the commission to be sufficient to meet all deferred payments arising out of any accident, which renders the self-insurer liable to relatively large lump-sum payments at the will of the commission.

The experience of insurers under various forms of policies has tended to show that the rates charged for stock and mutual insurance are excessive, or else that the experience of the companies in this state, since the enactment of the compensation law, has been unusually favorable. So far as your committee could ascertain, there does not seem to be, in the experience of the companies in this state, a justification for the higher rate charged for interurban as compared with urban operation, and it would appear that these rates, and especially the interurban rate, are subject to adjustment downward.

The experience of the self-insurers under the law

shows a considerably lower cost than any of the other forms of insurance, but this statement should be viewed in the light of the fact that the companies from whose records information was obtained have not suffered the burden of any accidents of unusually disastrous nature, a danger which confronts all self-insurers.

PLAN OF "UTILITIES MUTUAL"

The gas and electric companies, a business similar to, and to some extent allied with, the electric transportation business, have formed a mutual insurance company, known as the Utilities Mutual, eighteen months of whose experience is available for comparison. The expense ratio of this company over the eighteen months has been 22 per cent, the loss ratio 22.50 per cent, leaving a balance to apply on surplus and reserve of 55.5 per cent. The tendency toward increase of settlements and general cost of this form of insurance is illustrated by the following comparative table, showing the experience of the company just quoted for the first twelve months of its operation, as compared with the eighteen months, the latter figures including the former:

	For Twelve Months	For Eighteen Months
Loss ratio .....	16.19 per cent	22.50 per cent
Expense ratio .....	20.27 per cent	22.00 per cent
Surplus .....	61.76 per cent	55.50 per cent

The increased loss and expense ratios and decrease in surplus for the eighteen months, as compared with twelve months, is stated by the Utilities Mutual Company as due to reductions in advance premium through individual ratings by the compensation inspection rating board. These reduced premiums illustrate the immediate advantage to be obtained in the mutual company from favorable experience.

No figures of loss ratio, as applied to the electric railway industry, are available, but it seems fair to presume that the loss ratio, being dependent upon the state of the industry rather than on the form of insurance carried, would be practically constant under either the mutual or state fund plans.

The Utilities Mutual, whose officers and directors are chosen from among the officials of lighting companies throughout the state, and whose affairs are under the management of Parsons & Company, is willing to extend its plan of operation to include electric railway risks and has, at least in one instance, already done so.

The plan of participation on the part of the electric railway industry contemplates keeping the statistics as applied to electric railway companies separate from those of the other industries, so that each industry may know its own experience, individually and also as compared with the experience of the other industry. They further propose that upon participation in that company by the electric railways, places will be made on the board of directors for representatives of the electric railway interests, and by-laws will be adopted such that the relative representation on the board of directors of the railway and lighting representatives will be proportional to the premium payments from the two industries.

The estimated premiums of the entire electric railway industry of the state, based upon payroll figures, is four times that of the lighting industry, and under the plan proposed, assuming that all or nearly all of the electric railways insured in the Utilities Mutual, the board of directors would comprise a majority of railway representatives.

CONCLUSION

There are then, five plans from which the railways of the state have to choose: (1) stock company insurances; (2) mutual company insurance in a company composed entirely of street railway policyholders; (3) in-



insurance in a utilities mutual, composed of railway and lighting interests; (4) insurance in state fund; (5) self-insurance.

Your committee deems best to refrain from any recommendation to the member companies as to the various forms of insurance, confining itself solely to a statement of the conditions and possibilities of each method and to form the basis for discussion on the floor of the convention. Your committee has in its possession considerable data regarding the costs and conditions of the various forms of insurance, which are omitted from this report for the sake of brevity, but which are available to member companies interested in securing the information.

## Fare Increase Denied

United Traction Company Said Not to Have Proved Case for Higher Interurban Fares—Albany Service More than Is Justified by Earnings

UPON the ground that the United Traction Company, Albany, N. Y., had not proved its need for an increase of fares between Albany and Troy and that the proposed increase from 10 to 15 cents with full transfer privileges would be unjustly discriminatory against users of the Albany-Troy line and residents along the Troy road, the Public Service Commission for the Second District on June 28 refused to permit the company to put its proposed new schedules into effect. Commissioner Frank Irvine wrote the opinion in the case, in which all the other commissioners concurred. Commissioner Carr, however, submitted a memorandum in which he agreed that the proposed schedules should not be permitted, but suggested that as the company undoubtedly needs additional revenue it might gain this by keeping the fares as at present and withdrawing the transfer privilege to and from the interurban line for local lines both in Albany and Troy.

Although figures were presented to show that including a profit from the ownership of the Hudson Valley Railway the United Traction Company operated last year at a deficit of about \$70,000, and although it was testified that a "practical study" of the situation had convinced the company that the only means to increase the revenue to meet this deficit was to increase the Albany-Troy fares, Commissioner Irvine did not attach much value to such evidence. He said that there was no evidence as to the value of the property employed in the Albany-Troy service, or in the entire service rendered by the company. Commissioner Irvine then quoted a table of the company's earnings as filed with the commission, showing that the revenue per car-mile on the Albany-Troy line was greater from 1910 to 1914 than the revenue per car-mile either on the Albany or Troy divisions. In 1914 and 1915 the revenue per car-mile was slightly less than on the Albany division but much greater than on the Troy division. "An inspection of the tables shows conclusively," said Commissioner Irvine, "that the losses, if any, are not because of the Albany-Troy operation." He also stated that while no figures were procurable showing the cost of operation on the Albany-Troy line, the company not distributing costs to the various divisions, it seemed more than probable that the operating expense per car-mile is less than on the urban lines. He was led to this conclusion by the fact that there is less paving expense on much of this line, that more economical rails can be used, and that the higher-speed interurban operation reduces platform expense.

Of the discrimination in the proposed schedule, Commissioner Irvine wrote as follows:

"It is said that as no suggestion has been made that

unjust discrimination would result from the proposed tariff, its establishment is within the managerial discretion of the company. In order to establish discrimination it is not necessary that any witness should use the word. In Albany or in Troy, one on a 5-cent fare may ride 7 miles without a transfer and 9.24 miles in the same general direction with a transfer. In view of what has been shown as to revenues and expenses, how can it possibly be contended that there is no discrimination in charging three times as much for a distance of 7.3 miles (the mileage of the Albany-Troy line) as is charged for 7 miles or 9 miles or 10 miles, and twice as much between the Schuyler Bridge and Grabrance Lane district and Albany or Troy, a maximum of about 5 miles, as is charged for those other distances in the Albany district or the Troy district? These are certainly discriminations and if they are not unjust discriminations the duty devolved upon the company of presenting evidence to justify them. The record is absolutely barren of such evidence."

Not the least important part of this decision, it is said, was the suggestion in Commissioner Irvine's opinion that the public service commissions have the power in the light of the recent Ulster & Delaware Railroad decision of the Court of Appeals to permit increases in rates where the need for them is proved, notwithstanding previous legislative enactments limiting such rates. Under such an interpretation of the law as handed down by the highest tribunal, it might be possible for the commissions to permit an increase of fares above 5 cents in any city, notwithstanding the provisions of the railroad law which on its face restricts street railroads from charging more than 5 cents for a ride between any two points on its system in any city or village. "This statute by its terms," said Commissioner Irvine, "does not apply to passengers between different communities in the Troy district or to passengers between Albany and Rensselaer. But in view of the recent decision it seems that the restriction is no longer operative in any case where a company can show that at the statutory rate it is unable to earn a fair return. Even if the statutory restriction applied in the present case and the company was not earning a fair return, it would not follow that this increase should be permitted. One class of patrons may not be subjected to a rate in itself unreasonably high in order to recoup losses sustained in serving other classes at unprofitable rates. It can make no difference in this respect that the unprofitable rate is imposed by law. The company rather than its patrons must bear the burden thereof."

Commissioner Carr, while concurring in the refusal of the commission to approve of the proposed increase of fare to 15 cents between Albany and Troy, stated that the problem might best be solved by keeping the fares as at present—10 cents between Albany and Troy on the direct line and 5 cents from the intermediate zone to any place on the direct line in either city—but withdrawing the transfers to and from the Albany-Troy line and any of the local lines in Albany and Troy.

In his opinion this would be a fair arrangement of these rates and it would not work any hardship upon the public in any respect, while it would give the company a reasonable return for the service which it performs. Of the general financial situation of the company with regard to the service furnished, Mr. Carr had this to say:

"Another thing which should be borne in mind in connection with this case is that, in Albany particularly, the company is as a whole giving more service than its earnings justify. Whether this is due to the fact that it runs cars on a close headway during the non-rush hours as well as during the rush hours, I can not state. It may be that the people in Albany could get better



service than they get now with a considerably less number of car-miles per mile of road. The figures show that the car-miles per mile of road in Albany are considerably more than 60 per cent higher than any other road in the State of New York outside of the metropolitan district. If a thorough rearrangement of service could be made in Albany it is possible that much better accommodations could be given to the public at a lower cost to the company."

## C. E. R. A. Reaches Home

### Britton I. Budd Describes Activities of Illinois Electric Railways Association—Other Events of Last Two Days of Cruise

At the meeting of the Central Electric Railway Association held on the steamship South American on the morning of June 28, J. A. McGowan, secretary and treasurer Terre Haute, Indianapolis & Eastern Traction Company, and chairman of the committee on resolutions presented a report. It took the form of extending the sincere thanks of the association to the supply men's committee of arrangements for the excellent work it had done in arranging all the details of the four-day cruise; to the Terre Haute, Indianapolis & Eastern Traction for the special car it ran from Indianapolis via Dayton and Toledo, Ohio; to the Union Traction Company of Indiana for the special car it ran from Indianapolis to Toledo via Fort Wayne; to the Ohio Electric Railway Company, the Toledo Railway & Light Company, the president, officers and speakers at the sessions held on the boat trip, and to S. W. Greenland, Fort Wayne, R. A. Crume, Tiptecanoe City, and C. K. Minary of Benton Harbor, Mich., for the courtesies they had extended the association; to L. C. Smith & Brothers for the loan of a typewriter; and A. B. Dick Company for the loan of a mimeograph which was used to publish the "C. E. R. A. Deep Blue Daily." The following resolution regarding this daily was also presented by this committee: "Resolved: That the Central Electric Railway Association extends its sincere thanks to the ELECTRIC RAILWAY JOURNAL, through its representatives Messrs. Hugh M. Wilson, L. E. Gould and E. M. Haas, for the publication on board the steamer of the sparkling and witty 'Deep Blue Daily,' giving an account of all the accidents and incidents of the voyage." A proposed amendment to the constitution of the association affecting the qualifications of its officers was also proposed and it will be submitted for consideration of the members in printed form.

#### HANDLING LEGISLATIVE MATTERS

Britton I. Budd, president Chicago Elevated Railroads, was then introduced, and he expressed much interest in the co-operative spirit that was so prevalent among the members of the Central Electric Railway Association. He said that he was very much in favor of the railway officers taking an active part in association work because he believed that they could derive great benefit. Mr. Budd then proceeded to tell of the work of the Illinois Electric Railways Association which, he said, was four years old and embraced forty railway companies. In the second year of this association's existence many bills were introduced in the State Legislature affecting electric railways. This fact was called to the attention of the association, and little or no information was found available concerning the progress of the bills nor the exact wording of them. In fact, bills affecting the transportation industry including both steam and electric railroads had been introduced and were passed without the legislators consulting the officers of the railways concerning the effect they would have on operation. Accordingly the Illinois association decided that it must

take an active part in legislative matters, become personally acquainted with the legislators and openly endeavor to prevent the passage of vicious bills. Mr. Budd said that whenever bills of interest to electric railways were now up for consideration as many as thirty-five or forty officials were present at Springfield and openly used arguments and their personal influence to defeat them. He remarked that it was his experience that when legislators were acquainted with the actual facts concerning the effect of a bill both on the public and on the railways, most of them were reasonable and would not give their support to unjust measures.

Mr. Budd said the association made it a point to have some of the officers of every railway company personally acquainted with their representatives in the State Legislature. He was also of the opinion that the best results could be obtained by bringing the actual operating officers into personal contact with the legislators. The legislators had more respect for views of these practical men than they did for lawyers or paid lobbyists. On the other hand, the experience which these department heads obtained in this work was of much value and a great asset to the railway company they served. The steam railroad representatives have followed about the same plan as the electric railways, and in many instances the representatives of the two forms of transportation have co-operated in bringing about amendments or actually killing detrimental legislation. In conclusion Mr. Budd stated that the work as done by the association in connection with legislative matters had alone justified its existence. The work that its representatives had done before the State Legislature had also brought them in closer friendly relations with the steam roads than they were before.

Charles L. Henry, Indianapolis, responded to Mr. Budd's address. He said that in Indiana the electric railways have a special organization which looks after legislation. This organization is not allied with the association but has all the association's members' interests at heart. It has been the practice of this special organization to have a paid employee attend all the sessions of the legislature and obtain copies of all bills introduced which in any way affect railway operation. The copies of these bills are filed, and whenever they are up for consideration in the Legislature, the officers of the railways affected are called in to the hearing. All bills affecting detrimentally electric railway operation are followed from the time they are introduced until they are killed or amended so that they will not prove vicious. Mr. Henry said that because the Central Electric Railway Association embraced four states, it was practically impossible for it to act in legislative matters, but the representatives from each state have found it more advantageous to act for themselves.

#### OTHER SPEAKERS AND EVENTS ON TRIP

At this point John Benham, vice-president International Register Company, told the association of his very pleasant relations with the Chicago, Duluth & Georgian Bay Transit Company's officers and how they had endeavored to make the trip the success that it was. Upon motion Mr. Benham was authorized to write a letter to the president of the boat company commending the service and thanking the officers most cordially for the many courtesies they had extended to the association. E. M. Walker, general manager and purchasing agent Union Electric Company of Dubuque, Iowa, who was a guest on this trip, was then introduced and made a few complimentary remarks. G. F. Allen, Railway Materials Company, Chicago, Ill., also addressed the association.

After a stop of from 5 o'clock until 10 o'clock in the morning at Mackinac where most of the party made a



tour of the island, the steamship South American proceeded to Harbor Springs, Mich., where it docked for two hours. Owing to the inclement weather, however, very few of the members went ashore, and at the scheduled hour, 4 o'clock in the afternoon, the cruise proceeded to Macatawa Pier in Black Lake, Mich. The steamer arrived there at 7.30 o'clock in the morning, June 30, where a large number of the party disembarked and took the private cars furnished by John F. Collins, vice-president and general manager Michigan Railway, for Toledo, Ohio. The cruise was officially completed at Benton Harbor, Mich., where C. K. Minary gave the association a luncheon at the "House of David" a religious colony near Benton Harbor. At this point the Indiana members were met by the special cars of the Terre Haute, Indianapolis & Eastern Traction Co. and of the Union Traction Company of Indiana, and they proceeded to Indianapolis and Fort Wayne via South Bend and Peru. More than 100 of the party remained aboard the steamer and took the trip across Lake Michigan from Benton Harbor to Chicago.

## Cleveland Pays Railway to Flush Streets

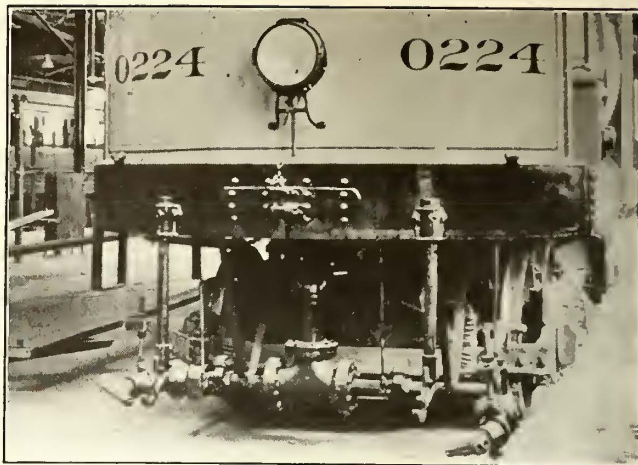
Plan Whereby the Cleveland Railway Flushes the City Streets and a Description of the Flusher Provided for This Purpose

By H. C. EBELING

Engineer Cleveland (Ohio) Railway Company

**A** DISCOVERY by the city officials that a provision of the Taylor ordinance, under which the Cleveland (Ohio) Railway operates, provided that the railway should also "operate hospital and supply cars for the city and such other cars for exclusive municipal purposes as the city shall furnish and maintain," led them to require the railway company to operate tank cars to be employed in flushing and cleaning the streets. For a number of years the city has been flushing its streets to clean them.

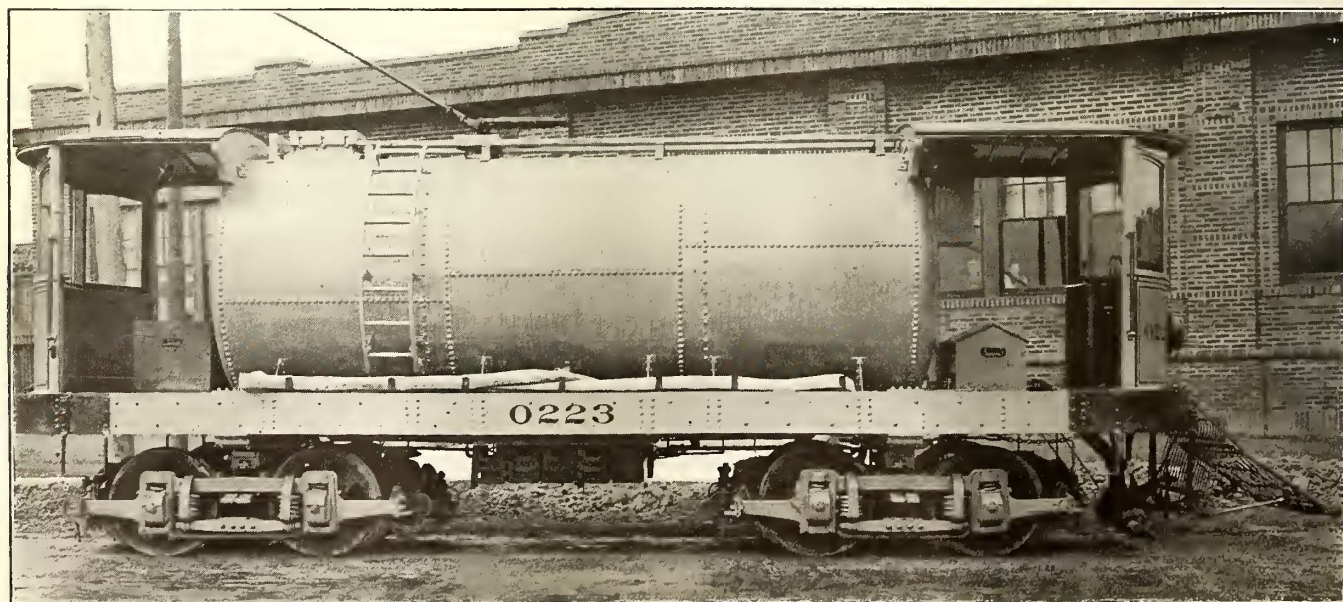
The first efforts of this kind were to flush the streets by discharging water over the surface of the pavement by means of suitable nozzles on tank wagons. The water for these was obtained from the fire hydrants, pressure equal to the city water pressure being secured by closing the tank outlets and forcing the wa-



CLEVELAND RAILWAY'S FLUSHER CAR—VIEW OF NOZZLE ARRANGEMENT

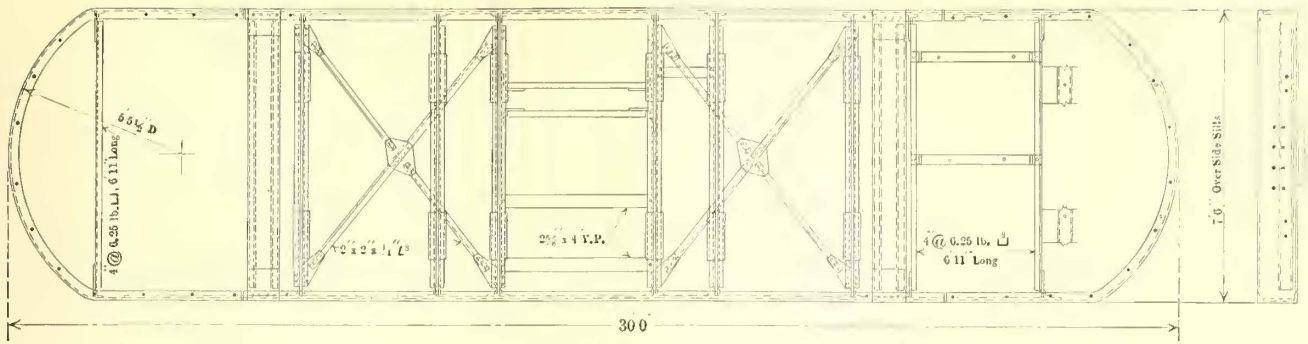
ter into it until the water-main pressure was reached. This method of flushing was found satisfactory for the congested districts, but a tank mounted on a wagon was necessarily small and frequently had to be refilled. Moreover, only a comparatively small section of a street could be cleaned at one filling of the tank, and the streets cleaned in this way were few owing to the limited amount of equipment the municipality had for this purpose.

Prior to the arrangement whereby the railway company flushed the streets it was required under its franchise to sprinkle them, consequently it had a number of service cars for this purpose. When the municipal authorities decided to avail themselves of the provisions of the ordinance, the railway company was instructed to convert its sprinkling cars into flushers. With the advent of the street car flusher it was no longer necessary for the railway company to sprinkle the streets, because the dust and refuse were flushed away sufficiently often to make sprinkling unnecessary to keep down the dust. Furthermore, under the old arrangement the expense of sprinkling its right-of-way was borne by the railway, but under the new plan the city reimburses the company to the extent that it furnishes and maintains the flusher cars, pays the cost of operating them including the wages of the employees and the cost of the power,



CLEVELAND RAILWAY'S FLUSHER CAR—SIDE VIEW OF CAR





CLEVELAND RAILWAY'S FLUSHER CAR—DETAILS OF UNDERFRAME

but contributes nothing toward fixed charges or for track maintenance and renewals.

CONVERTING SPRINKLERS INTO FLUSHERS

It was a comparatively simple task to equip the old sprinkler tank cars so that they would serve as flushers. A De Laval centrifugal pump, direct connected to a 15-hp. Westinghouse motor mounted on the same base as the pump, was placed on the front platform of the car. The suction line of the pump was connected to the tank as close to the bottom as possible. The discharge line was furnished with a Y fitting, and a line from each branch of the Y connected to a nozzle over each track rail and about 11 in. above them. A quick-opening lever gate valve was placed in each branch of the discharge line and arranged to be opened and closed from the car platform by means of foot-pedal operating levers. Each valve is operated independently so that either or both sides of the street may be flushed. The motor operates at 550 volts or the trolley voltage, and it is equipped with a suitable starting rheostat.

The nozzles are designed to discharge a fan-like sheet of water over the surface of the street, the nozzle on one side of the car being so adjusted as to clean the devilstrip and the track upon which the car operates, and the other nozzle catches the refuse washed from the track and devilstrip by the first nozzle and carries it to the curb, whence it flows to the sewer. Views of the nozzle arrangement are shown in the accompanying illustrations. The flushing nozzles are made of cast brass with inner and outer casings. The inner casing has a narrow slot through which the water passes, and the outer casing has a slot a trifle wider. The width of the stream of water is controlled by turning the inner casing. Under ordinary conditions a slot 3/4 in. wide by 6 in. long is used.

After the sprinkler cars which had been converted into flushers had been in operation a short time, they proved so satisfactory that the company was requested to build two additional double-truck flusher cars. This is the type of flusher shown in the accompanying illustrations and its construction is described in detail. An all-steel underframe built of structural shapes was provided to carry the 4488-gal. steel tank. Owing to the weight of this tank when filled with water, the underframe construction is rather heavy, and the 12-in. side-sill channels were each reinforced by a 1/2-in. x 10-in. plate placed between the flanges of the channels. The tank cradles were made of 5/16-in. plates cut to fit the curve of the tank, and where these cradles rested on the underframe they were reinforced with 4-in. 6 1/4-lb. channels. Six cradles were installed to support the tank and they were secured to the side sills by connecting angles. Diagonal braces of 2-in. x 2-in. x 1/4-in. angles were provided in the underframe to stiffen it against transverse deflection. The bolsters were formed of two 8-in. 11 1/4-lb. channels placed 4 3/4 in. back to back

and fitted with 3/8-in. x 10-in. cover plates. The other framing shown in the plan of the underframe was installed to support the pump and motor, the air-brake cylinder and grid resistances.

The tank is built of 1/4-in. and 5/16-in. plates, and it is 18 ft. 4 1/2 in. long over all and 6 ft. 7 in. in diameter. Angles were placed on the bottom of the tank so that it could be bolted to the supporting cradles, and a man-hole and cover were provided to give access to the interior for cleaning and inspection. Brackets secured on the top of the tank support the trolley board, and a ladder beside the manhole was installed for convenience in operating. A De Laval rotary turbine pump, the same as mentioned earlier in the article, having a capacity of 175 gal. of water per minute at a head of 124 ft., was also provided on these flushers. These tank cars are mounted on Brill 27-F trucks, and are equipped with four Westinghouse No. 49 motors and type K control.

While much depends upon the condition of the street and the skill of the operator of these flusher equipments, some idea of their effectiveness may be obtained from the following data taken from the original flusher cars:

Capacity of the tank.....	3,247 gal.
Width of part of street flushed.....	25 ft.
Distance flushed.....	3,500 ft.
Time required.....	8 minutes

On this basis the double truck or large flushers having a capacity of about 4488 gal. will flush 4850 ft. of street on one side only, in about twelve minutes with one filling of the tank.

Electrical Engineers Discuss Transmission Problems

Discussion at Cleveland Meeting Showed Important Problems to Be Those Connected with Reliability of Service

THE thirty-third annual convention of the American Institute of Electrical Engineers was held from June 27 to 30. The headquarters were at the Hollenden Hotel in Cleveland, where the Tuesday, Wednesday and Thursday meetings were held. Thursday afternoon was spent in an outing at Nela Park, where dinner was served in the evening. The last day of the convention was spent on shipboard cruising among the Lake Erie islands. More than 600 members and guests registered for the convention and the technical sessions were unusually spirited and well attended.

In the technical sessions several papers of interest to electric railway men were delivered. These took up some of the latest problems in power transmission, and they are briefly abstracted below.

Methods of minimizing the duration of unavoidable interruptions to service were outlined in a paper presented by F. E. Ricketts. It was advocated that, since



the amount of service affected by opening switches depends upon the nearness of the switch to generator, generator switches should not open automatically on overload. A scheme was described for extinguishing short-circuit arcs by interrupting the generator field current and then restoring it before motor-driven apparatus on the line came to a stop. The difficulties arising with synchronous convertors in this connection were pointed out and relay connections for automatically taking care of the convertors were described.

The report of the transmission committee, of which Percy H. Thomas, consulting engineer, New York City, is chairman, listed the comments of a number of central station men regarding the effect of altitude on the operating temperature rise of electrical apparatus and the use of grounded neutrals on high-tension transmission lines. It was brought out that the effect of grounding the neutral will not be the same on all systems. Opinion as to the desirability of lower ratings on machines for use in high altitudes was divided.

The experiences of the Public Service Electric Company of New Jersey with the various modern central station protective devices were described by N. L. Pollard and J. T. Lawson. In five years of experience with the arcing-ground suppressor, it has operated in every case of fault to ground. Top and bottom dampers on all air-blast transformers, especially where a common chamber is used, were recommended.

In a short paper, O. O. Rider, assistant to general superintendent, Public Service Electric Co. of Northern Illinois, pointed out the value of the isolating transformer with a 1-to-1 ratio as a means of localizing disturbances on extended systems transmitting energy at moderate voltages.

F. L. Hunt, chief engineer, Turner's Falls Power & Electric Co., gave the results of megger tests made on disk insulators on a 66,000-volt transmission line in central Massachusetts. The cost of testing per insulator on the line varied from 7.3 to 11 cents. The highest percentage of damaged units was found at the line end of the strings.

A method of grading suspension insulators so as to secure uniform distribution of voltage over the various disks of a string was described by R. H. Marvin, electrical engineer, R. Thomas & Sons Co. Grading is accomplished by placing flat metal rings of different size around each insulator cap and stud.

In a paper by E. E. F. Creighton, consulting engineer, General Electric Co., the advantages and disadvantages of the overhead ground wire as a protective device were discussed at length. To render the paper of interest to the greatest number of readers the mathematical portions were segregated as much as possible from the remainder of the text. From a theoretical standpoint, a single grounded wire should be placed as near as practicable to the power wire in order to get the greatest electrostatic protection. It was pointed out that additional ground wires properly placed increased the protection. In general, where more than one ground wire is used a great advantage can be obtained by keeping them as far apart as possible. Mechanical and economic conditions often affect the location of grounded overhead wires.

A bulletin has been issued by the Ohio State University which describes the itinerary taken on an Eastern inspection trip by four instructors and the fourth-year students in mechanical engineering and electrical engineering. The itinerary included a visit to a number of important manufacturing and power generating plants. Two days were spent in Cleveland, two days in Pittsburgh, two days in Niagara Falls and one day in Buffalo.

## AMERICAN ASSOCIATION NEWS

### Section No. 7 Discusses Safety, Preparedness and Traffic Checks

The last regular meeting of the Connecticut Company section for the season was held on June 13 with a record-breaking attendance of 216 persons. The meeting was preceded by a "shore" dinner. It was followed by a visit to a local theater where a safety film, "The Price of Thoughtlessness," and a number of comic films were shown for the entertainment of the members.

The program of the meeting included a talk by Hon. Russell A. Sears, general attorney Boston Elevated Railway, on "The Reasons for the Safety-First and Preparedness Movements," a talk by R. A. May, comptroller Connecticut Company, on "The Work of the Connecticut Company Section," and a paper by Walter Camp, Jr., traffic engineer Connecticut Company, on "The Duties and Work of the Traffic Engineer."

Mr. Camp said in part: "The main object of the work of the traffic department of the Connecticut Company is to fit the service to the actual riding and to avoid making fixed schedules and then trusting that the riding will adjust itself to them. The day has passed for street railways of any size when any one individual can by his personal observation have sufficient knowledge of the demands for service on the various lines to enable him to adjust and place service where it will do the most good. Our traffic studies are to secure, with the co-operation of the local managers, such details and accurate information of traffic demands that we can tell where to place our cars.

"We have started off with the largest three divisions, New Haven, Hartford and Bridgeport, in each of which is an inspector who makes passenger counts daily at points of maximum load. The checks are taken each day at maximum load points in the direction of heaviest riding. Ordinarily, in-bound cars are checked from 6 o'clock to 10 o'clock in the morning and out-bound cars from 2 o'clock to 7 o'clock in the afternoon. Occasionally all-day checks, requiring two men, are also made.

"Each inspector has a regular printed form on which to make his report, and as each car comes along he puts down the name of the line, the car number, the time of arrival and the number of passengers. Every line is checked about once a week and lines are checked on different days each week, that is, a line checked on Tuesday one week will be checked on Wednesday the following week. Inspectors also note upon their reports matters affecting the service, such as accidents, delays, crippled cars, tie-ups, fires, parades, etc., or reasons for unusual riding such as picnics, games, etc. They also note the weather conditions during the check.

"The records for each line are divided into half-hour periods, and in the office the times at which each car is due at the checking points are entered on the record sheet in a special column and every car more than three minutes off time is checked off. Overloads are checked also, 50 per cent above the seating capacity being considered an overload. Monthly statements are made up for each line showing the number of cars operated, the percentage of cars on time within two minutes, those on time within three minutes and the percentage more than three minutes off time. Cases where cars are more than three minutes off time are investigated. Summaries are also made up for each line comparing the riding during each half-hour period of one day against the corresponding half-hour period of another day."



# EQUIPMENT AND ITS MAINTENANCE

Short Descriptions of Labor, Mechanical and Electrical Practices  
in Every Department of Electric Railroading

*Contributions from the Men in the Field Are Solicited and Will Be Paid for at Special Rates.*

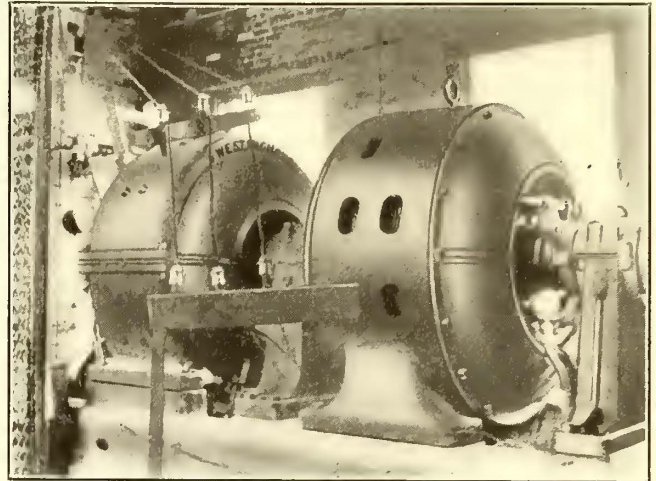
## Drying Out Motor Generator Sets

BY J. G. KOPPEL

Electrical Superintendent of Bridges, Sault Ste. Marie, Mich.

During the rainy season while installing a 400-kw., 600-volt, d.c. to 2200-volt 600 hp. a.c. motor-generator set, the windings were exposed to moisture to such an extent that the insulation resistance fell to 1 megohm. This being a low value, it was decided to dry out the stator winding.

The incoming line was three-phase, 60-cycle, 24,000-volt, and the voltage was stepped down to 2200 by three



MOTOR-GENERATOR SET READY FOR DRYING OUT PROCESS

days and three nights the insulation resistance had been brought up to 15 megohms, after which the drying was discontinued and current was cut in for operating the set.

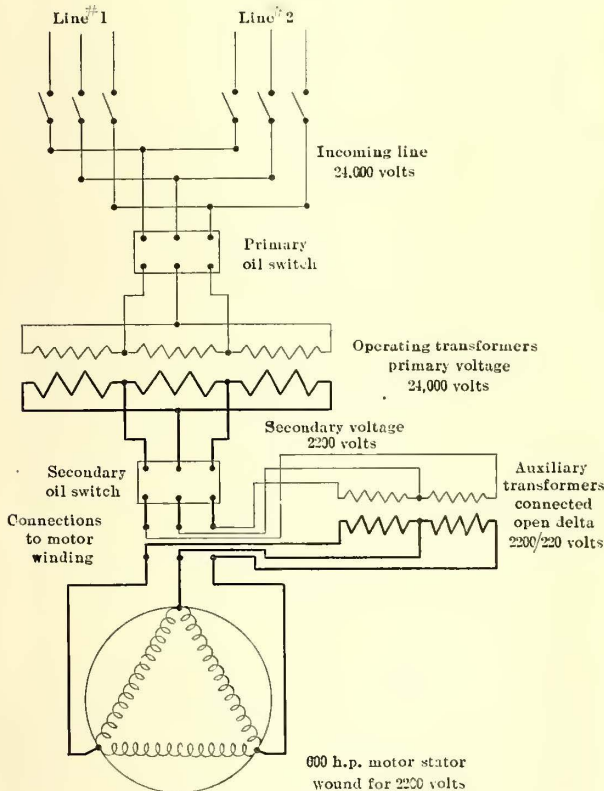


DIAGRAM OF CONNECTIONS FOR DRYING OUT STATOR OF MOTOR-GENERATOR SET

single-phase transformers, each of 185-kva. capacity. The transformers were connected delta-delta and fed the motor stator directly. The leads running from the oil switch to the motor were disconnected, and two 2200 to 220-volt auxiliary transformers were connected in as shown on the accompanying diagram. The transformers, which were brought to the door of the substation in a box car, were secured from the central station supplying the power. A temporary line was run out from the operating transformers to take the primary leads of the auxiliary transformers, and another temporary line was employed to bring in the secondary 220-volt leads to the motor stator.

It required 48 amp. to raise the temperature of the stator windings to 90 deg. C. Readings of temperature were taken every fifteen minutes and an insulation test was made every twelve hours. At the end of three

## Foundation Resilience and Rail Corrugation

BY T. NORMAN JONES, JR.

Chief Engineer Virginia Railway & Power Company, Richmond, Va.

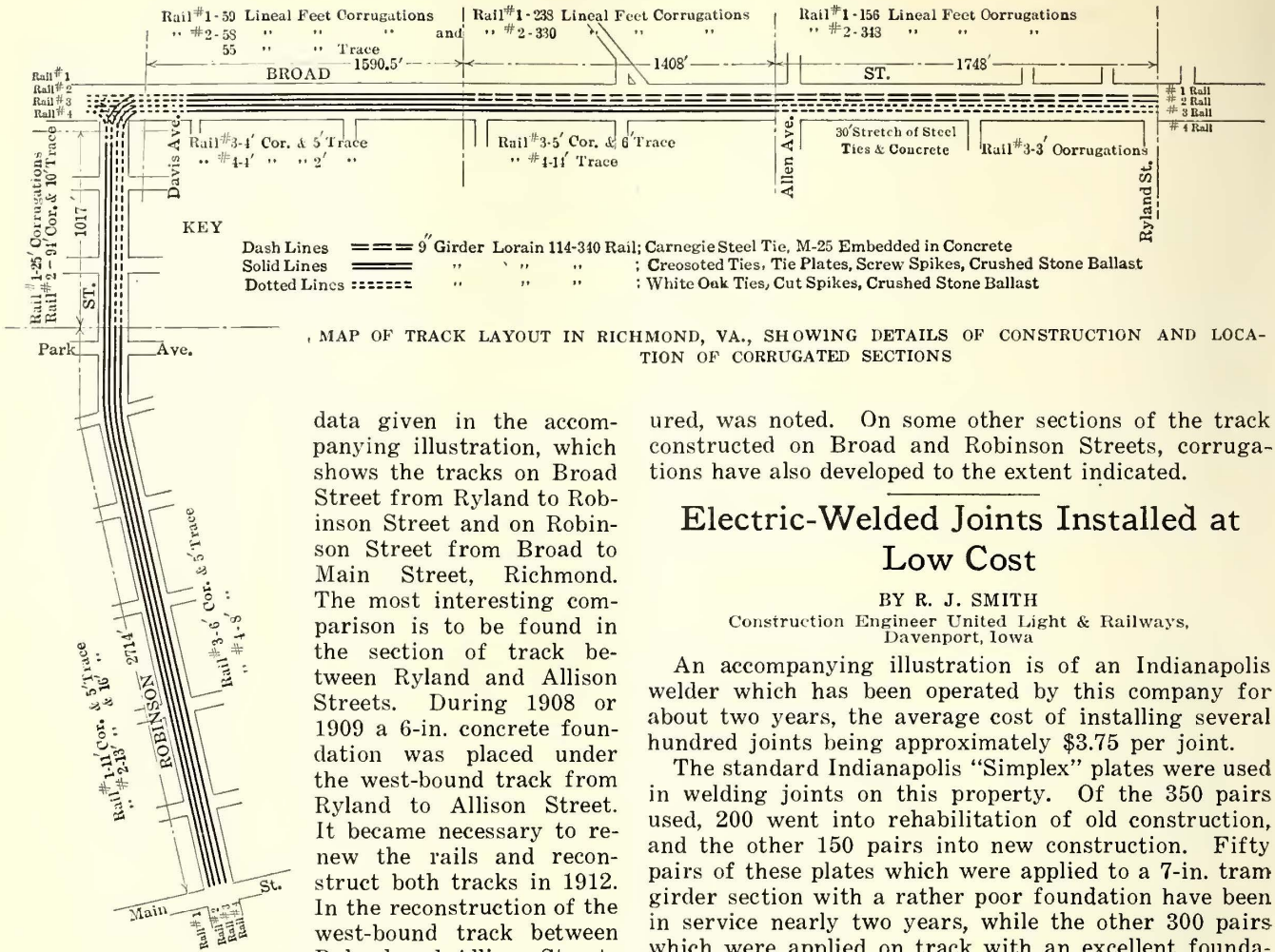
This company has had, within the last few years, some very interesting experiences with rail corrugations which developed on approximately 2 miles of track. Prior to taking charge of this department in 1911, the writer had had no experience with girder rails in paved streets. His personal experience, therefore, with corrugations dates from 1911, although he found well developed corrugations on many sections of track at that time.

After having carefully inspected various sections of girder rail tracks constructed on various types of foundations, the writer, in the spring of 1912, reached the definite conclusion that track constructed on a resilient foundation was superior to track constructed on a rigid foundation, and that the use of a resilient foundation would greatly retard the development of corrugations. He, therefore, recommended the abandonment of concrete foundations in Richmond, and the use of crushed stone or washed gravel under and partly between the ties, with a slab of concrete partly between and on top of the ties, to support the paving.

Having succeeded in convincing the street committee of the City Council that a change from concrete foundation to crushed stone would be desirable from the city's standpoint, as well as that of the company, the management of the road was permitted by the city to adopt a resilient type of construction. During the summer and fall of 1912 a considerable amount of track was constructed on crushed-stone foundation, which type has been standard with the company ever since.

Confirmation of the writer's belief in the superiority of a resilient foundation over a rigid one is found in the





MAP OF TRACK LAYOUT IN RICHMOND, VA., SHOWING DETAILS OF CONSTRUCTION AND LOCATION OF CORRUGATED SECTIONS

data given in the accompanying illustration, which shows the tracks on Broad Street from Ryland to Robinson Street and on Robinson Street from Broad to Main Street, Richmond. The most interesting comparison is to be found in the section of track between Ryland and Allison Streets. During 1908 or 1909 a 6-in. concrete foundation was placed under the west-bound track from Ryland to Allison Street. It became necessary to renew the rails and reconstruct both tracks in 1912. In the reconstruction the west-bound track between Ryland and Allison Streets the concrete foundation referred to above was utilized, as the concrete was of good quality and the whole base in excellent condition.

In the existing concrete foundation, trenches were cut crosswise of the track at 8-ft. intervals. In these excavations Carnegie steel ties were placed and bolted to the rails, and fresh concrete was placed around and under the Carnegie ties to secure them in place.

In the construction of the east-bound tracks between the points above mentioned, the foundation was thoroughly rolled before the placing of crushed-stone ballast, after which the ties and rail were placed. For a portion of the distance, as noted in the illustration, white oak ties were used, the rails being fastened to them with cut spikes. In the remainder of this section, creosoted pine ties were used with tie plates and screw spikes. In order to eliminate the difficulty of working under traffic, a third or temporary track was constructed, over which cars operated during the reconstruction of both tracks.

Over both sections of track cars of the same type have been operated; in other words, the same cars that operate over the west-bound track return over the east-bound track. Some of these cars were equipped with cast-iron wheels, others with steel wheels.

From the data given it will be seen that in both rails of the track on concrete, or rigid, construction there is a total of 1072 ft. of rail affected by corrugation, whereas in the same length of track constructed on a crushed stone, or resilient, foundation, only 8 ft. of corrugation is to be found.

The writer, with an assistant, took the measurements noted but a short time ago. Only rail on which the wave length of the corrugation could be accurately measured, was noted.

On some other sections of the track constructed on Broad and Robinson Streets, corrugations have also developed to the extent indicated.

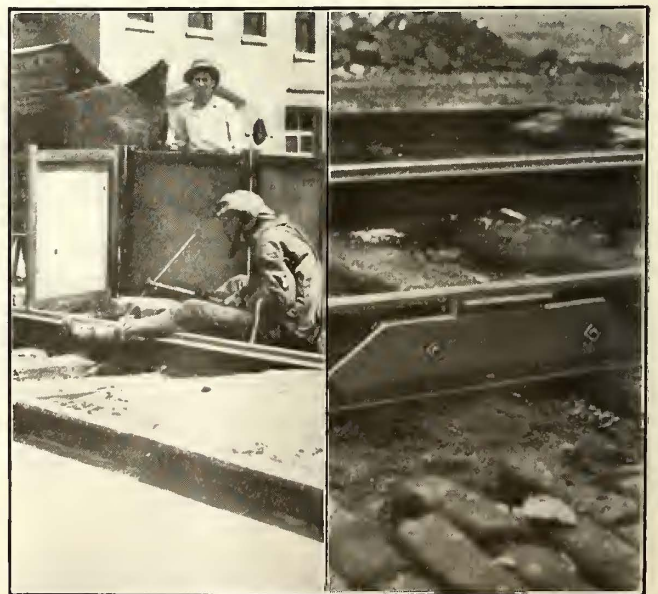
### Electric-Welded Joints Installed at Low Cost

BY R. J. SMITH  
Construction Engineer United Light & Railways,  
Davenport, Iowa

An accompanying illustration is of an Indianapolis welder which has been operated by this company for about two years, the average cost of installing several hundred joints being approximately \$3.75 per joint.

The standard Indianapolis "Simplex" plates were used in welding joints on this property. Of the 350 pairs used, 200 went into rehabilitation of old construction, and the other 150 pairs into new construction. Fifty pairs of these plates which were applied to a 7-in. tram girder section with a rather poor foundation have been in service nearly two years, while the other 300 pairs which were applied on track with an excellent foundation, and with light traffic, have been in service for only a few months. From this it follows that only the fifty pairs first mentioned can be regarded as having complied with a satisfactory test so far as the mechanical service of the joint is concerned. Electrically, however, they are perfect.

In addition to the above, at Cedar Rapids, we have fixed up some old 45-lb. angle-bar track in paving by putting in new bolts, spotting them with the welder and



BUILDING UP JOINTS BY ELECTRIC WELDING PROCESS; RIGHT-HAND VIEW SHOWS JOINT INSTALLED



welding the bases of rails to 1/2-in. bearing plates placed beneath the joints. This work, however, which was undertaken merely as an experiment, is unlikely to produce desirable results because of the generally run-down condition of the track structure as a whole, and should not be given serious consideration. As far as joint work is concerned, the above constitutes the very limited experience of this company, the welder being chiefly engaged in building up cups and in special work.

If a great deal of this kind of welding was to be performed the costs might be slightly reduced through the adoption of an efficient motor-generator set. A power test of the Indianapolis welder made on our property gave the following results: Trolley voltage, 545; current under normal conditions of operation, 198 amp.; current when the welding point was held directly on the rail, 210 amp.; voltage around arc from cable to rail, 25 to 40, average 30; total kilowatts used under normal conditions of operation, 107.9; total kilowatts used at the arc in the process of welding, 5.94; kilowatts lost in resistance 101.9; efficiency 5 1/2 per cent. The total energy per weld was about 50 kw.-hr. The cost of installing the regular "Simplex" joint on this property was as follows:

Cost of one pair of plates.....	\$2.05
Cost of two bolts.....	.07
Cost of power.....	.60
Cost of labor.....	.65
Cost of welding metal.....	.18
<b>Total .....</b>	<b>\$3.55</b>

If no more than 10 per cent for time lost in delay due to schedule is allowed, three men will install ten joints per day of ten hours, and in exceptional cases a maximum of fourteen. The costs just enumerated do not include overhead charges, interest, depreciation or repairs of plant. These items have been estimated at 20 cents, making a total cost of \$3.75 per joint.

The company is at present installing joints complete on about 1 mile of double track, which is laid with Pennsylvania Steel Company's 80-lb. section No. 238 rail, that has been in light service for ten years. This track was poorly laid with four-hole channels and compressed terminal bonds and has been loosened, battered, and kinked at all of the joints although the greater part of the rail is but little worn. The joints were originally laid even, greatly facilitating the rehabilitation, which consists of renewing joint and shoulder ties, replacing the ballast for a distance of 6 or 8 ft. each side of the joint, substituting welded plates for the channels and bonds, inserting "dutchmen" where expansion had originally been allowed, grinding and occasionally building up cups, the placing of 6 in. of 1:3:6 concrete paving base and 1 in. of 1:4 grout bed or "cushion," and the relaying of the old brick with a sand filler.

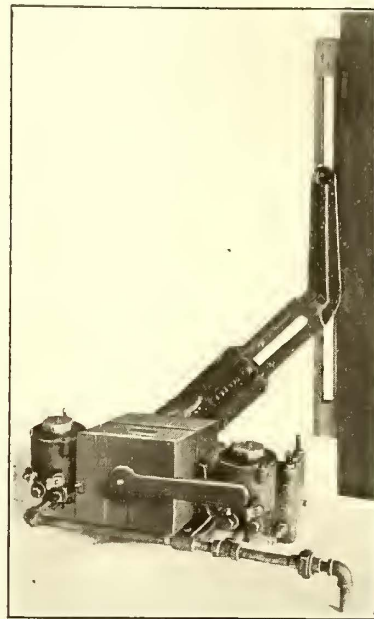
The detailed costs are not yet available but a close approximation based upon the installation of 100 joints with labor at 20 cents per hour is as follows:

COST PER JOINT	
Miscellaneous labor (excavating, tamping, etc.).....	\$5.00
Ballast .....	1.50
Ties .....	2.00
Concrete .....	3.00
Brick .....	.25
Plates installed .....	3.75
Grinding .....	.50
General .....	.25
<b>Total .....</b>	<b>\$16.25</b>

About 10 per cent waste in this relaying is being supplied from a stock of second-hand brick. In this work we "cock" the joint up about 1/2 in. in the endeavor to counteract both the ballast settlement and the set of the ends of the rails downward due to the battering that they had received.

## New Type of Door Engine

The Consolidated Car Heating Company has recently brought out a new type of pneumatic engine for closing car doors, illustrated herewith. The engine is electro-pneumatically controlled by the valves which are placed one on each end of the engine. The air is cut off the



NEW DOOR ENGINE FOR NEW YORK MUNICIPAL RAILWAY

engine at each end of the stroke. This economizes on the amount of air used as it eliminates all questions of leather leaks. At the same time it permits of atmospheric check or cushioning which has proved to be the most reliable.

The engine has a safety feature by which a small amount of pressure exerted by the passenger will hold up the door in case of premature closing. Further, the door may be pushed open 5 in. when fully shut to release clothing or anything that might be caught in the door. This is the limit of emer-

gency opening, there being a positive stop to prevent a false opening. The engine is extremely light on account of its construction, the cylinders being of brass tubing. The arm, rack and pinion are made of cast steel and are all accurately machined. The engines are controlled by the standard Consolidated type push button for door control, which has been perfected for the past four years.

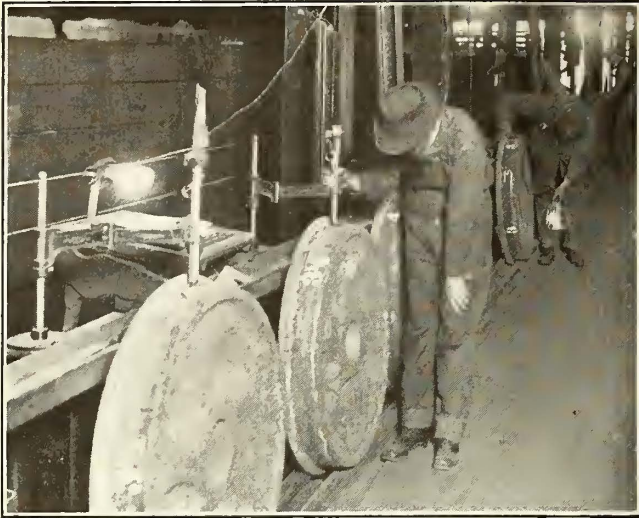
Fifty equipments of these engines are being installed on fifty cars of the New York Municipal Railway.

## A Cast-Steel Wheel with Manganese Tread and Flange

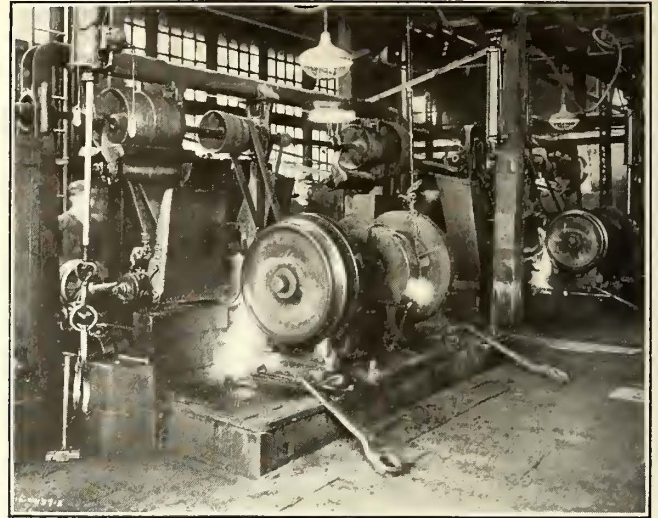
A one-life, cast-steel wheel with a manganese-steel tread and flange and a ductile steel plate around the hub, has recently been introduced in the electric railway field by the American Steel Foundries of Chicago, Ill. This product is known as the Davis steel wheel, and its first cost approximates that of a rolled steel wheel. Its wear life, however, is similar to the wear life of a cast-steel wheel or even better because of the tough wheel tread and flange produced by manufacturing them of manganese steel. The method by which the two kinds of steel are incorporated in one casting was devised especially for the manufacture of the Davis steel wheel. It includes revolving the mold in which the first metal entering is treated with ferro-manganese during its passage from the ladle into the mold where the centrifugal action throws it to the wheel tread and flange. As the pouring continues, the manganese steel rim is gradually blended into a ductile-steel plate and hub by tapering off the ferro-manganese treatment.

The manufacturers claim the advantage of this wheel is that it retains the one-wear principle of the cast-iron wheel and at the same time secures greater strength, safety and a lower maintenance cost. It also avoids the disadvantages of a rolled steel wheel introduced by





CAST-STEEL WHEEL RECEIVING HARDNESS TEST



TRUING CAST-STEEL WHEEL BY GRINDING

turning which must be followed by adjustments in the bearings and brake rigging whenever wheels are changed. The following are service data for 83,000 Davis wheels under 40- and 50-ton equipment.

Periods of Service:

4,000 in service for 3 years and 11 months.  
10,400 in service for an average of 3 years and 7 months.  
59,600 in service for an average of 2 years and 7 months.  
83,000 in service for an average of 2 years and 4 months.

Record of Service:

Worn wheels removed.....	69	(1/12 per cent)
Damaged wheels removed.....	60	(1/15 per cent)
Defective wheels removed.....	96	(1/15 per cent)
Slid-flat wheels removed, reground and returned to service.....	482	(7/12 per cent)
Total number removed, eliminating "slid-flats," which have been reground and put back in service.....	185	(1/5 per cent)

Only fifty-six wheels were removed because of defects, out of a total of 83,000.

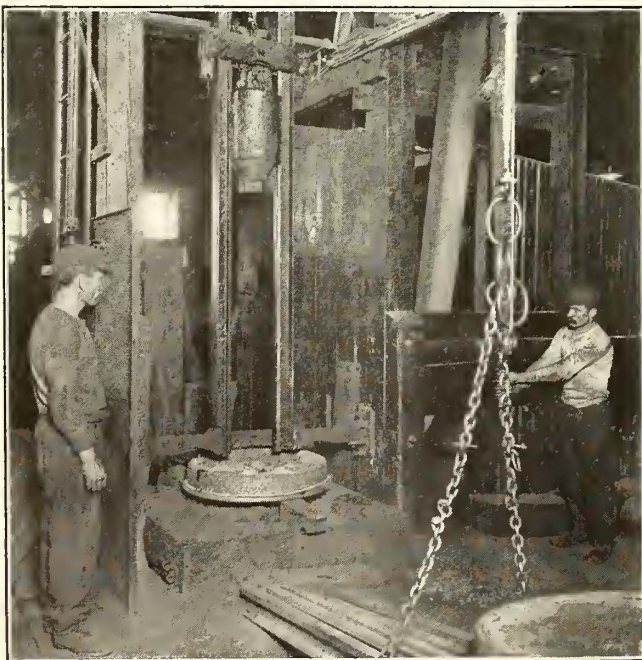
Other important claims for this one-life, cast-steel wheel are that cars are not held out of service as long as would be the case when wheels are turned, and the higher resistance to wear maintains a practically uniform wheel diameter throughout their life in the trucks. Fewer wheels are also required in stock because turning is unnecessary and this also tends to reduce the

labor materially. In order to insure perfect rotundity, the treads of all Davis wheels are ground to contour, and this greatly minimizes the possibility of wheels sliding when the brakes are applied, hence the possibility of slid-flats with this particular type of wheel is practically removed. Wheels undergoing this grinding treatment are shown in one of the accompanying illustrations.

It is also of interest to note that every wheel is subjected to a drop test. Each wheel is laid on an anvil with three points of support, where it is given a blow with a 500-lb. hammer dropped from a height of about 6½ ft. This test is made after the wheels have been ground true and tempered. The impact test is made sufficiently severe to reveal all casting imperfections, and at the same time not permanently to affect the strength of the wheel. In addition to this each wheel is tested with a scleroscope for uniform hardness and it is also taped to determine the uniformity of diameter. A view showing the application of the hardness test and a wheel undergoing the impact test are shown in the accompanying illustrations.

The extraordinary strength and resistance to wear obtained by the combination of metals in the Davis steel wheel, makes it possible to produce them in weights lighter than could be obtained with any other metal. Moreover, being a one-wear wheel it carries no added thickness at the rim and this, together with other reductions in the wheel sections, makes it approximately 20 per cent lighter than the cast-iron or the multiple-wear steel wheels. Actual tests have shown that this product has a flange strength of approximately eight times that of a cast-iron wheel under an impact test and four times that of a cast-iron wheel under a static load test. These tests also indicate that these wheels have a strength equivalent to that of rolled-steel wheels.

The tests from which these results were obtained were conducted by Prof. L. E. Endsley of Purdue University, at the East St. Louis, Ill., plant of the American Steel Foundries, November, 1913. The average maximum static load on the flanges of the Davis wheels was 381,000 lb., that for the rolled-steel wheel was 386,500 lb., and that for the cast-iron wheel 111,250 lb. Under the impact test the strength of the rolled-steel wheel and the Davis steel wheels was about the same, while the cast-iron wheel flange was broken with every 10-in. blow of a 1640-lb. hammer in a standard M. C. B. coupler drop-testing machine. In no case were the flanges of the Davis or the rolled-steel wheels broken off under this height and, in fact, fifty 10-in. blows did not cause a

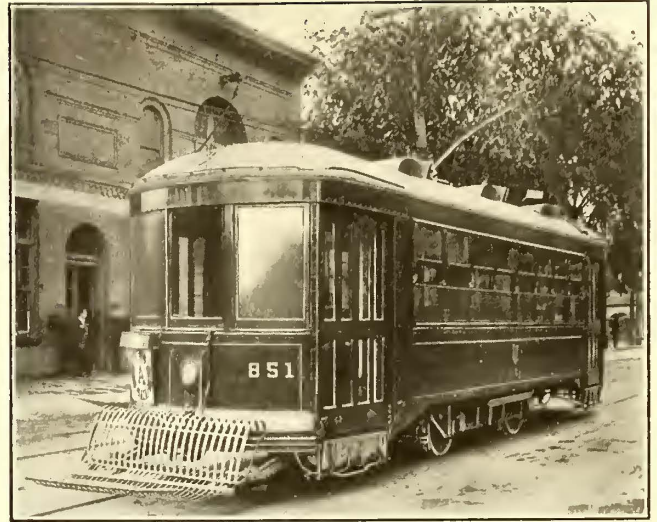


CAST-STEEL WHEEL UNDERGOING DROP TEST



single failure. Neither the Davis wheel nor the rolled-steel wheel flange failed after fifty blows with a drop of 20 in., and each Davis wheel stood at least four blows with a 40-in. drop of the hammer before a fracture occurred. In actual tests none of the steel wheels were broken under less than a blow from a height of 80 in.

Professor Endsley also made friction tests in a standard M. C. B. brake shoe testing machine with a standard cast-iron brake shoe and a rail shoe made of a piece of 80-lb. rail bent to conform to the wheel contour and of the same length as the standard cast-iron brake shoe. This test showed that the coefficient friction between the Davis wheel and the standard cast-iron brake shoe was approximately the same as that for the cast-iron shoe and the rolled-steel wheel. The coefficient of friction between the Davis wheel and the rail shoe, however, was from 9 per cent to 48 per cent higher than that for either the cast-iron or the rolled-steel wheels. This quality is of great advantage in starting acceleration as it reduces the amount of wheel slippage.



EXTERIOR VIEW OF ALBANY CAR

### Single-Truck, Arch-Roof Cars of the United Traction Company, Albany

An instructive example of superior service economically rendered is afforded by the substitution of modern single-truck cars weighing 22,000 lb. each for double-truck cars weighing 48,000 lb. each on the Belt Line of the United Traction Company, Albany, N. Y. The headway has been cut from seven to five minutes with considerable satisfaction.

The United Traction Company now has in service fifteen of these cars, built by the Wason Car Company, and ten more are under construction by the Laconia Car Company. The first three cars went into operation on March 25, 1916. Their general dimensions and other data are given in the accompanying table.

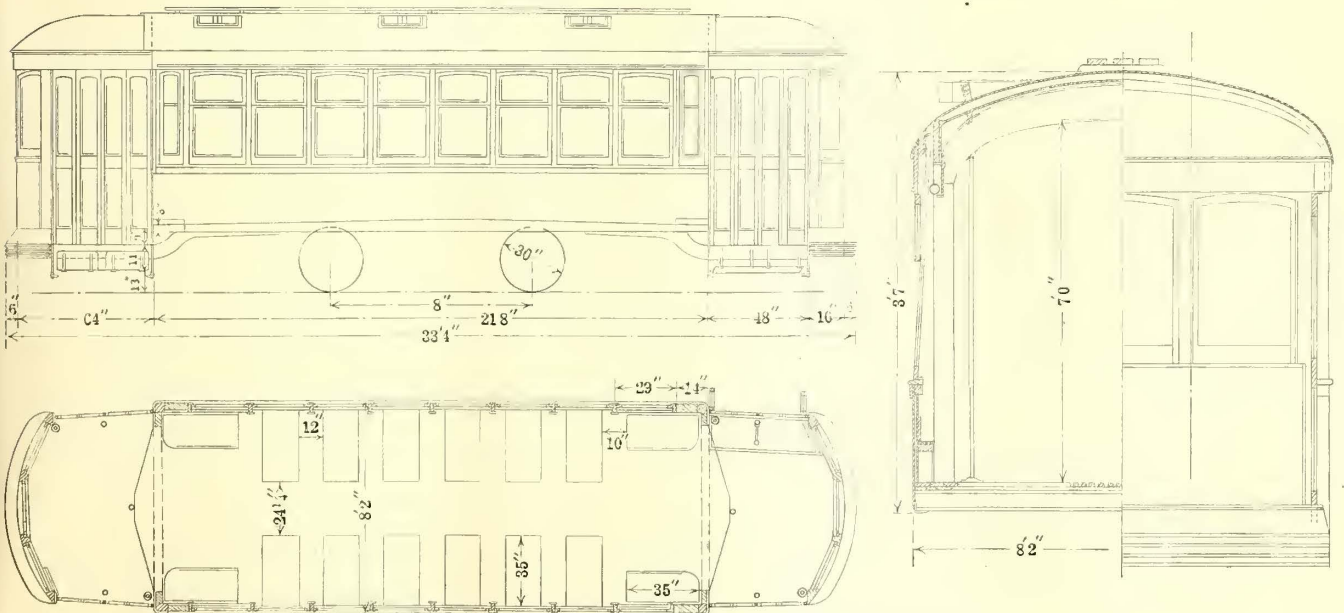
The bottom framing is of steel throughout with 1/4-in. steel girder plates bent around the corner posts from bulkhead posts to bulkhead posts and riveted to the lower sill angle, which is made in one length and spliced in the center of the end sill. The cross joists are punched to receive 1 1/2-in. loricated motor wiring conduit. All door posts, corner posts, belt rails, letterboards and carlines are of steel; the side and corner posts are riveted at the bottom to the lower sill angles

and side girder plates and at the top to a steel letter-board, which is L-shaped with a web of sufficient depth at the top to make a suitable fastening for the steel roof carlines. The roof is of plain arch type, with steel carlines with poplar roof boards. It carries six Automatic ventilators.

The interior finish is red cherry. The inside lining below the sash rests of the car body is 1/2-in. cork glued to the side plates and covered with 3/16-in. Agasote in fourteen cars and of Nevasplit in one car. The headlining is of 3/16-in. Agasote. The cars are painted olive-green with gold lettering.

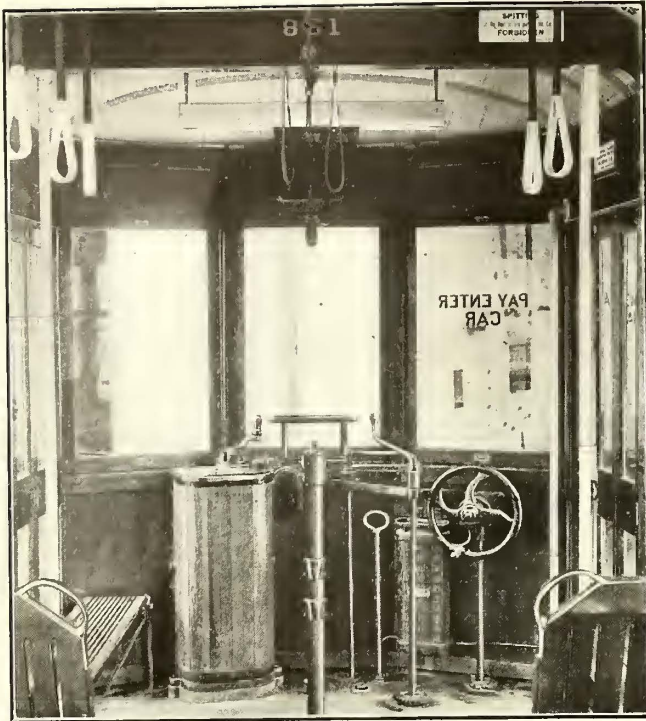
The cars are arranged for double-end pay-within operation, with two double-hinged folding doors on both sides of each platform, folding outward and closing

Length over bumpers.....	33 ft. 4 in.
Length over corner posts.....	21 ft. 8 in.
Length of platform from outside of dash to corner posts.....	5 ft. 4 in.
Width over girder plates.....	8 ft. 2 in.
Height from under side of the sill to the top of the roof.....	8 ft. 7 3/4 in.
Height from rail to the top of the floor at the corner posts, maximum.....	33 in.
Height from floor to the top of the sash pocket cover.....	27 5/8 in.
Width of opening between vestibule corner post and the car-body corner post.....	29 5/8 in.
Width of letterboard.....	40 in.
Weight of body completely equipped within.....	9 3/4 in.
	10,000 lb.



ELEVATIONS AND SECTIONS OF ALBANY SINGLE-TRUCK CARS





FRONT PLATFORM OF ALBANY CAR

against the edge of the platform. The doors are hand-controlled in connection with a folding step, and are operated in connection with the National Pneumatic Company's interlocking safety door control, which does not permit the cars to start until all doors are closed. The successive levels of these cars are as follows:

Ground to step.....	13 in.
Step to platform.....	11 in.
Platform to body floor.....	9 in.
Ramp to center of car.....	2 in.

The cars are fitted with the new Brill Renitent posts, Curtain Supply Company's window fixtures, and Pantasote curtains. The seating is made up of twelve transverse seats, four longitudinal corner seats and one fold-



INTERIOR VIEW OF ALBANY CAR

ing seat in each vestibule. These seats, furnished by Heywood Brothers & Wakefield, are of wood with reversible backs and have pedestals and ends of pressed steel.

Each car is mounted on a Taylor truck carrying two Westinghouse 323-B motors. The control is K-36. The heaters, thermostatic control and passengers' buzzers are Consolidated. The fare collecting equipment embraces Dayton straight-cash fare boxes and International R-5 registers.

The safety features of these cars include Peacock improved brakes for service applications, Brill vertical wheel brakes for emergency use on steep grades, Mason treads for all steps, Rico anti-climbers, Providence fenders, De Witt Simplex sanders, and Crouse-Hinds headlights.

### Power Station Records in Havana

The annual report for 1915 of the Havana Electric Railway, Light & Power Company gives some interesting statistics in regard to the operation of the company's new power plant, described in the ELECTRIC RAILWAY JOURNAL for May 15, 1915. Although completed in 1914, and in continuous operation since October of that year, it was necessary to keep some of the old power plants in operation until the entire distribution system was completed, so that it was not until June of last year that the new plant furnished all of the power used by the company in Havana and its suburbs. The following facts and statistics of operation appear in the report.

There are three turbine-generators each of 12,500 kw. capacity for continuous operation and 15,000 kw. maximum capacity, and the turbines are now fitted and adjusted for best economy at 10,000 kw. The highest hour during 1915 was 12,700 kw. and the largest observed load was 13,400 kw. The average load during December, the heaviest month of the year, was 5364 kw., which is 53.64 per cent of the most economical capacity of one generating unit. A serious disadvantage which no large steam plant in Havana can avoid is the high temperature of the condensing water, which averaged 80.7 deg. Fahr., with a maximum of 88 deg. and a minimum of 71 deg. Even this, however, is better than the water of the Gulf Stream, which laves the north shore of this part of Cuba and averages about 83 deg. The harbor water is a little cooler, due to the flow from inland streams.

	STATISTICS OF POWER PLANT OPERATION			
	1914	1915		December
	12 months	First half	Second Half	1915
Plants in operation..	3-4	3	1	1
Net output, kilowatt-hours .....	39,688,427	20,536,737	21,649,365	3,970,366
Coal consumed, tons (gross) .....	74,797	26,870	20,234	3,613
Coal per kilowatt-hours, pounds.....	4.26	3.026	3.095	2.040
Total number of plant employees...	239	229	100	98

The report says that the kilowatt-hour total output during 1914 and the first six months of 1915, shown in the preceding table, is probably too high, because the measuring instruments in the old power plants were antiquated and not nearly as reliable as the new equipment, and the load is known to have increased during the year, due to the growth in both railway and lighting and power demands. Hence the contrast between coal used per kilowatt-hour should be greater than that shown. The coal rate and other costs of operation in the power plants already compare favorably with those of large modern plants in the United States, in spite of the very small proportion of the plant capacity now employed, and as the output increases the company expects that the cost will decrease still further.



## NEWS OF ELECTRIC RAILWAYS

### THOMPSON TOUCHES MANY TOPICS

#### Committee at Work Since Spring of 1915 Concludes Its Sessions—Will Report to Next Legislature

The Thompson legislative investigating committee ended its official existence on July 1 without developing anything in the nature of a sensation. The brief session was devoted almost entirely to the hearing of testimony relative to the illuminating concerns doing business in New York City.

Recent witnesses before the committee have included Comptroller Prendergast of New York City; Walter G. Oakman, formerly a director of the Interborough Rapid Transit Company and a trustee of the estate of the late Andrew Freedman; Daniel L. Turner, assistant chief engineer of the Public Service Commission; Howard Abel, auditor of the Brooklyn Rapid Transit Company; Henry B. Seaman, formerly chief engineer of the Public Service Commission; William H. Allen, head of the Institute of Public Service and formerly with the Bureau of Municipal Research; Col. T. S. Williams, president of the Brooklyn Rapid Transit Company; William Merican, president of the New York Newsdealers Association, and August Belmont.

The session at which Mr. Belmont was examined on June 29 was staged amid unusual surroundings. It had to do for the most part with the exclusion of the *Masses*, a socialist publication, from the newsstands in the subway by Ward & Gow, who hold the contract for the newsstand privileges. There were many well-known persons on hand to listen to the testimony. Among those of national prominence who attended the session were Mrs. Rose Pastor Stokes, Rev. Percy Stickney Grant, Inez Milholland Boissevain, Warden George W. Kirchwey of Sing Sing, Mr. and Mrs. Amos Pinchot, Lincoln Steffens, Prof. John Dewey and Prof. Charles Fagnani. The questions directed at the witness had to do entirely with the reasons of the exclusion of the paper from the newsstands. Previous to the introduction of this testimony, Mr. Oakman refused to permit the committee to examine the private papers of the Freedman estate. He said that he did this on the advice of counsel. Other matters inquired into recently by the committee were the removal of the offices of the Public Service Commission from the Tribune Building to the Equitable Building, the probable returns to the Interborough Rapid Transit Company under the dual subway contracts and the attitude of Comptroller Prendergast with respect to the rapid transit contracts. Artemas Ward explained that the lease originally held by his company for the newsstand privileges in the present subway had been renewed in December, 1915, to run for fifteen years from Jan. 1, 1914. The Interborough Rapid Transit Company received about \$900,000 a year for the newsstand rights. Ward & Gow had 1200 stands on the lines, and last year their profit was about \$1 a stand. Mr. Ward said that the rental paid under the new contract was about double that on the previous contract and that the privileges were about the same. The hope of the company lay in the prospects for business on the new lines soon to be opened.

The legislative committee, of which Senator George F. Thompson was chairman, was appointed in the early spring of 1915 for the avowed purpose of investigating the Public Service Commissions. The committee held a number of sessions during the first weeks of its existence and examined a score or more witnesses, including the Public Service Commissioners. William Hayward was then counsel to the committee. The committee filed charges against three of the Public Service Commissioners, including Chairman Edward E. McCall, but they were dismissed by Governor Whitman. The committee kept at its investigation in a desultory fashion during the summer of 1915, and then adjourned until September. From the middle of last September until July 1 the committee had been in almost continuous session. The most far-reaching result gained was the removal or resignation of all the Public Service Commissioners who

were in office when the committee began its work. Chairman Edward E. McCall was removed by Governor Whitman when charges were filed against him a second time; Commissioner R. C. Wood resigned and later was indicted by the Grand Jury on a charge of soliciting a bribe; Commissioner George V. S. Williams resigned under threat of charges, and Commissioner J. Sergeant Cram was not re-appointed when his term expired. The term of office of Commissioner Milo R. Maltbie expired soon after the appointment of the commission, and William Hayward was appointed in his place, Mr. Maltbie accepting the position offered to him by Mayor Mitchel of Chamberlain of New York City. An entirely new set of commissioners came into office with Oscar S. Straus as chairman.

### SPRINGFIELD AND WORCESTER WAGES ADJUSTED

A uniform increase of 25½ cents a day has been granted to all conductors, motormen and messengers in the employ of the Springfield (Mass.) Street Railway. The increase represents an advance of 11 per cent for the employees in the minimum grade and an advance of approximately 9 per cent for the employees in the maximum grade of the service. The present day rating, based on nine in eleven hours, has been retained. The agreement reached by the officials of the company and the representatives of the men has been ratified by the men. All employees in the other branches of the service have received material wage increases.

The principal changes in the new agreement relate to wages and conditions. The life of the agreement will be two years instead of one, as heretofore, provision being made for an adjustment of differences that might arise by means of a conference board and as a last means arbitration. The new wage scale provides an increase for the men in the employ of the company during the first six months, from \$2.30 a day to \$2.55½; for the second six months of service an increase from \$2.45 to \$2.70½ a day; for the second year men an increase from \$2.60 a day to \$2.85½ a day; for the third year men, an increase from \$2.70 a day to \$2.95½ a day; for the fourth year men and thereafter, an increase from \$2.85 a day to \$3.10½ a day. All messengers, motormen and conductors doing work on the sand cars from midnight till 4.30 o'clock in the morning will be paid time and half-time. This same rating will apply for storm-work. All motormen, conductors and messengers who are called on to instruct new men receive 5 cents an hour additional for this service.

It is provided that all unclassified service employees shall receive an increase of 12½ per cent over their present ratings. This, however, is exceeded in the minimum grades of the service. In such cases common laborers receive a minimum of \$2 a day. The section of the agreement pertaining to the minimum schedules provides that where the 12½ per cent does not bring the present wage up to \$2, then such wage shall be increased to that amount. If the increase added to the present wage of any employee brings the wage to more than \$2 and less than \$2.25, then the wages of this class shall be increased to \$2.25 a day. The shop, carhouse, track and line employees, who have always worked eight hours on Sundays and holidays, will also receive full pay for eight hours on Saturday. This, however, affects only men who work the full seven-day schedule. These men are now granted time and a half for all overtime instead of straight time, as before. Men called out for emergency work on Sunday are assured pay for a day's work. Where the full day is worked the rate of pay is made on an overtime basis of time and a half.

A similar agreement covering the wages of employees of the Worcester (Mass.) Consolidated Street Railway has been approved by the men on that property. The lines in Springfield and Worcester are controlled by the New England Investment & Security Company.



### CENTRAL'S WEST SIDE IMPROVEMENT PLANS INDORSED

At a special meeting on June 30, the Chamber of Commerce of New York approved, without a dissenting vote, the report of the committee on harbor and shipping, indorsing the proposed contract between the city and the New York Central Railroad, known as the West Side plan, which contemplates the removal of the railroad's freight tracks from grade, their electrification, and the organization of a modern terminal system on the west side of Manhattan. The committee said in part:

"Your committee believes that it is not within the province of a commercial body to pass judgment upon the intricate engineering and financial details necessarily a part of such a contract. Approval or disapproval by this chamber must be based upon broad principles, and the committee accepts the statement of the terminal committee of the Board of Estimate that the financial features of the proposed contract have been carefully safeguarded and the engineering and landscape details have been approved by competent professional judgment. It is natural that a difference of opinion should arise over the merits of many details of a matter of such far-reaching importance, but the committee submits that the views of the city officials who have given long and intimate study to the problem should be upheld, unless a positive and important reason to the contrary be advanced."

The advisory council of real estate interests, which has approved the plans for the New York Central's improvement of the west side of Manhattan, has made public its report of investigations of the several objections raised by civic and property owners' associations to some of the technical details in carrying out the agreement between the city and the railroad company. The report said:

"Mr. Olmsted seems to fear that if the tracks are covered over between Seventy-second and Eighty-second Streets there would result a mound which could not be treated artistically. Mention is also made of contours. The great artist is he who can take conditions as he finds them and produce good results.

"There is no doubt in my mind that Mr. Olmsted is a great artist and could produce a satisfactory park with real good landscape effects if he were given the job after the tracks were all in and covered over as now planned.

"In regard to the second point raised by Mr. Olmsted, namely, the cutting off of the view from Riverside Drive, it does seem as though this is a minor matter, as the part in question is only for about two blocks. I doubt very much if the view of the river would be cut off as much as Mr. Olmsted says would result."

### HAITIAN DEVELOPMENT PROPOSED

According to the *Wall Street Journal* plans have just been completed for the creation under New York State laws of the Haitian-American Corporation to acquire existing public utilities in Haiti. These consist of terminal facilities, a railroad, electric light plants and a tramway in the capital city of Port-au-Prince and the adjoining agricultural valleys of Cul de Sac and Leogane and an electric light plant in the city of Cap Haitien. The public utilities to be acquired are owned by Europeans and have been in existence for some years and are operated under concessions from the Haitian Government. The financial structure of the new Haitian-American Corporation will consist of \$6,000,000 of 7 per cent cumulative, convertible preferred stock, of which \$5,500,000 will be issued and \$500,000 will be reserved. This stock will be retirable at 110. Of \$12,000,000 of 7 per cent non-cumulative common stock, further participating after payment of both preferred and common stock dividends, \$6,000,000 will be issued, of which \$250,000 will be held as treasury stock, and \$6,000,000 will be reserved. There will be 60,000 founders' common shares, entitled to one-third of the remaining earnings after payment of fixed dividends on both preferred and common stocks.

Financing of Haytian-American Corporation will be undertaken by Chicago and New York banking interests, which include Lawrence Turnure & Company, New York; Breed, Elliott & Harrison, Chicago, and P. W. Chapman & Company, Chicago and New York. Interests associated with the Cuban-American Sugar Company and the South

Porto Rico Sugar Company are expected to be in charge of sugar developments. The West India Construction Company, identified with these two sugar companies, will take in hand the Haytian-American Corporation plans.

### AGREEMENT REACHED ON CINCINNATI WAGES

By a vote of 1100 to 139, taken on June 29, the employees of the Cincinnati (Ohio) Traction Company accepted the wage agreement formulated by the representatives of the union and of the company during the previous week. Under this agreement the wages are advanced each year for three years. The new scale went into effect on July 1.

For the year 1916-1917 first-year men receive 23 cents an hour; second-year men, 25 cents; third-year men, 26 cents; fourth-year men, 27 cents; fifth-year men, 28 cents; sixth-year men, 29 cents, and seventh-year men, 30 cents. For the year 1917-1918 first-year men will receive 24 cents; second-year men, 26 cents; third-year men, 27 cents; fourth-year men, 28 cents; fifth-year men, 29 cents, and sixth-year men, 30 cents. For 1918-1919 first-year men will receive 24 cents; second-year men, 27 cents; third-year men, 28 cents; fourth-year men, 29 cents and fifth-year men, 30 cents.

During the first year of the agreement men will have to be in the service for six years before they will receive the maximum wages. During the second year they will have to be in the service for five years, and during the third year they will have to be in the service for four years. Under the old agreement men were required to be in the service seven years in order to receive the maximum wage. Overtime is to be paid for as time and one-third.

Men operating the owl car service are not to be asked to do extra work at any time. All straight day runs are runs through a continuous period of not less than nine nor more than nine and a half hours. All day runs are to leave the carhouses not later than 7 a. m. and all afternoon runs of nine hours or more are to be considered late runs. Where it is shown that short runs can be coupled so as to make a full run this is to be done. All substitutes are to be guaranteed a minimum of \$52.50 per month.

At divisions where pay-enter cars are operated the company is to supply each conductor change amounting to not less than \$10 for each regular run taken out. All grievances are to be submitted to the company and if an agreement cannot be reached, they are then to be submitted to arbitration. The board in each case is to consist of three men, one chosen by the company, one by the union and these two are to choose a third. If the two cannot agree upon a third, the board of arbitration and conciliation is to make the selection.

Among the things asked by the men was the employment of union men only, an increase of the minimum wage from 20 cents to 25 cents and the maximum from 27 cents to 33 cents. The first demand was not granted. The figures for wages noted previously represent a compromise agreeable to the men.

### ROCHESTER COMPANY TO MEET RECOMMENDATIONS IN JITNEY CASE

At an informal conference with the Public Service Commission for the Second District of New York at Albany on July 5 officials of the New York State Railways indicated that they will render substantial compliance to all the recommendations imposed by the commission when it dismissed the applications of the Rochester jitneys for permission to compete with the electric railway. The conference on July 5 did not concern subjects such as new lines and re-routing old ones, upon which the Rochester Chamber of Commerce had asked the commission to withhold final action. With regard to rearrangement of the company's present facilities for better service the company indicated that it would do all that was required.

Horace E. Andrews, president of the New York State Railways; Robert M. Searle, vice-president, and E. J. Cook, general manager of the Rochester lines, promised that two new emergency trucks would be put into service immediately; that the equipment of electric switches would be added to and that checks of travel would be made anew. The officers of the company believe that their present telephone system



is adequate, but will confer with Charles R. Barnes of the commission with a view to possible improvements. Additional seats and a crosstown bus line for the north side will also be the subjects of conference as to details.

The removal of the cause for delays at the State Street carhouse is up to the city, according to Mr. Andrews. All that is needed to enable the company to take the network of tracks out of State Street and to so arrange the carhouse that movements can be made absolutely without delay is the approval of the company's plans by the city authorities. These plans, submitted to the commission on July 5, provide for putting all of the switches within the building line on the company's own property. The additional property needed for this is under option and will be bought as soon as the city approves. Better transfer facilities between the local and interurban cars for Fairport will also be the subject of a conference into which the lines of the Empire United Railways, Inc., will be asked to come. Mr. Andrews told the commission that the company had made no progress toward lines through Chili Avenue, Clarissa and Alexander Streets. He said that a few persons by standing on their rights as property owners, are preventing the proper development of these lines.

In order to accommodate the traffic conditions on the north and east sides, the company evidently, from remarks made at the hearing on July 5, contemplates the establishment of a north side crosstown bus line over the Driving Park Avenue Bridge. The president of the company stated, however, that if the company adopted this plan he could not guarantee a flat rate charge of 5 cents for the service. He believed that the plan could be worked out satisfactorily with an additional charge for the transfer which would have to be used in connection therewith. This matter is to be taken under consideration.

#### CONDITIONS IN FRENCH ELECTRICAL INDUSTRY SHOULD INTEREST AMERICANS

The issue for June 28 of the Daily Consular and Trade Reports, published by the Bureau of Foreign and Domestic Commerce, Department of Commerce of the United States, was devoted entirely to a review of conditions in France by Consul General A. M. Thackara at Paris. In discussing the electrical industry, Mr. Thackara said:

"There was great activity in the electrical industries of France during 1915. The plants were kept well employed in supplying the heavy demands for electrical material of every kind for the equipment of factories. There were large orders placed for direct-current motors for operating machine tools and other machinery, and important contracts were made for the equipment of hydroelectric plants.

"None of the leading French railway companies contracted for the new electrification of their roads in 1915, and trade in material for electrical railways and tramways was confined almost exclusively to repair work.

"There was a notable increase in the manufacture of metal-filament lamps in France during 1915 and the output would have been much greater had there not been a great scarcity of glass bulbs.

"Prices in the electrical lamp trade, which had been seriously depressed by foreign competition before the war, became much more favorable, notwithstanding the great increase in the cost of production. As a rule all the prices for electrical products have advanced considerably. As most of the output was furnished to plants working on war orders the question of prices was not as important as that of speedy deliveries.

"The prospects for the French electrical industry appear bright. After peace is restored there will be a period of intensive activity. Many of the important industrial plants, especially mining and metallurgical industries, are situated in the invaded districts and probably have been either destroyed or badly crippled, and for the re-establishment of these plants and for the creation of new industries that are projected for manufacturing in France many products that were imported from enemy countries, a great quantity of electrical and other machinery will be required. The situation is of intense interest to American manufacturers, as they will undoubtedly be called upon to supply many of the wants of the French consumers."

#### ADDITIONAL TAXES CONSIDERED IN TOLEDO

Mayor Milroy and Director of Finance Diemer met with the sub-committee of the Milroy street railway committee at Toledo, Ohio, on June 23 in order to learn the opinion of the members on a plan to assess the Toledo Railways & Light Company for the use of the streets and the interurban companies for the use of the bridges. N. D. Cochran said that when a public utility company was assessed an extra tax for any purpose it simply charged it to operating expense and in one way or another exacted the sum from the patrons of the service. Low fares would come only as the taxes of the company were kept down. Johnson Thurston, president of the commission, expressed the opinion that it was manifestly unfair to raise funds from the company for any purpose other than the purchase of the road. It was important to gather funds as rapidly as possible for the purchase of the property, but the wants of the people had become so great that it seemed necessary to raise money from other sources than the tax duplicate. For this reason he did not oppose the movement at this time. Secretary Usher expressed a similar opinion. All the members agreed that the people would vote in favor of a special bond issue to supply the needs of the city when they were shown the need of it in the right manner. They believed that it was a mistake for the city to make too many special assessments. They also went on record as favoring a more equitable distribution of the tax burden.

**Boston Wage Offer Rejected.**—The compromise offer of the Boston (Mass.) Elevated Railway of a flat increase of 1 cent an hour for the first year, ½ cent an hour for the second year and 1 cent an hour for the third year was rejected by the union of employees at a meeting on the night of June 30.

**Increase for Bristol Employees.**—The Bristol & Plainville Tramway, Bristol, Conn., operating 13 miles of line, has increased the pay of its trainmen from a sliding scale ranging from 24 cents to 29 cents an hour to one ranging from 26 cents to 32 cents an hour. Ten cents an hour extra is paid for overtime.

**Battery Car Service Between High Point and Thomasville.**—The Carolina & Yadkin River Railroad has placed a storage-battery car of the Railway Storage Battery Car Company in regular service on its line between High Point, N. C., and Thomasville, a distance of 7½ miles. There is a thirty-minute service between the terminals. The fare is 15 cents. The car is charged at the station of the railroad in High Point.

**Detroit Carhouse Burned.**—Service on the Chene Street extension of the Detroit (Mich.) United Railway was interrupted on June 26 due to a fire which destroyed the North Detroit carhouse, two double-truck cars and a single-truck car. Only two cars kept at this house were untouched—a double-truck car and a trailer, which, luckily, were outside of the carhouse and some distance away. The loss is estimated at \$35,000.

**Richmond Company to Pay Employees With Colors.**—The Virginia Railway & Power Company, Richmond, Va., has announced that it will pay all regular employees who are called to the colors an amount which, together with the compensation they receive from the Government, will equal their present salary. This applies to men on the monthly pay rolls. Other employees will be paid an amount which, together with the compensation received from the Government, will equal the average pay received for the three months prior to June 1, 1916. The men will be reinstated in their old positions on their return from military service. Thirteen employees from the Richmond Division and nine from the Norfolk Division have left with their companies. There are nineteen more from the Norfolk Division who are members of military companies that are likely to be called at any time.

**Wages of Third Avenue Men Increased.**—On June 29 F. W. Whitridge, president of the Third Avenue Railway, New York, N. Y., addressed the following communication to the men in the employ of the Yonkers and Mount Vernon divisions of the company: "Conductors and Motormen.—Beginning with the first week in July, 1916, the rate of wages to be



paid conductors and motormen, operating other than storage battery cars, will be as follows: 26 cents an hour for first year men; 29 cents an hour for second, third, fourth and fifth year men; 30 cents an hour for all over five years. Inspectors and Starters.—Beginning with the first week in July, 1916, the pay of all inspectors and starters employed upon the system will be increased \$1 a week. Storage Battery Cars.—Beginning with the first week in July, 1916, the rate of wages to be paid conductors and motormen, operating storage battery cars in Manhattan, will be as follows: 23 cents an hour for first year conductors; 26 cents an hour for first year motormen; 24 cents an hour for after first year conductors; 27 cents an hour for after first year motormen."

**Installation of Railless Trolley Postponed.**—On account of the war the Corporation of Bristol, England, has decided to apply to the Board of Trade for an extension of the time allowed in the act for the exercise of powers relating to the proposed railless trolley installation, and for the granting of additional powers in regard to motor omnibuses. The railless trolley powers expire in 1917. The motor omnibus clause permits the operation of such vehicles on the authorized trolley routes pending the construction of the railless undertaking. Under an earlier act of 1903 the Council had also obtained powers to run omnibuses on specified routes, but it has never been exercised. It has now been decided to apply for the amendment of the two acts in order to acquire a general power of running omnibuses without limitation, in accordance with the present practice in the granting of motor omnibus powers. Authority is also to be sought to enable the corporation to lease the right to run omnibuses with the consent of The Board of Trade. A similar provision is contained in the Hove corporation railless trolley act.

**Auto Accidents Increase in New York.**—According to the report of the National Highways Protective Society on accidents due to vehicular traffic on the streets of New York City for the month of June, thirty-five persons were killed by automobiles, two by electric railways and seven by wagons, as compared with twenty-four by automobiles, eight by electric railways and eight by wagons during the corresponding month last year. For the first six months of 1916, 152 persons were killed by automobiles as against 137 for the corresponding period last year. Deaths due to wagons have decreased in New York State. Outside of New York City twenty-three persons were killed by automobiles, two by electric railways and three by wagons during the month of June. In New Jersey, during the same period, automobiles caused the death of fifteen, and electric railways one. In New York State, including New York City, for the first six months of 1916, 252 people were killed by automobiles, as against 241 for the first six months of 1915. During June this year three persons were killed at highway railroad grade crossings in New York State, and six in the State of New Jersey. All of these were occupants of automobiles.

**Twelve Tons of Rubbish Removed from New York's Subway Daily.**—The Interborough Rapid Transit Company, New York, N. Y., has published statistics on rubbish accumulation and removal in the subway for the first six months of the year. Here are some of the items: Five tons of newspapers and 7½ tons of dirt were cleaned off the steps and platforms of the subway stations every twenty-four hours. This refuse would have blocked the tracks completely if the cleaners had left off work for any considerable period. Passengers to the number of 728,000,000 tramped 1500 tons of dirt into stations and dropped newspapers sufficient to make 36,000 bundles weighing 15 lb. each in the period for which the records were kept. The services of 100 porters, at an expense of \$40,000, were required to keep the stations clean for six months. The porters used 42 doz. corn brooms, 18 doz. hair brooms, 120 cases of polish, 72 doz. mops, 42 doz. scrubbing brushes, 60 cases of ground soap, 1000 lb. of cotton waste, 18 doz. wringers, 36 doz. sponges, 18 doz. huge cans of brass polish, and 180 gal. crude oil. In the various stations 750 rubbish cans were utilized in the period, and every station was cleaned four times a day. The tiling was cleaned four times each week, and each night work trains picked up from 300 to 350 cans of dirt and 300 bundles of newspapers.

## Financial and Corporate

### ANNUAL REPORTS

#### United Gas & Electric Corporation

The comparative results of operation of the subsidiaries of the United Gas & Electric Corporation, New York, N. Y., for the calendar years 1914 and 1915 are shown in the following statement:

	1915	1914
Gross earnings .....	\$13,564,410	\$13,129,132
Operating expenses .....	6,836,119	6,912,293
Net income .....	\$6,728,291	\$6,216,839
Taxes .....	821,428	761,050
Gross income .....	\$5,906,863	\$5,455,789
Fixed charges .....	3,419,897	3,344,298
Balance available for renewals, financing and dividends.....	\$2,486,966	\$2,111,491

NOTE.—The figures prior to 1915 have been adjusted by elimination of earnings of properties subsequently disposed of, etc.

The operation of the subsidiary properties of the corporation shows that the gross earnings for the year increased \$435,277 or 3.3 per cent. The taxes increased \$60,378 and operating expenses decreased \$76,174, making an increase in net earnings of \$451,074 or 8.3 per cent. During the last few months of 1915 a considerable improvement was shown, the gross earnings in the last quarter gaining \$273,996 or 8.1 per cent and the net earnings \$251,480 or 17.8 per cent.

During 1915 an amount of \$1,199,135 was expended and charged to operating expenses by the subsidiary properties for maintenance, and in addition a renewals and replacements reserve of \$543,076 was set aside, making a total of \$1,742,211 appropriated out of current earnings. The balance in the renewals and replacements reserve on Dec. 31, 1915, was \$1,075,303. The current surplus earnings of the subsidiary companies, after paying their preferred stock dividends, amounted to \$1,840,767, of which amount \$543,076 was transferred to the renewals and replacements reserve, and \$534,536 was left for contingencies or investment in betterments and improvements and \$763,155 was paid out in common stock dividends. The combined surplus of the subsidiary companies (after all adjustments by the auditors for current and previous years), not declared in dividends, but largely used by them for improvements, betterments and other corporate purposes, was \$3,129,260 at the end of the year.

During 1915 \$1,168,945 was expended for additions, betterments and extensions, this amount including \$102,428 for the Elmira Water, Light & Railroad Company and \$382,810 for the International Railway.

#### Terre Haute, Indianapolis & Eastern Traction Company

The statement of income, profit and loss of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., for the year ended Dec. 31, 1915, is as shown below:

Gross earnings from operation.....	\$2,954,119
Operating expenses.....	1,762,223
Net earnings .....	\$1,191,895
Taxes .....	149,322
Operating income .....	\$1,042,573
Other income:	
Dividends on stocks owned, etc.....	\$131,329
Sale of power.....	115,477
	246,806
Gross income.....	\$1,289,379
Deductions and rentals:	
Bond interest.....	\$778,468
Dividends .....	219,500
Interest on notes.....	33,798
Maintenance of organization—leased lines..	3,000
	1,034,766
Surplus .....	\$254,613
Sinking fund.....	188,224
Balance .....	\$66,389

The total operating expenses of the railway, light and power departments for 1915 were 59.65 per cent of the gross earnings. Operating expenses were reduced from \$1,866,-



001 in 1914 to \$1,762,223 in 1915, an amount of \$103,778, or 5.56 per cent. There was an increase of \$6,377 in taxes paid in 1915. The total expenditures on account of maintenance of owned and leased lines for 1915 amounted to 18.49 per cent of gross earnings. During the year there was expended and charged to capital account for added property the sum of \$51,357, of which \$32,654 was expended on leased lines and \$18,702 on owned lines.

In 1915 the company paid \$188,224 to the trustees on account of sinking funds. Up to Dec. 31, 1915, the total amount, par value, of bonds held for sinking funds, including cash in the hands of the trustees for the purchase of additional bonds, was \$543,041. No dividends were paid on the company's preferred stock during the year, the surplus being invested for construction purposes. The total amount expended for construction purposes, for which no securities have been issued, to Dec. 31, 1915, amounted to \$640,995 on owned lines and \$282,177 on leased lines, a total of \$923,172.

Since the beginning of 1916 there has been reported a substantial increase in the earnings of all divisions of the company, and also of the Indianapolis Traction & Terminal Company, the stock of which latter railway is owned by the Terre Haute, Indianapolis & Eastern Traction Company.

Miscellaneous traffic and operating statistics of the company for 1915 follow:

Passengers carried—interurban lines.....	8,007,107
Passengers carried—city lines (Terre Haute and Richmond) .....	11,729,134
Total passengers carried.....	19,736,241
Freight handled (tons).....	82,030
Express handled, exclusive of Wells-Fargo (tons).....	13,482
Car-miles operated—interurban lines.....	5,739,795
Car-miles operated—city lines.....	2,127,328
Coal consumed at power stations (tons).....	194,808
Power generated, main power stations (kilowatt-hours) .....	89,069,150

**Honolulu Rapid Transit & Land Company**

In 1913 the gross revenue from transportation of the Honolulu Rapid Transit & Land Company, Honolulu, T. H., was \$613,137, and in 1914 \$602,841, while in 1915 it fell to \$586,588. This was \$26,549 less than in 1913 and \$16,253 less than in 1914. The revenue from other sources—that is, from rents, miscellaneous income and the Aquarium—was for 1913, \$12,584; for 1914, \$12,741, and for 1915, \$12,976. The operating expenses, not including taxes and car licenses, were—1913, \$371,242; 1914, \$367,794, and 1915, \$372,411, making the net revenue for 1913, \$254,480; 1914, \$247,788, and 1915, \$227,153. While the operating expenses thus showed very little variation, the falling off in revenue was material. This is attributed almost wholly to the great increase in the number of automobiles in private and public use. In comparison with 1914 the passenger traffic decreased 295,215 fare passengers and 6923 free passengers, while 2,975,395 transfers were issued, as compared to 2,878,719 in 1914.

On the other hand, general business conditions in Hawaii and Honolulu show much improvement over the average condition of the last three years, and a large increase in tourist travel is now noted. Beneficial results in street car traffic are already shown which offset in a measure the severe handicap that has been caused by the growing use of automobiles.

Late in the year four motor buses of special design were procured at a cost of \$17,314 to extend the service on free transfers on certain lines. The extended service to military posts has been well patronized, but owing largely to the poor condition of the streets and roads traversed has proved a costly undertaking.

Miscellaneous comparative statistics for this company follow:

	1915	1914
Average fare, revenue passengers.....	\$0.0488	\$0.0488
Revenue from transportation per car-mile....	.2955	.3072
Revenue from transportation per car-hour....	2.748	2.820
Revenue from operations other than transportation per car-mile .....	.0065	.0064
Revenue from operations other than transportation per car-hour .....	.0608	.0596
Operating revenue per car-mile.....	.3020	.3136
Operating revenue per car-hour.....	2.809	2.879
Operating expenses per car-mile.....	.1876	.1814
Operating expenses per car-hour.....	1.745	1.720
Per cent operating expenses to transportation revenue .....	63.48	61.01
Per cent operating expenses to total operating revenues .....	62.11	59.76

**Washington Water Power Company**

The income, profit and loss statement of the Washington Water Power Company, Spokane, Wash., for the calendar year 1915 follows:

Gross operating revenues.....	\$2,743,876
Receipts from interest on current balances.....	6,609
Total revenues .....	\$2,750,485
Operating expenses, including taxes.....	1,239,505
Net operating earnings.....	\$1,510,980
Deductions .....	787,323
Net earnings .....	\$723,657
Surplus from 1914.....	1,118,688
	<hr/>
	\$1,842,345
Dividends paid .....	\$851,950
Adjustments prior to 1915.....	3,450
Surplus Dec. 31, 1915.....	\$986,945

The receipts from the 110 miles of street railway tracks operated by this company decreased 13 per cent during 1915 on account of jitney competition and the increasing number of private automobiles. It is expected that the effect of the former will be less in 1916. The railway expenditures for additions and betterments amounted to \$71,562 for the year. No extensions of tracks or additions to equipment are now contemplated. Some street paving may be required by city ordinance, and the separation of grades by the Northern Pacific Railway Company will probably be completed in 1916, requiring some expenditures in connection with placing the street railway tracks at the new grades.

The operating burdens of the railway system may be judged from the following comparative statement for recent years:

Year	Miles of Track	Passengers Carried	Car-Miles Run	Car-Hours Run
1906	82.94	13,915,570	2,914,502	378,263
1907	96.21	17,249,527	3,111,563	398,820
1908	97.55	19,520,942	3,393,479	420,836
1909	100.96	24,842,767	3,624,586	435,541
1910	108.92	24,730,145	3,990,653	465,516
1911	111.85	23,691,820	3,982,362	467,813
1912	112.03	20,726,062	3,698,584	432,213
1913	112.30	19,437,009	3,650,692	423,455
1914	110.18	17,840,796	3,647,640	414,200
1915	110.18	15,714,753	3,612,993	407,157

NOTE—Statistics cover the whole system, excepting passengers carried, which are for city lines only.

**TAX ASSESSMENTS IN OHIO**

The 1916 valuation of street and interurban railways in Ohio, as assessed by the State Tax Commission, totaled \$135,974,190 as compared to \$131,768,260 in 1915, an increase of \$4,205,930 or about 3.2 per cent. Of the eighty-one companies that were assessed in 1915, forty-one showed increases in 1916, twelve decreases and twenty-six no change, while two as yet have no 1916 valuations. The increases in most cases were not large, but the fact that there was a revision upward in so many cases made the aggregate large. A notable exception was the Cincinnati, Newport & Covington Railway, whose valuation was reduced from \$1,020,620 to \$500,000. This was done because the company owns a large amount of the stock of a Kentucky corporation of the same name, which is assessed in that State. The two companies operate the line serving Newport and Covington, Ky., and connecting them with Cincinnati. The value of the Lake Shore Electric property remains the same as in 1915, as does that of the Ohio Electric Railway.

**Algiers Railway & Lighting Company, New Orleans, La.**—D. Emerson, general manager of the New Orleans Southern & Grand Isle Railway, has assumed charge of the Algiers Railway & Light Company properties as receiver, under appointment by Federal Judge Rufus E. Foster.

**Boston & Suburban Electric Companies, Boston, Mass.**—A quarterly dividend of 50 cents has been declared on the 31,387 shares of preferred stock of the Boston & Suburban Electric Companies. This stock is without par value. The dividend is payable on July 15 to holders of record of July 3. In January and April, 1916, \$1 each was paid. There is still \$11.50 accumulated.

**Cincinnati, Dayton & Toledo Traction Company, Hamilton, Ohio.**—The Cleveland Trust Company, Cleveland, Ohio,



filed suit in the Common Pleas Court at Cincinnati on July 1, asking for a receiver to take charge of the properties of the Cincinnati, Dayton & Toledo Traction Company. This company is trustee under the mortgage securing the bonds of the company. The petition states that the company has defaulted in the payment of interest on the bonds since Jan. 1, 1916. It further stated that holders of more than \$2,200,000 of bonds had requested that action be taken to foreclose the mortgage. The trust company claims that in order to preserve the franchises and property rights and continue the road in operation, it is essential to appoint a receiver. Judge Murphy of the Common Pleas Court of Butler County recently announced that he would appoint a receiver for the company, but he has not yet done so. For some time the Ohio Electric Railway, which has been operating the Cincinnati, Dayton & Toledo line underlease, has been turning the earnings over to a bondholders' protective committee.

**Cities Service Company, New York, N. Y.**—At a meeting of stockholders of Cities Service Company held on June 29 the authorized amount of Cities Service preferred stock was increased to \$60,000,000 and the authorized amount of common stock was increased to \$40,000,000. This prepares the way for the exchanges of securities of Cities Service Company for the stocks of Electric Bond Deposit Company, Toledo Traction, Light & Power Company, Lincoln Gas & Electric Light Company, and Montgomery Light & Water Company. It is expected that the final determination of the basis for these exchanges will be announced soon.

**Columbus Railway, Power & Light Company, Columbus, Ohio.**—Kissel, Kinnicutt & Company, New York, N. Y., are offering for subscription at 98 and interest, yielding 5.12 per cent, a block of \$100,000 of Columbus Railway, Power & Light Company's first refunding and extension mortgage 5 per cent sinking fund bonds due on Oct. 1, 1940, with interest payable on April 1 and Oct. 1. They are redeemable at 105 and interest. The bonds will be a first mortgage on the electric light and power and the heating properties of the company on the retirement of certain underlying issues, which have been called for payment, and are a mortgage on the street railway subject to prior liens secured by closed mortgages, for the retirement of which certain of the first refunding bonds are reserved.

**Fort Wayne & Decatur Traction Company, Decatur, Ind.**—The Indiana Public Service Commission on June 23 approved the purchase of the Fort Wayne & Springfield Railway by the Fort Wayne & Decatur Traction Company, and also authorized the issue of \$90,000 of ten-year gold bonds and \$150,000 of common stock at par to pay for the property which has been taken over.

**Georgia Railway & Power Company, Atlanta, Ga.**—The Georgia Railway & Power Company has secured control of the Gainesville Railway & Power Company through the purchase of the holdings of W. A. Carlisle, W. H. Slack and H. H. Dean. The Gainesville property consists of 8 miles of street railway line in the city and 2 miles to the suburbs, the electric lighting system of Gainesville and a hydro-electric plant on the Chestatee River rated at 1500 hp.

**Sacramento & Woodland Railroad, Chico, Cal.**—The California Railroad Commission has issued a supplemental order authorizing the Sacramento & Woodland Railroad to issue its demand notes for \$45,000 to the First National Bank, San Francisco, \$20,000 of this amount at 6 per cent and \$25,000 at 7 per cent. These notes are to cancel similar amounts to the same bank.

**Shore Line Electric Railway, Norwich, Conn.**—The directors of the New London & East Lynne Street Railway have voted to recommend the sale of the outstanding stock of the company to the Shore Line Electric Railway, which now operates the road under lease.

**Standard Gas & Electric Company, Chicago, Ill.**—The entire outstanding balance of the issue of \$3,000,000 of 6 per cent collateral trust notes of the Standard Gas & Electric Company dated June 1, 1913, was paid on June 1, 1916. The company's outstanding convertible 6 per cent sinking fund gold bonds, due 1926, are being reduced by \$1,911,500 with funds secured from the sale to the Northern

States Power Company of its holdings of Northern States subsidiaries' bonds at call figures. This brings the present outstanding bond issue down to \$7,040,500, which will be further reduced on July 1 through operation of the \$58,800 cash now in sinking fund when tenders will be accepted of convertible 6 per cent bonds.

**Topeka (Kan.) Railway.**—The stockholders of the Topeka Railway have voted to increase the capital stock from \$1,210,000 to \$2,250,000, and have filed application for such increase with the Kansas Public Utilities Commission. It is reported that the company is planning to build an interurban line from Topeka to Lawrence.

**Union Traction Company, Coffeyville, Kan.**—The stockholders of the Union Traction Company, which operates between Parsons and Coffeyville, have approved the purchase of the Kansas-Oklahoma Traction Company, which operates between Coffeyville and Nowata, Okla, subject to the approval of the Corporation Commission of Oklahoma and the Public Service Commission of Kansas.

#### DIVIDENDS DECLARED

Athens Railway & Electric Company, Athens, Ga., quarterly, 1¼ per cent, preferred.

Bay State Street Railway, Boston, Mass., 3 per cent, first preferred.

Boston (Mass.) Suburban Electric Companies, quarterly, 50 cents, preferred.

Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky., quarterly, 1½ per cent, preferred; quarterly, 1½ per cent, common.

Citizens Traction Company, Oil City, Pa., quarterly, 75 cents, preferred.

Columbia Railway, Gas & Electric Company, Columbia, S. C., quarterly, 1½ per cent, preferred.

Dayton & Troy Electric Railway, Dayton, Ohio, quarterly, 1¼ per cent, preferred; quarterly, 1¼ per cent, common.

Detroit (Mich.) United Railway, quarterly, 1¼ per cent.

Kentucky Securities Corporation, Lexington, Ky., quarterly, 1½ per cent, preferred.

Little Rock Railway & Electric Company, Little Rock, Ark., 2 per cent, common and preferred.

Pacific Gas & Electric Co., San Francisco, Cal., quarterly, 1¼ per cent, common.

South Carolina Light, Power & Railways Company, Spartanburg, S. C., quarterly, 1½ per cent, preferred.

Springfield & Xenia Railway, Springfield, Ohio, 1½ per cent, preferred.

United Railways & Electric Company, Baltimore, Md., quarterly, 50 cents, common.

Youngstown & Ohio Railway, Leetonia, Ohio, 1¼ per cent, preferred; one-fourth of 1 per cent, preferred extra.

#### ELECTRIC RAILWAY MONTHLY EARNINGS

##### BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., April, '16	\$8,403	*\$8,258	\$145	\$1,096	†\$951
1 " " '15	7,407	*8,431	+1,024	1,110	†2,134
12 " " '16	117,963	*98,444	19,519	13,370	6,149
12 " " '15	121,522	*101,198	20,324	13,375	6,949

##### CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

1m., April, '16	\$28,234	*\$18,296	\$9,938	\$6,499	\$3,439
1 " " '15	25,164	*15,337	9,827	6,449	3,378
12 " " '16	374,920	*218,588	156,332	78,830	79,502
12 " " '15	342,908	*207,651	135,257	78,145	57,112

##### JACKSONVILLE (FLA.) TRACTION COMPANY

1m., April, '16	\$54,593	*\$34,645	\$19,948	\$15,439	\$4,509
1 " " '15	52,075	*36,425	15,650	16,254	†604
12 " " '16	615,221	*424,264	190,957	179,363	11,594
12 " " '15	677,607	*459,907	217,700	160,143	57,557

##### KENTUCKY TRACTION & TERMINAL COMPANY, LEXINGTON, KY.

1m., April, '16	\$65,564	\$34,666	\$30,898	\$20,574	†\$14,496
1 " " '15	63,611	33,152	30,459	19,754	†15,192
10 " " '16	705,579	362,519	343,060	204,133	†163,848
10 " " '15	673,217	358,307	314,910	197,748	†144,690

##### PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

1m., April, '16	\$24,384	*\$15,899	\$8,485	\$7,137	\$1,348
1 " " '15	22,193	*14,866	7,327	7,749	†422
12 " " '16	296,777	*179,639	117,078	89,444	27,634
12 " " '15	297,981	*190,134	107,846	91,767	16,079

\*Includes taxes. †Deficits. ‡Includes non-operating income.



## Traffic and Transportation

### PITTSBURGH OWL CAR RATE HEARING

#### Summary of Testimony in Case Involving an Increase in Fare from 5 Cents to 10 Cents

The Public Service Commission of Pennsylvania held a public hearing at Harrisburg on June 30 on the proposed increase of fare from 5 to 10 cents on the owl cars of the Pittsburgh Railways. As a result of the points raised by counsel for W. M. Jacoby, the complainant, and the city of Pittsburgh, co-complainant, against the proposed increase, the Public Service Commission will be compelled to make a new ruling as to what constitutes proper notice to the public of a change of rates. The commission decided to consider only one of the complaints filed—that of whether the public received proper notice of the increased night rate fare by schedules posted as required by law. After hearing witnesses for the complainants and the company, the commission announced it would hand down a decision in the near future.

Counsel for the Pittsburgh Railways contended that all requirements of the law had been met—that the company had notified the commission of the proposed increase, and had placed tariff schedules at the main office of the company and at all stations where tickets were sold thirty days before the proposed increase went into effect. The complainants alleged that it is insufficient notice of a change of rates to place a schedule where only those who inquire may find it, and that actual posting "where all who run may read" is necessary. The hearing of witnesses on this one point consumed all morning and afternoon, and no testimony was taken as to whether the proposed increase is justifiable. The Pittsburgh Railways will be forced to withdraw its schedule and make publication of a proposed increase anew if the commission sustains the complainants. However, if the company is sustained, the complainants will have to proceed with arguments to prove that the rate increase is not justifiable as they contend. Meanwhile the public will receive rebate coupons issued by the company, at the commission's order.

P. N. Jones, general manager; C. S. Mitchell, comptroller; J. M. Loftis, superintendent; W. B. Carson, secretary; J. W. Welsh, James W. W. Ash, traffic agents, and Attorneys A. W. Robertson and David Reed attended the meeting for the company.

Commissioners Ainey, Brecht, Ryan, Magee and Rilling sat to hear the case in the house of the legislature caucus room, but before beginning the hearing of testimony it was announced that Commissioners Magee and Brecht would not participate, and Messrs. Ainey, Ryan and Rilling heard the case. Messrs. Magee and Brecht are residents in the territory in which the Pittsburgh Railways operates.

James W. W. Ash, traffic agent, demonstrated the manner in which copies of the new night rate schedule were filed at stations and other public places in Pittsburgh. He said copies of the new tariff were given to the agents, with instructions that they be placed on file and kept for public reference. This notice to the agents was sent on May 22, and the proposed increase notice was filed at stations, carhouses and waiting rooms.

At Chairman Ainey's request, copies of the agents' instructions were exhibited. It was brought out that the only notice to the public was through the filing of the new schedule and no other notice was posted until the day before the increase was effective, when posters announcing the doubling of the fare were placed in the cars. Witnesses produced a list of places where the new rates were filed, including carhouses and the company waiting rooms and offices. Advertisements were produced from the Pittsburgh papers of the date of June 23 as the first printed concerning the increase. One of the posters placed in the cars on June 21 was also identified by witnesses.

Councilmen and investigators for the complainants then gave testimony relating to their search for the posted rate increase notification, and all declared that no notification

could be found in a public place and that at many of the waiting rooms and offices the new tariff schedule was procured with difficulty.

P. S. Joyce of the law department of the city of Pittsburgh said that he visited carhouses and failed to find notices of the advance, and declared the schedules were not accessible. Photographic views of some carhouses were produced as part of his evidence to show the alleged inaccessibility of these places.

Attorney David Reed objected to this testimony, but Chairman Ainey said he "considered it a lack of opportunity for publicity."

Councilman John S. Herron, who was called to testify in regard to excess receipts, stated that he saw a number of passengers who did not get such receipts even when they asked the conductor for them. Notice to the public to ask for receipts issued by the company was read from the poster and made an exhibit. Mr. Reed, for the company, declared that every effort had been made to comply with the commission's order relating to excess receipts, and insisted that there was no attempt to evade or disobey that body's order.

Commissioner Ainey said that a passenger's getting an excess receipt should not depend on whether the passenger asked for that receipt. Passengers were entitled to them and every passenger should get one. The burden rested on the company to see that passengers did receive excess receipts.

Mr. Brown, for the complainant, held that a notice in bold-faced type should have been posted to call the public's attention to the increased night fare, and asked how a patron of the company could have knowledge of the change unless he made inquiry every day where tariffs were on file.

Counsel for the Pittsburgh Railways offered in evidence tariff circulars and other documents, including the original tariff schedule and two supplements, one of them the night rate schedule. David A. Reed, for the company, declared that the 10-cent fare on owl cars was the custom until 1907, when an act was passed, forbidding more than a 5-cent fare in any city in Pennsylvania. This act was later declared unconstitutional by the Supreme Court, and Mr. Reed pointed out that the company was merely going back to its old rates, in effect for forty years before the passing of the act of 1907.

Commissioner Ryan asked what the schedule of rates contained to indicate an increase or decrease. Mr. Reed said: "It is simply an amended page, and it cannot be interpreted as an increase or decrease. The statement of variation is plain, as it says it 'applies to night fares.'"

Commissioner Ryan asked if it was not a fact that the commission was formed to protect the public in just such matters as this. Mr. Reed said he believed the public sufficiently intelligent to care for itself and insisted that the notice given by the company met all the requirements of the law. After argument on the meaning of the word "posted" the commission adjourned.

### INSURANCE PLAN ANNOUNCED FOR BALTIMORE EMPLOYEES

William A. House, president of the United Railways & Electric Company, Baltimore, Md., has announced that the company has completed an insurance plan for the employees. About 4500 employees are affected by it. The plan follows quite naturally the progressive step of the company taken in 1914, when it established a pension plan for the employees who had reached a certain age limit. The letter from Mr. House announcing the terms of the plan as worked out is as follows:

"As a further evidence of this company's interest in the welfare of its employees and their families, the board of directors has authorized the inauguration of an insurance plan, effective on July 1, 1916, under which the family of an employee will receive benefits from the company in the event of his death. Pensioned employees are included in this plan. The employees of the company have been divided for the purpose of the insurance plan, into three classes, as follows:

"Class A—Will comprise those not married, having no dependents.

"Class B—Will comprise married employees having no children and those not married having dependents.



"Class C—Will comprise married employees, with wife and children.

"The following table shows the amounts payable to beneficiaries of employees who have been in the company's service for the periods named, according to the designated classes:

	A	B	C
"After one year of service.....	\$100	\$150	\$200
"After two years of service.....	200	300	400
"After three years of service.....	300	450	600
"After four years of service.....	400	600	800
"After five years of service.....	500	750	1,000

"The one year of service provision will be waived with respect to those employees now in the service of the company, who are otherwise eligible to the benefits of this plan. Those entering the employ of the company after July 1, 1916, will become eligible after one year of continuous service.

"The entire expense of this insurance plan will be borne by the company.

"It is believed that those in the company's service will find much comfort in the thought that, in case of death, their families will, to this extent, be provided for, and this action on the part of the company will undoubtedly serve to engender still further that feeling of loyalty which has been so strongly evident in the past.

"The plan in detail will be posted at the headquarters of your department."

#### HEARINGS CONTINUE ON BAY STATE FARE CASE

A report on the Bay State Street Railway was presented recently in connection with hearings before the Public Service Commission on the pending petition for fare increases, by George W. Bishop, formerly a member of the commission and now head of its inspection department. A special examination of the equipment was made by John W. Ogden and Arthur W. Hodges, inspectors for the commission, and Philip Scott, assistant inspector.

The report criticises the original construction of the constituent roads now making up the Bay State system, and points out that light-weight rails, small ties and insufficient roadbed are typical of portions of outlying lines. The management has in recent years been engaged in correcting this situation, the report says. In the interests of safety, the first available funds should be used to repair and reconstruct parts of the roadbed and track. The amount considered necessary is \$1,659,720, about half of which should be expended during the present season. Of the 2,350,000 odd ties in the system, 1,855,834 have been placed during the last thirteen years. Mr. Bishop's estimate of the average life is twelve years; hence he deduces that there is a shortage of nearly 700,000 tie renewals on all Bay State lines. Of the 116,000 tons of rails on the system, about 47 per cent is 90 to 105 lb. girder rail and 53 per cent 40 to 75 lb. T-rail. The average life is estimated at eighteen years, requiring 6500 tons annually for repairs. The company reported 59,658 tons placed during the last fourteen years, of which 11,610 tons were used in construction, 46,384 tons in reconstruction, and 1664 tons in maintenance, a deficiency of more than 30,000 tons on the eighteen-year estimate.

An improved signal system is recommended. About 340 miles of the total 556 miles of single track are protected as follows: 240 miles by 343 blocks of hand-throw signals, eighty-eight miles by 124 blocks of non-counting signals, and twelve miles by thirty-three blocks of counting signals. Owing to the exposure of hand-throw signals to malicious interference, it is recommended that \$5,000 be expended to secure them against this depredation. It is estimated that the cost per block of hand-throw signals is \$75, and their annual maintenance \$10, while figures for both non-counting and counting signals are \$600 and \$50, respectively. About \$280,000 would be required to replace the older types with counting signals, and their annual maintenance would cost about \$20,000. About \$180,000 more would protect the single track not now supplied with signals. Safety and economical operation favor the installation of a standard type on all lines.

The Bishop report estimates the cost of improved car-house and shop equipment at \$2,120,400; improvements in power stations and feeder lines call for \$910,500; the total estimated requirement to bring the property to first-class

condition being \$5,150,620. This amount should be spent during 1916 and 1917.

Peter Witt, formerly railway commissioner of Cleveland, Ohio, was examined June 26 and 27, on a study made at the request of R. S. Bauer, representing Lynn and Essex County. Mr. Witt recommended the housing of cars in a few large carhouses and storage yards; the speeding up of service generally; the use of one-man cars on a number of city and suburban lines; the scrapping of all open cars and a large number of box cars, and other radical measures. He thought that the installation of fare boxes would result in substantial increases of revenue, perhaps 10 to 15 per cent. The accident hazard of the open car, and the duplication of equipment it involves for all-the-year operation, make that type very uneconomical. Mr. Witt did not consider the argument that open cars encourage summer riding as forceful at the present time. Mr. Witt held that the one-man car would successfully combat jitney competition. Mr. Witt referred to the twenty-two passenger, two-ton-body car adopted by Stone & Webster for certain of their Southern systems. He said that such cars have not been adopted in Cleveland because the headways there are close, and large cars are more advantageous. Instead of the prevailing 15-minute headway in Lynn he would operate one-man cars on 7.5-minute headway and leave the jitney little patronage. Such operation would stimulate noonday riding.

On June 28, Alton D. Adams, consulting engineer employed by the remonstrants, was examined by Albert P. Worthen, counsel for the remonstrants.

#### TRENTON FARE CASE STILL BEFORE COURTS

The Trenton & Mercer County Traction Corporation is availing itself of every legal course to have its rights defined in the dispute with the city of Trenton over the sale of six tickets for 25 cents. The city claims that the company is obligated by the ordinances under which it is operating, and by the sale of the tickets for so many years, to continue to sell six tickets for 25 cents. The company claims that under its franchise it has the right to demand a straight 5-cent fare. The suit in the federal court is to determine the city's power to interfere with the operation of cars, as the city has threatened to do, should the company discontinue the sale of tickets. The suit in the New Jersey Supreme Court is for a review of the findings of the State Public Utility Commission, which ordered the company to continue the sale of the tickets. Neither court has rendered an opinion in the case. The company's application for an order to the United States District Court to restrain the city from interfering with the operation of cars is now on the calendar for final hearing. It is not likely that the case in the federal court will be moved until the question is determined before the State Supreme Court. The case was carried into the Supreme Court on certiorari proceedings after a decision by the utility board. The Supreme Court, after argument, will hand down its opinion, and then an appeal will probably be taken to the Court of Errors and Appeals.

**Booklet Describing Kansas City.**—The Kansas City (Mo.) Railways has issued a booklet filled with pictures and descriptions of Kansas City's parks and boulevards—particularly the parks, which are widely scattered. It is somewhat in the form of a railway folder. All the beauty spots of the city, and many outside the city, can be reached for a single 5-cent fare.

**Ban on Left-Hand Turns to Be Removed.**—Acting on complaints of the Automobile Club the Board of Public Safety of Louisville, Ky., has announced that immediately on installation of semaphores which are planned for several of the important downtown intersections, the rule against the left-hand turn, so as to cross the street, will be lifted for a while at least. The Automobile Club members contend that instead of obviating congestion the system actually increases confusion on the busy streets.

**Two-Cent Fare in Grant County to Continue.**—Two cents per mile will remain the fare to be charged by the Union Traction Company of Indiana in Grant County, Ind., until the September term of court, as a result of the decision of Judge Paulus not to set the date for the argument on a demurrer in the case of the town of Fairmount, Ind., against



the Indiana Public Service Company and the Union Traction Company. The order of the commission eliminating the low passenger rates imposed by franchise conditions in Indiana was referred to in the *ELECTRIC RAILWAY JOURNAL* of April 22, page 799.

**New Emergency Ticket in Brooklyn.**—The New York Consolidated Railroad (Brooklyn Rapid Transit System) notified the Public Service Commission for the First District of New York that on June 15 the company would put into effect a system of issuing block or emergency tickets on the elevated and subway lines in Brooklyn. In the case of a block on any elevated or subway division, tickets will be issued to passengers who have paid their fare and will be good within forty-eight hours not only on any other elevated or subway line but also on any surface line in the Brooklyn Rapid Transit System.

**Excursion from Peoria to Niagara Falls.**—The Illinois Traction System, Peoria, Ill., conducted an excursion to Niagara Falls on June 24, tickets being sold via the Toledo, St. Louis & Western Railroad at Ridge Farm, Ill., where connection is made with the Illinois Traction System. The passengers were conveyed from Ridge Farm to Toledo by the Toledo, St. Louis & Western Railroad, thence by the Lake Shore Electric Railway to Cleveland, thence via the lake vessel SeeandBee to Buffalo and over the International Railway to Niagara Falls. Liberal stop-overs were allowed and many side visits of interest were provided.

**California Line Reduces Fare.**—The Central California Traction Company, Lodi, Cal., with the approval of the Railroad Commission of California has put into effect for the summer a one-way fare of \$1 from Sacramento to Stockton and a round-trip fare of \$1.50 good only for the date of sale. The old rate was \$1.45 for one way and \$2.90 for the round trip. The fare between Stockton and Lodi has been cut to 25 cents for the round trip, good for the day of sale only. Heretofore the round trip rate has been 50 cents, and 35 cents for one way. It is stated that the reduction was sought largely on account of the competition offered by the auto bus.

**Suit Over a Pig.**—Construction of an old agreement, asserted by the plaintiff in the case, will result from a suit filed in the Quarterly Court at Louisville by S. W. Duncan against the Louisville & Interurban Railway, in which the plaintiff claims \$4 for the death of a pig. He asserts that when the railway received a right-of-way through his property it was agreed that the promoters would build and maintain a fence which would keep his cattle and hogs off the right-of-way. Mr. Duncan says this agreement has not been lived up to by the company, and that he was refused payment on presentation of his claim for the pig, which got through the fence onto the track and was run down.

**Topeka Jitney Ordinance Declared Operative.**—The ordinance regulating jitneys in Topeka, Kan., requiring practically prohibitive license on certain streets where street cars operate, will go into effect unchanged. The delay of a month granted by the City Commissioners was not improved by the jitney owners. They established a transfer system, but got into a squabble over the exchange of transfers and the distribution of territory. It seemed that it would be impossible to maintain a permanent agreement on service to all parts of the city, and on the main streets, and that the service itself was subject to the opportunities of the jitney owners to make more money occasionally with special fares.

**Burlington County Fare Increase Still Before Commission.**—The petition for the Burlington County Traction Company for permission to increase its fare from 20 cents to 30 cents from Moorestown to Burlington, N. J., is still before the Board of Public Utility Commissioners of New Jersey. In the meantime the utility board has directed the company to comply with certain minor directions as to roadbed, equipment and other incidentals. When the company announced that it would ask the commission to allow it to increase its fare the citizens of Burlington County objected and a committee was appointed to prevent the increase. The citizens announced, however, that if the company would provide better equipment, roadbed and service they would sanction the increase.

**Louisville Suburban Lines Recover Traffic.**—In spite of increased competition the Louisville & Interurban system of electric lines shows a gain in business, according to the figures which have just been compiled for May of this year. The country lines of the Louisville system were the last to feel the effects of the late depression and have been the last to recover. The increase in May was the first gain for a number of months. Competition is now to be contended with on all the lines of the company running out from Louisville, passenger automobile service and freight service by motor trucks both being encountered. The method by which the service of the railway lines is extended by motor truck beyond the terminus of the Shelbyville line is proving up to expectations and recommends itself as one way in which electric railways can off-set the business taken away by the motor trucks.

**Hearing Fixed for Order on Turn Backs.**—The Public Service Commission for the First District of New York on June 9 last issued an order to all surface railways in Greater New York, forbidding the turning back of cars before reaching the destination for which they started, unless some excellent reason for that procedure could be shown. The companies were directed to make daily reports to the commission, showing the number of cars turned back on the preceding day and for what reason. The Third Avenue Railway wrote to the commission, stating that compliance with the order would upset its traffic arrangements, and that the order was a serious matter and should not be enforced without first giving the corporations a chance to present their side of the case to the commission. The commissioners thought it but fair to accede to the Third Avenue Railway's request and all the companies have been notified to have representatives at a public hearing on the question to be held at the office of the commission on July 11.

**Brooklyn Safety Prizes Awarded.**—Five hundred children from fifteen public schools which were winners of the district prizes in the 1916 safety essay competition held by the Bureau of Public Safety under the auspices of the Brooklyn Institution for Safety (Brooklyn Rapid Transit System) gathered at the assembly hall of the Central Branch Y. M. C. A. in Brooklyn on the evening of June 22 to witness the award of the district prizes and of the three grand prizes given in this competition. The principals of the schools winning the district prizes and a considerable number of teachers and parents attended with the children. The judges, of the competition, Gen. George W. Wingate, president of the Brooklyn Institute for Safety, and Dr. Gustav Straubmuller, acting City Superintendent of Schools, found that the essays of Allen Savage of P. S. No. 73 and of Benjamin Brook of P. S. No. 178 tied for first place in the competition and accordingly the first and second grand prizes of \$50 and \$30 were divided between these schools, \$40 for each school. The third grand prize was won by Harry Rankin of P. S. No. 147, whose safety essay brought \$20 to his school in addition to the \$10 district prize.

**McAlester's Jitney Policy Recommended for Emulation.**—The Ardmore (Okla.) *Ardmorite* said recently, in the course of an editorial: "McAlester has had some trouble with its system of electric cars and has learned to appreciate what a car line means to the city and has begun a campaign to protect the receipts of the line by making war on the jitney. A high license fee is charged, a \$10,000 bond is required, children under five are required to be transferred free and at half price between five and twelve years, and the jitney is required to give continuous service from 6.30 a. m. to 10.30 p. m. The McAlester people are to be congratulated upon the work done in this direction. Jitneys will never build a city, while street cars will settle additions and make living conditions more wholesome. The salaried man can depend upon the street railway to get him to his work on time, while no one can depend on the jitney for continuous service in any kind of weather. A street railway gives the family of small means a chance for recreation and the man of good common sense who has worn the novelty off his automobile will patronize the street car for many of his outings instead of using his car. Ardmore has an opportunity, or will have within a short time, to co-operate with its street railway line, and everything possible should be done to make the system a success."



**I. C. C. Denies Through Routes and Joint Rates.**—The Interstate Commerce Commission has refused to compel the Grand Rapids, Holland & Chicago Railway, Holland, Mich., to establish through routes and joint rates with the Indiana Transportation Company. It was held that the evidence failed to show a public necessity for the physical connection between the two carriers. The Grand Rapids, Holland & Chicago Railway operates an interstate electric railway for the transportation of freight and passengers between Holland, Mich., and Grand Rapids and over a branch line between Holland and Saugatuck, connecting at Holland with the Graham & Morton boat line operating between Holland and Chicago. In its finding the commission said: "Through routes between Chicago and these Michigan points now exist to all points which would be reached by the proposed through route, and complainant does not attack the reasonableness of existing joint rates nor does it present any testimony seeking or tending to show that lower joint rates should be made over the proposed route than the existing joint rates over the present route. Defendant shows that the cost of the service to it would be greater over the proposed route than over the existing route. No testimony was offered upon which to base a finding as to the amount of the proportional rates from Saugatuck, and the prayer for proportional rates seems in effect to have been abandoned."

**Accident Prevention Effort at Bylesby Railway Properties.**—The four street railroads of H. M. Bylesby & Company, located at Pueblo, Col.; Ottumwa, Iowa; Fort Smith, Ark., and Fargo, N. D., are making an effort to reduce the number and the seriousness of street railway accidents through the education of school children. Blotters showing accident possibilities to children playing in the streets, jumping on street cars for free rides, etc., have been distributed to every child in the cities where the companies operate street cars. A part of the educational effort includes a moving picture film entitled "Staking Their Lives," which illustrates the dangers of being careless or forgetting the street cars, and shows many kinds of accidents which are likely to follow such carelessness. Five prizes are being offered to school boys and girls in each of the cities involved for the best accident prevention suggestions received up to Jan. 1, 1917. A series of twelve newspaper advertisements will be published, calling attention to the prizes offered and suggesting ways and means for the public, passengers, automobile and vehicle drivers to assist the companies in eliminating accidents. The campaign is based upon the belief that care and watchfulness can best be engendered through inducing the children to give the matter serious consideration, as they will undoubtedly discuss the matter with their elders and in this way direct favorable attention to the newspaper advertising of the various companies.

**Messrs Ham and Hanna Discuss Proposed Service Standards.**—At the hearing in Washington, D. C., on the subject of standard of car loading proposed by the Public Utilities Commission of the District of Columbia the Washington Railway & Electric Company was represented by W. F. Ham, vice-president, and the Capital Traction Company by J. H. Hanna, vice-president. Engineer Commissioner C. W. Kutz as chairman of the body explained in detail the proposed requirements. These were set forth briefly in the *ELECTRIC RAILWAY JOURNAL* of June 3, page 1063. Mr. Ham said that the public needed to be educated. With the co-operation of the public better conditions would exist on the cars. He declared the subject had been investigated by experts in various cities and that before any standard schedule was fixed by the commission some measure of determining what was adequate service should be taken up. Mr. Hanna said that it did not appear to his company that the establishment of any standard of car service was one of particularly vital necessity. Standards of car service, in order to be of practical use, should be so flexible as to allow variations to meet the different conditions which exist on different lines and at different times of the year. Mr. Hanna said the disagreement of the railway with the commission over the proposed schedule was largely as to details and that the companies believed that continued conferences between the commission and railways would eliminate many of the points at issue.

## Personal Mention

**J. T. Kemp**, formerly with the Aetna Chemical Company, Drummondville, Que., has been appointed general superintendent of the Sherbrooke Railway & Power Company, Sherbrooke, Que.

**Charles Johnstone**, formerly accountant of the Sherbrooke Railway & Power Company, Sherbrooke, Que., has been appointed acting manager of the company to succeed J. H. Trimmingham, who succeeded Maj. N. C. Pilcher, killed in action in France.

**J. H. Trimmingham**, superintendent of power of the Sherbrooke Railway & Power Company, Sherbrooke, Que., who acted as general superintendent of the company during the absence of Maj. N. C. Pilcher in Europe, has been appointed sub-lieutenant in the Royal Naval Motor Boat Patrol Service, and has left Canada for England.

**William N. De Neale**, who has been in continuous service with the Washington Railway & Electric Company, Washington, D. C., and its predecessors for forty-two years, has been relieved of the duties of superintendent of the eastern division of the company's lines and made special agent of the transportation department. When he completed his forty years' service with the company Mr. De Neale was summoned by the board of directors and presented with \$100 in gold in recognition of his faithful and meritorious service.

**P. J. Kealy**, president of the Kansas City (Mo.) Railways and since last November Lieutenant-Colonel of the Third Regiment, M.N.G., has been elected Colonel of the regiment, succeeding Col. Fred A. Lamb, resigned. The choice was popular in Kansas City, where the citizens appreciate deeply the service of Colonel Kealy in organizing the regiment in good order, and recruiting it to full strength for mustering into the federal service. Colonel Kealy has also secured for the regiment a measure of support locally that it had not enjoyed, obtaining equipment badly needed, his appeals for motor trucks and other things meeting instant response. During Colonel Kealy's temporary absences, or during his long absence in case the troops should go beyond the border, James E. Gibson, general manager, and Chester C. Smith, assistant to the president, will put Mr. Kealy's policies into effect.

**E. J. Burdick** has been appointed general manager of the Detroit (Mich.) United Lines. Mr. Burdick was born and educated in Wisconsin. He began work with the Brush Electrical Manufacturing Company, Cleveland, and four years later he was employed by the Westinghouse Electric & Manufacturing Company, where he remained until he became associated with the Detroit Electric Railway in May, 1895, in charge of the electric apparatus. At the time of the consolidation of the various properties into the Detroit United Railway, Mr. Burdick was placed in charge as superintendent of the power and overhead departments, where he has served up to his recent advancement. Mr. Burdick is



E. J. BURDICK

a member of the city commission of the Board of Boiler Rules, is past president of the Detroit Engineering Society and has served the American Electric Railway Association and the Central Electric Railway Association in many capacities. Mr. Burdick is thoroughly acquainted with all the properties of the Detroit United lines. His work has brought him in close touch with the details of railway practice. His training and experience are extensive. The appointment is an extremely popular one within the company. Mr. Burdick entered upon his new duties on July 1.



## Construction News

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

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

### RECENT INCORPORATIONS

**\*Lakeland, Bartow and Winterhaven Interurban Railroad, Winterhaven, Fla.**—Application for a charter will be made by this company to construct a line from Lakeland to Bartow and Winterhaven. Capital stock, \$700,000. Officers: J. L. Wilson, Altoona, Pa., president; E. B. Nelson, Baltimore, Md., vice-president and general manager; A. X. Erickson, Lakeland, Fla., secretary, and G. A. Wilson, Phillipsburg, Pa., treasurer.

**Akron Belt Line Railroad, Akron, Ohio.**—Incorporated to construct an electric railway from Akron to New London. Capital stock, \$250,000. Glen Brown, Akron, is interested. [May 13, '16.]

**\*Pittsburg County Railroad, McAlester, Okla.**—A charter has been granted to the Pittsburg County Railway. Capital stock, \$600,000. Incorporators: C. H. Mason, Montclair, N. J.; Ernest B. Osborne, New York; S. M. Beachman, Orange, N. J.; Walter H. Vorce and C. H. King, Jr., McAlester.

### FRANCHISES

**\*Clearwater, Fla.**—Martin Carabello has asked the Council for a franchise to construct a line through Clearwater. It is proposed to construct a line from Tampa to Sutherland, with branches from there to Lake Butler and Tarpon Springs and to Dunedin, Clearwater, Belleair, Largo and St. Petersburg.

**Newport, Ky.**—By a vote of four to one a new street railway ordinance was passed by the City Commissioners on June 27. It is said to be much the same as the one repealed by the commissioners when referendum petitions were secured some months ago. The ordinance provides that the company operating the street railway lines shall pay the city \$6,000 a year as rental for the streets used. Several factions here are dissatisfied with the ordinance and threaten to initiate one to their own liking and bring it before the voters at the November election. The Cincinnati, Newport & Covington Street Railway Company and its Kentucky associated companies will probably be the only bidder for the franchise.

**Baltimore, Md.**—The United Railways & Electric Company has received a franchise from the Council to construct a double-track line over the new Hanover Street bridge which spans the middle and southwest branches of the Patapsco River.

**Kansas City, Mo.**—The lower house of the City Council of Kansas City, Mo., has killed an ordinance providing for removal of the Kansas City Railway's tracks on McGee Street from Fifteenth to Nineteenth Streets. The removal of the tracks would probably have obviated the necessity of building certain connecting tracks provided for in the franchise, at Nineteenth Street.

**Lancaster, N. Y.**—The Buffalo & Depew Railway has received a franchise from the Council to lay track on Central Avenue.

**Rochester, N. Y.**—The New York State Railways have asked the Council for permission to make a number of track changes in connection with the State Street carhouse. In the petition the company sets forth its desire to lay a single track in Commercial Street from State Street to Plymouth Avenue to connect with the tracks in those two streets; a single track wye from the Commercial Street track to a ladder track running parallel to and 14 ft. from the east line of Frank Street, from which there will be five loading branches into the various tracks of the carhouse; a single track beginning at the Plymouth Avenue end of the Commercial Street track and running on a curve in a northeasterly direction into the carhouse; a single track running in a southeasterly direction from the carhouse to

the south-bound track in State Street; permission to abandon all the switches in State Street except three at the northerly end, one of which is to be used for emergency purposes and the other two to remain until a freight and express terminal is located.

**Columbus, Ohio.**—In order to make its securities saleable, the Columbus, Delaware & Marion Railway Company has asked the commissioners of Franklin County to grant it a twenty-five-year franchise to be effective at the termination of its present grant, which has seven years yet to run. The company had promised to lay new tracks and make other improvements on the county road which is to be paved, and \$105,000 in receiver's certificates had been authorized. The company found, however, that because of the short period its franchise has to run it could not sell the securities.

### TRACK AND ROADWAY

**Northern Electric Railway, Chico, Cal.**—It is reported that this company has awarded a contract to the Missouri Valley Bridge Company for the construction of a steel bridge over the American River, also for a bridge over the Feather River near Oroville, which will cost approximately \$55,000.

**Pacific Electric Railway, Los Angeles, Cal.**—Plans are being considered by the City Council of Los Angeles for the construction of a viaduct at Sherman Drive over the tracks of the Pacific Electric Company. The viaduct, according to plans, will cost about \$30,000, and it is proposed that the Pacific Electric Railway shall pay one-half of the cost, the other half to be divided equally between the city at large and an assessment district covering the property directly benefited by the crossing.

**San Diego (Cal.) Electric Railway.**—This company announces that it has three plate girder bridges, aggregating 1020 ft. in length, consisting of fifty plate girders 30 ft. long and 3 ft. deep; forty plate girders 60 ft. long and 5 ft. deep, and steel supporting towers for sale. The bridges were fabricated by Milliken Brothers, Staten Island, under Robert W. Hunt & Company's inspection for mill and shop. The bridges were not erected and the steel is new and in excellent condition. Plans and specifications may be obtained upon application to the purchasing department.

**Peoria, Galesburg & Western Railroad, Peoria, Ill.**—It is reported that plans are now being made to finance this company's proposed lines from Peoria to Galesburg, via Farmington. [April 17, '15.]

**Peoria (Ill.) Railway.**—It is reported that this company is considering the construction of an extension out Washington Street to Bloomington Street, East Peoria.

**Quincy (Ill.) Railway.**—This company will construct a loop at the terminus of its State Street line at Twenty-second and Washington Streets.

**\*Springfield, Ill.**—Plans are being considered by the Springfield Commercial Association for the construction of an electric railway from Springfield to Hillsboro, 50 miles. The plan proposed contemplates the building of the road from Springfield in a direct southerly route through Pawnee and other towns located south of Springfield to Hillsboro and eventually to Cairo.

**Indianapolis, Chicago & Meridian Railway, Indianapolis, Ind.**—It is reported that plans are being considered to revive the project of this company to construct a line from Indianapolis to East Chicago, which was abandoned about two years ago because of lack of funds. John A. Shafer, Indianapolis, is reported interested. [Dec. 6, '13.]

**Topeka (Kan.) Railway.**—This company has asked the Kansas Public Utilities Commission for permission to increase its capital stock from \$1,210,000 to \$2,250,000. It is reported that the company plans to construct a line from Topeka to Lawrence.

**South Covington & Cincinnati Street Railway, Covington, Ky.**—It is reported that this company will construct a 1½-mile extension of its Fort Thomas line to Cold Springs.

**United Railways & Electric Company, Baltimore, Md.**—The Public Service Commission of Maryland has instructed the United Railways & Electric Company to extend its Columbia Avenue line and Orangeville line.



**Moncton Tramways, Electricity & Gas Company, Ltd., Moncton, N. B.**—This company will probably remove its track on Main Street between Weldon and High Streets and on High Street between Main and Park Streets and place the same on Weldon Street from Main to Park Streets, thence on Park Street to High Street, about  $\frac{1}{2}$  mile.

**\*Pennsgrove, N. J.**—Plans are being considered for the construction of an electric railway from Pennsgrove to Atlantic City. The Chamber of Commerce of Pennsgrove may give information.

**Five-Mile Beach Electric Railway, Wildwood, N. J.**—The Board of Public Utility Commissioners has granted permission to the Five-Mile Beach Electric Railway to abandon a portion of its line on Rio Grande Avenue, Wildwood.

**Interborough Rapid Transit Company, New York, N. Y.**—The contract for the construction of the 180th Street yard on Route No. 18, the White Plains Road elevated extension of the Lenox Avenue branch of the first subway in the Bronx, has been awarded by the Public Service Commission for the First District of New York to the Thomas J. Buckley Construction Company, New York, the lowest bidder, at \$269,222.50. The yard is to have capacity for about 275 cars, and must be completed within twelve months from the delivery of the contract. The commission has authorized the chairman and secretary to advertise for bids, to be opened on July 17, for the construction of a railroad duct line for the Lexington Avenue subway. The duct line is to consist of a line of thirty ducts extending through Walton Avenue and East 157th Street from a point near 153d Street to River Avenue, in the Borough of The Bronx. The method of construction will be by trench excavation, and the work must be completed within two months from the delivery of the contract.

**Asheville, N. C.**—A report from the Kenilworth Development Company states that the company is constructing  $\frac{1}{2}$ -mile of track on which a gasoline car will be operated. [June 10, '16.]

**Carolina & Yadkin River Railway, Greensboro, N. C.**—Electric operation has been begun by this company between High Point and Thomasville,  $7\frac{1}{2}$  miles, a storage-battery car being used.

**Pictou County Electric Company, Stellerton, N. S.**—This company has received an extension of time from the Nova Scotia Legislature in which to construct various lines which its predecessor, the Egerton Tramway Company, was authorized to build in 1902 and which have not been built.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—Dissatisfied with the concession of the Northern Ohio Traction & Light Company to build only \$35,000 worth of street car extensions in Canton, a delegation of business men and officials of that city appealed to the Public Utilities Commission of Ohio for extensions amounting to \$300,000. After hearing the demands of the delegation, the commission suggested that the Canton people call into conference Charles Currie, general manager of the company, present their needs to him and ask the company to issue additional bonds to make the extensions. Mr. Currie said that such an arrangement was agreeable to him. The city wants six extensions of lines aggregating 9 miles. These are chiefly into sections of the city in which new industrial plants have been built.

**Oakwood Street Railway, Dayton, Ohio.**—Plans are being considered by this company for the construction of an extension to the Dixie Highway. It is proposed to follow the river to Webster Street, then across the new Webster Street bridge and out the Dixie Highway. The new Webster Street bridge is being constructed with provisions for double-track service.

**East Liverpool Traction & Light Company, East Liverpool, Ohio.**—This company will re-route one of its lines, which will necessitate the laying of about  $1\frac{1}{2}$  miles of track and overhead lines.

**Lake Erie & Northern Railway, Brantford, Ont.**—Operation on this company's extension from Brantford to Simcoe was begun on May 30. The cars now operate from Galt to Simcoe, 43 miles. The 8-mile extension from Simcoe to Port Dover is expected to be open for traffic about July 15.

**Hamilton (Ont.) Street Railway.**—Work will be begun at once by this company on the construction of track on Kenilworth Avenue from Barton to Burlington Street.

**Toronto (Ont.) Suburban Street Railway.**—The Ontario Railway Board has granted permission to the Toronto Suburban Street Railway to deviate its track on Dundas Street near Lambton, in order that it might connect with the Toronto & Western Radial line, which operates a line from the suburbs of Toronto to Brampton and Guelph.

**\*Medford, Ore.**—The city of Medford has voted \$300,000 of bonds for the construction of a 30-mile railroad to the Blue Ledge mining district, subject to the ratification by the voters on July 10 of a contract for the construction of the road with the Southern Oregon Traction Company, Medford.

**North Branch Transit Company, Bloomsburg, Pa.**—Work will be begun at once by this company repairing its tracks on East Front Street.

**Port Jervis & Delaware Valley Railroad, Matamoras, Pa.**—It is reported that work will be begun early this month on this company's proposed line from Port Jervis to Matamoras and Milford, about  $7\frac{1}{2}$  miles. The work will include 21,000 cu. yd. of earth excavation, 15,000 cu. yd. of embankments, one 60-ft. steel girder bridge and two camel-back trusses, 300 ft. spans to be reinforced. There will also be about 300 lineal feet of trestle and 250 cu. yd. of masonry. Most of the material has been contracted for. J. A. Vandegrift & Company, 149 Broadway, New York City, are to finance and build the line. W. E. Soden, 19 Hubbard Building, Port Jervis, N. Y., treasurer and engineer. [June 17, '16.]

**Rhode Island Company, Providence, R. I.**—Work will be begun at once by this company on the double tracking of its line on Randall Street from Charles Street to North Main Street.

**Carolina Rapid Transit Company, Clinton, S. C.**—Preliminary surveys will be begun about July 10 by Reid Tull, Spartanburg, for this company's proposed line to connect Spartanburg, Union, Woodruff, Enoree, Laurens and Clinton, about 85 miles. J. F. Jacobs, Clinton, is interested. [June 17, '16.]

**El Paso (Tex.) Electric Railway.**—All overhead lighting and power wires of the El Paso Electric Railway in the business district of El Paso will be installed in underground conduits within the next year. Work will be begun in about ninety days. It is estimated that the cost will be about \$325,000.

**Spokane & Inland Empire Railway, Spokane, Wash.**—It is reported that this company has decided to extend the Manito Park car lines from Thirty-third Avenue to Thirty-eighth Avenue, actual work to begin as soon as the paving of Grand Boulevard is begun.

**Kanawha Traction & Electric Company, Parkersburg, W. Va.**—This company contemplates the construction of a bridge above Boaz Stop.

#### SHOPS AND BUILDINGS

**Detroit (Mich.) United Railway.**—This company's car-house at North Detroit, containing two double-truck cars and a single-truck car, was destroyed by fire on June 26. The loss is estimated at \$35,000.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—It is reported that this company is receiving bids for the construction of an office and terminal building and course. The structure will be 84 ft. x 155 ft., of brick, stone, concrete and steel, and will be four stories. Franz C. Warner, Cleveland, architect.

**Portland & Oregon City Railway, Portland, Ore.**—This company will construct a new station on East Third and East Clay Streets near Hawthorne Avenue, Portland. A station will also be built at Clackamas River, which will be called the Carver Station.

#### POWER HOUSES AND SUBSTATIONS

**Knoxville Railway & Light Company, Knoxville, Tenn.**—This company has received a contract from the city of Knoxville for installing a white-way system in the business district at \$9,000.



## Manufactures and Supplies

### PREDOMINANCE OF SAFETY FEATURES IN CAR DESIGN

An article on page 1148 of the *Equipment and Its Maintenance* department in the issue of this paper for June 17, describing recent practice in Brooklyn, emphasizes the extent to which safety is the dominating feature of much of the car design of the present day. It does not take a very long memory to reach back to the time when the fender was about the only device used on an electric car in which safety was the primary purpose for its use. Gradually, however, other devices were adopted. Probably one of the first of these was the safety gates used on the platforms of the cars in a few cities, notably in Minneapolis and St. Paul, but the idea that the car platform should be inclosed did not become generally accepted until well along in the history of prepayment design. Finally, the pay-within car was put on the market with a completely inclosed rear platform, and the principle that the passenger should be protected against himself when boarding and alighting became a standard feature in the practice of many American electric railways. Another early device was the protection of the bumper by an oblique shield so as to make it impossible for boys or others to stand on the rear bumper outside the dashboard either as passengers when the car was crowded or to steal a ride.

The purpose of this article is not to establish claims for priority of use for any of the different safety appliances or even to attempt to enumerate all of them but to call attention to the large number which have been put upon the market during the past few years and have become recognized as standards of equipment with many companies. Most of these have been developed during the past few years and have received a great stimulus from the safety-first movement, if indeed they were not largely responsible for the movement itself. It is a notable commentary upon the enterprise of the American electric railway manufacturer and electric railway manager that they should have developed and adopted so many of these devices and thus have helped to make the modern electric car almost "foolproof." To mention some of them, it might be well to begin with the outside of the car.

Here the fender naturally attracts first attention, and while the idea of the fender is twenty years old or more, the fender of the present day bears little resemblance to the crude device which was attached to the front of the early electric cars. A modern fender is not only far more reliable in operation but is also much less liable to cause accidents to the unwary pedestrian on the streets than its predecessor. We have already referred to platform gates and doors, but the modern devices of this kind are also far removed from the original Twin City gates. They are often operated by air power and have so delicate a closure as not to cause injury in case a person should be caught between the closing door and the jamb. Underneath the door on an end-platform car in many cases are folding or disappearing steps, while the steps themselves are usually fitted with non-slipping treads. In the front of the car on the bumper is an anti-climber to prevent cars riding during a collision.

As one boards a car, the first equipment with which he comes in contact is the platform railing which enables him to maintain his balance as the car is starting and is a substitute for the old grab handle on the outside of the car. These platform railings also serve in many cars to divide the stream of ingoing from outgoing passengers, but they are quite as much for safety as to avoid platform congestion. Inside the car there are, of course, the car-seat handle or the sanitary strap to enable the passenger to keep himself erect when the car starts or stops suddenly or is passing around a curve.

These are, of course, only a few of the many devices of a safety pattern used on cars, but we believe that enough have been enumerated to demonstrate the claim made at the

beginning of this article that safety has become a primary purpose in the design of many cars which are being built to-day.

### ROLLING STOCK

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., noted in the *ELECTRIC RAILWAY JOURNAL* of June 10 as being in the market for two cars, is considering the purchase of two single-truck all-steel cars, 33 ft. 4 in. over all.

Three Rivers Traction Company, Three Rivers, P. Q., has ordered a single-end combination baggage car and snow plow from the Ottawa Car Manufacturing Company, Ltd., Ottawa, Canada. The car will be of wooden construction with a heavy side-wing plow on one side and a heavy nose plow in front. It will be 30 ft. over all.

### TRADE NOTES

Lord Manufacturing Company, New York, N. Y., has received an order for thirty-two Berg folding type fenders for the sixteen cars of the Binghamton (N. Y.) Railway being built by the Cincinnati Car Company.

T. L. Smith Company, Milwaukee, Wis., announces that E. R. Marker, district manager, has moved to 609 Wells Street, Milwaukee, Wis., where he will take charge of the business of the company as Wisconsin representative.

Chattanooga Brass & Machinery Company, Chattanooga, Tenn., composed of W. L. Case, Carl Flatter, John Fort and W. F. Norman and capitalized at \$15,000, has been formed for the purpose of manufacturing ball-bearing, self-lubricating trolley wheels.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is reported to have purchased 440 acres of ground in Tincum Township, Pa., fronting on the Delaware River, on which it may establish a plant, although it has not definitely been decided.

George R. Law, who for some time has been New England representative of the American Brake Shoe & Foundry Company, has severed his connection with them and is now manager of the mechanical department of the Electrical Sales Company, 176 Federal Street, Boston, Mass.

General Electric Company, Schenectady, N. Y., has received an order for double-motor and control equipment for the seventy storage-battery cars being built by the Southern Car Company for the New York (N. Y.) Railways. Bush Terminal Company has ordered a 60-ton electric locomotive from this company.

W. H. Ivers, formerly with Baldwin Locomotive Works, has been appointed Southwestern representative of Gold Car Heating & Lighting Company, with headquarters at St. Louis, Mo., succeeding George F. Ivers, who has resigned to become manager of the railway supply department of Shapleigh Hardware Company, St. Louis, Mo.

Holden & White, Chicago, Ill., announce the appointment of the O. H. Davidson Equipment Company as their representative in Utah, Idaho, Montana, eastern Nevada and western Wyoming. The office of this company, at Salt Lake City, is in charge of L. Brandenburger and will hereafter represent Holden & White in the sale of Wasson bases, Garland ventilators and Perry-Hartman side and center bearings in that territory.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has sold to the Rochester Railway & Light Company, Rochester, N. Y., for its new hydroelectric plant in that city two 12,500-kva., 11,000-volt, three-phase, 60-cycle, 180-rpm, vertical a.c. generators with direct-connected exciters. This company has received an order from the Pennsylvania Lines, West of Pittsburgh, for four 600-amp. electric arc welding equipments. This company also reports the receipt of a number of other important orders.

American Car & Foundry Company, St. Louis, Mo., announces the following changes in officers: J. M. Buick, formerly vice-president, has been elected vice-president and general manager; William M. Hager, formerly secretary, has been elected assistant to the president; H. C. Wick has been elected secretary to fill Mr. Hager's place. Mr. Wick



has been with the company for the last twelve years, acting as assistant to the secretary and also secretary to F. H. Eaton, the late president of the company. The entire board of directors was re-elected.

Tool Steel Gear & Pinion Company, Cincinnati, Ohio, reports that at the present time it has unfilled orders on its books that will take the entire production day and night for fully five months. Not all is for immediate shipment, but it cannot promise better than about ninety days' delivery on most of the orders now being accepted. This abnormal schedule comes about through difficulty in getting raw material and on account of the tremendous amount of business recently placed with this company. Many of its large customers have placed anticipatory orders for delivery the latter part of this year or early next year. These deferred delivery orders now total 2910 gears and 4894 pinions, from such companies as the following: Public Service Railway, Newark, N. J.; New York (N. Y.) Railways; Toledo Railways & Light Company; Chicago Elevated Railways; Cincinnati Traction Company; Colorado Springs & Interurban Railway; Kansas City Railways; Philadelphia Rapid Transit Company; United Railroads of San Francisco; Grand Rapids Railway; Nashville Railway & Light Company; Easton Transit Company; Bay State Street Railway, and American Railways, Altoona and Joliet.

#### ADVERTISING LITERATURE

Laclede-Christy Clay Products Company, St. Louis, Mo., is distributing a circular on fire brick and other refractory shapes.

Roller-Smith Company, New York, N. Y., has issued Bulletin 200 which describes and illustrates its direct reading bond testers.

MacGovern & Company, New York, N. Y., recently issued an illustrated catalog listing the electrical, hydraulic, steam and gas power machinery they have on hand.

Sprague Electric Works of General Electric Company, New York, N. Y., have issued Bulletin No. 48906 describing and illustrating their ½-ton and 1-ton electric hoists, Type S-1.

Chicago Pneumatic Tool Company, Chicago, Ill., has issued Bulletin E-41, superseding E-32, which describes and illustrates Duntley portable electric tools for street and interurban railways.

Ohio Brass Company, Mansfield, Ohio, has issued an illustrated circular on Crouse-Hinds Imperial headlights, for which it is general sales agent, as noted on page 44 of the ELECTRIC RAILWAY JOURNAL of July 1.

The Texas Company, New York, N. Y., is circulating an illustrated booklet entitled "About Texaco Crater Compound." The booklet describes the uses of this product by electric railways and other industries, and also gives directions for applying it.

Ohmer Fare Register Company, Dayton, Ohio, has issued a circular containing testimonial letters from C. B. Wells, recently with the Denver Tramway Company, and L. D. Mathes, general superintendent electrical division, Norfolk Southern Railroad. Both speak in high terms of the Ohmer fare register system.

Gurney Ball Bearing Company, Jamestown, N. Y., has just issued a very attractive catalog of forty pages. No attempt is made in it to illustrate the application of the bearings to different forms and parts of machinery, as these applications are taken up in a series of engineering bulletins issued by the company, but the general principles of the bearings are explained and illustrated.

Carnegie Steel Company, Pittsburgh, Pa., has just issued a pamphlet entitled "Axles and Forgings for Steam and Electric Railway Service; Standard Axles, Designs and Specifications." The pamphlet, which has eighty-eight pages, contains a brief introduction explaining the conditions under which Carnegie axles are made and sold. The specifications for axles of the American Society for Testing Materials, the Master Car Builders' and the American Electric Railway Association are then given and are followed by the standard axle designs of the M. C. B. and A. R. M. M. and the American Electric Railway Association. A few convenient calculating tables complete the pamphlet.

#### NEW PUBLICATIONS

Trolley Wayfinder, Official Street Railway Guide of New England, published by the New England Street Railway Club, Boston, Mass. Price 10 cents.

This is the authority for trolley trips in New England and is a good example of the constructive work which a sectional organization can do in the way of developing electric railway traffic. Of course, in New England, much of the summer traffic is from tourists, so that the "Wayfinder" gives considerable space to the scenic attractions and points of historical interest reached by the different lines, but it should also be of great help to the commercial traveler and others who are traveling for business purposes. The "Wayfinder" contains a good index and many maps as well as timetables showing distance, fare, total elapsed time and headway on all of the principal interurban and suburban lines in New England.

The Engineer in War, by P. S. Bond, Major, Corps of Engineers, U. S. Army, McGraw-Hill Book Company, Inc., New York, 187 pages, illustrated, price \$1.50.

The present political situation makes this book, which is made up from a series of articles originally appearing in the *Engineering Record*, of great interest and value. It is intended primarily to teach the non-military engineer the fundamentals of military engineering, and this is done in so clear a way that the book will hold the attention of the reader even if he is not intending immediately to apply the principles laid down. The author believes that no army ever had an excess of engineer troops, and says that the demands made upon the engineers in every army have inevitably been greater than their capacity. Moreover, the tendency of modern warfare is more and more to depend upon the engineer. Under our present military system, the engineer corps as well as the army have to be recruited from volunteers, so that even in peace the civilian engineer should become acquainted with at least the rudiments of military engineering. The book is one which could profitably be read by every engineer, even by those beyond military age.

#### JITNEY'S EFFECT IN PORTLAND

The Portland (Ore.) *Telegram*, commenting editorially in its issue of May 26 on a request which had been made recently for an extension of the railway facilities of the Portland Railway, Light & Power Company, said in part as follows:

"For the first time since the jitney converted a street railway asset into a liability the Portland Railway, Light & Power Company has been asked to make a new investment here. Request comes from the Franklin Parent-Teacher Association to extend the Richmond line a distance of eleven blocks to the new Franklin High School. A roseate prospectus is presented. One thousand pupils will attend at the opening of the next September term, and after all the units of the new building are completed there will be 2000 pupils.

"This request opens up the important question of intra-city transportation in its larger aspects, and it is pertinent to inquire whether there is a reasonable probability that present corporations in any city will extend existing lines or build new lines so long as jitney competition reduces income to a point below the outgo. Surely no new companies will enter an old field where the jitney offers a menace that has proved to be disastrous. Looking forward two or three decades how are we to increase our home-owning population if present street railway lines are not extended and no new districts developed? Shall the bulk of city population, as in New York, for instance, live in tenements?"

Thus far regulation of the jitney has failed. Of course a city could operate street railway systems at a continual loss. This is precisely what the Portland Railway, Light & Power Company has been doing for more than a year. It will be no easy job to induce the corporation to throw good money after bad. We fear the students at Franklin will have to walk part of the way to school. The jitney never ventures away from the car tracks."