

Electric Railway Journal

Vol. XLII

NEW YORK, SATURDAY, AUGUST 30, 1913

No. 9

PUBLISHED WEEKLY BY

McGraw Publishing Company, Inc.

JAMES H. MCGRAW, President. C. E. WHITTLESEY, Secretary and Treas.
239 West 39th Street, New York.

CHICAGO OFFICE.....1570 Old Colony Building
PHILADELPHIA OFFICE.....Real Estate Trust Building
EUROPEAN OFFICE....Hastings House, Norfolk St., Strand, London, Eng.

TERMS OF SUBSCRIPTION

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, \$3.00 per year; Canada, \$4.50 per year; all other countries, \$6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving old as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

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Entered as second-class matter at the post office at New York, N. Y.

Of this issue of the ELECTRIC RAILWAY JOURNAL, 8000 copies are printed.

ILLEGIBLE CAR NOTICES

The general advertiser who posts an announcement in a car is very sure to use a type display that will be legible from the greater part of the car. He knows that if his message is to go home, his words must be few but full of meaning. Would it not be well for electric railways, when they too have something to advertise, to follow the example of the experienced advertiser? Not long ago one railway issued a "courtesy" poster which ambled around and took several hundred words to explain that the men were instructed to be courteous to passengers and that all disputes regarding transfers, smoking, etc., should be reported to the management for adjustment. Yet the substance of this notice could have been put into a few words in much larger type, and then the company's story would have had a much better chance to be read and remembered. Aside from its unreadable typography, the poster was rarely in the same location in different cars, and in some cases it was attached almost along the center line of the ceiling. Under these circumstances, it is not likely that any large part of the public is properly acquainted with this railway company's laudable intentions to promote a better understanding with its patrons.

THROUGH SERVICE FOR AMUSEMENT RESORTS

During the present summer several roads have discontinued the operation of through cars for traffic to and from amusement resorts situated on branches from the main line, furnishing instead shuttle service or its practical equivalent over the branch line and handling the major part of the passengers by means of a somewhat augmented main-line service. The plan has much to commend it from a strictly operating standpoint, for the profitable operation of a temporary service to some unusual destination is always subject to the reverses due to inclement weather as well as to the lack of opportunity for estimating

the amount of traffic in advance of the time at which it is presented for transportation. In addition, the empty haul of the return trip is a prolific source of diminished revenue. Nevertheless, the plan is as dangerous an economy as that of the boy who mounted stairs two at a time to save shoe leather and then split his trousers. Hardly anything is productive of more adverse comment by the public than the necessity for transferring to some branch line when the number of people transferred is apparently large enough to warrant the operation of special through cars. On the other hand, the installation of the latter class of service cannot fail to make friends for the company, and even though it may not be as profitable as the other method of handling amusement resort crowds, it affords indirect advantages which should not be overlooked in planning for the handling of this class of traffic.

APARTMENTS IN RAILWAY SERVICE BUILDINGS

A notable feature of German electric practice is to incorporate living quarters for family use in substations, passenger stations and the general utility buildings at operating carhouses. This policy offers the advantage of having the local superintendent, agent or other employee on the spot for practically twenty-four hours a day. At a carhouse, for example, the same superintendent is in charge from the earliest preparations for the heavy morning service until the return of the last evening trippers. This long period of service can be performed by him without fatigue because he loses no time in going to and from work and has ample opportunity for a siesta between peak hours. Residence at a passenger station is equally desirable in the case of ticket agents, as this would insure the practically continuous presence of some one to receive service and emergency messages, and it would also avoid undue confusion at stations where it is customary for the agent to open the ticket window ten minutes before train time. Substations also offer opportunities for the installation of living rooms. The average interurban substation is usually operated by one man, who is as lonely as Robinson Crusoe on his island. Most substations are operated by young unmarried men, but where the equipment is large enough to require the services of an older man with a family the addition of apartments is worthy of some consideration. In general, the extra cost is not much, as service buildings of the character named are already supplied with plumbing, lighting and heating equipment. Furthermore, the provision of free living quarters is certainly an attraction from the employee's standpoint, because he saves an appreciable fraction of his wages and also secures better accommodations that he could afford to pay for elsewhere. Abroad it has been found that the sense of ownership which an employee acquires under these conditions is an important factor in keeping him contented with his employment.

FUNCTIONS OF PUBLIC SERVICE COMMISSIONS

An interesting discussion of commission regulation was presented Aug. 20 before a branch of the National Electric Light Association by William J. Norton and was published in abstract last week. Although relating directly to electric lighting companies, Mr. Norton traces the revolution which has occurred in public utility business matters through the establishment of commission rule, and this subject is, of course, of as much interest to one kind of public utility as to another.

Theoretically, it is difficult to conceive of any change more radical from a business standpoint than that resulting from the adoption of the commission principle. For years lighting companies had not been prohibited under existing laws from establishing variable rates for service rendered at different hours and in different quantities, although usually a maximum permissible rate was stipulated. They had power to develop their own rates. In a similar way the street railways had practically full liberty of action in regard to their operation and corporate organization, except that they were able by their charters to make only a certain maximum charge for transportation. All the investments in both kinds of enterprises had been undertaken upon this basis and upon the principle that it was proper from both a legal and an accounting standpoint to capitalize the earning capacity of the properties. It was also generally believed that all expenses caused by obsolescence and some of those required for depreciation were more than counterbalanced by the supposed appreciation constantly going on in the value of the property, due to its growth and to that of the city in which it was located. The modern theory of public service regulation is still in a somewhat nebulous shape, but in general its advocates unite upon the principle that such utilities should not be permitted to earn more than certain amounts, depending primarily upon the hazards of the business and upon the value of the property used in the prosecution of the enterprise. Such a plan presumably requires that when the profits of the enterprise are such that they exceed for any considerable length of time the maximum rate permitted upon the investment the charges for service will be reduced.

There seems to be no reasonable objection to a plan of this kind in the case of a new enterprise provided all points are clearly understood in advance and then remain in force. It is a simple business proposition which can be accepted or rejected at will, according as the rate of return under such a plan compares with the profits to be obtained from investments in other lines of industry. It is an entirely different matter, however, to apply such principles to an existing company whose business has been developed lawfully according to the older method. The reason for this is that the company's investment and all of its contracts and other business arrangements have been based upon the previous status of affairs, and if that is to be radically changed some time should be allowed to permit the company to adjust its affairs to fit the new conditions. The length of time may be as long a period as twenty-five years. This period of adjustment would allow a company to spread over a considerable number of payments any necessary amortization of intangible assets which the commission considered

it was no longer advisable for the company to keep in its capital account, and if increases in its charges for service had to be made to accomplish this change, they would have to be only reasonable in amount and thus would not seriously disturb the relations between the company and its customers.

PAY ROLLS AS RECORDS

The practically universal custom of considering repair shop pay rolls to be a part of the permanent records for use by general officials is, we believe, a practice not warranted by anything except conservatism. It is, of course, manifest that shop pay rolls must go through the hands of the proper shop officials for approval and through the office of the paymaster for distribution. There appears, however, to be no real need for the pay rolls in detailed form to be sent regularly as a matter of routine to the office of the auditor or even to that of the manager or president. Records of the unit cost of production are what such officials really need, and the mere statement of fact that a certain repairman draws \$70 for a month's work is absolutely unenlightening to anyone in the main office who is not acquainted with the kind or amount of work which that man is doing.

As a matter of fact, records of shop pay rolls in the hands of those who are not acquainted with the detailed operations of the shop where they originate may become a source of serious trouble. One of the most difficult things for some office men to comprehend is that large pay checks to individuals can easily be features of real advantage to the company. Yet it is quite common to find serious and long-continued objections taken in the offices of railways with shops operating on a piece-work basis if a machinist should draw a monthly pay of \$150 instead of the usual more modest figure. It may be that the man is turning out three times as much work as his fellows who draw half as much pay, but this fact is not shown in a record composed of a list of names and pay checks, and unless the reason is thoroughly understood, such a mere record is apt to be misleading.

This point is really the main cause of the objections which always are expressed when the introduction of a piece-work or premium system is proposed. The workmen claim, often with justice, that piece-work prices are not kept stable and when a man by unusual effort or skill succeeds in earning a large monthly pay this fact will be used as a means to reduce prices or at least will start an inquiry toward that end. The same thing applies to "stretching" work in shops where piece work has actually been established, and, indeed, some notorious examples show higher unit costs under a piece-work system than in other shops on the straight day-work basis doing exactly similar work. The reason is obvious.

Of course, it is a very simple matter for the manager or any one else in authority to secure a copy of the detailed sheet when he wishes it and thus to keep in touch with the situation at the shop. But the general principle should be followed that if the engineering department is held responsible for results and is obtaining these results economically, wide latitude in its methods and in its pay checks to individuals should be allowed to it.

WORK FOR THE SALT LAKE CONVENTION

In an editorial in the last issue of the *Motorman and Conductor* every local of the Amalgamated Association of Street & Electric Railway Employees is urged to send a full delegation to the annual convention at Salt Lake City in September. The convention, it is remarked, will be a barometer by which the growth, size and "aggressive and defensive force" of the organization will be judged by railway managements.

A full delegation from all locals at the thirteenth annual convention would mean an attendance of 500—enough to impress anyone so far as mere quantity or bulk can be impressive. Equally deserving of attention are the recent assertions of officials as to the extent of Amalgamated membership and the proportion of roads which are now unionized in whole or in part. Discount these statements as we may—and that they should be heavily discounted is beyond doubt—there is left this much of truth, that the Amalgamated now includes a large proportion of the electric railway employees of the United States, has steadily extended its influence of late to include such important communities as Buffalo and Cincinnati, and now has more than 170 written agreements with electric railways. The association has had a number of setbacks in the past year in various sections of the country from Florida to Wisconsin, but if railway managers wish to know what is really happening, as distinguished from what they would like to have true, it needs to be realized that the Amalgamated has made and is making steady progress in numbers and influence among the rank and file of electric railway workers, including shop and mechanical men as well as platform employees. With very rare exceptions this growth has not been accompanied by an improved standing among railway managers. Their attitude is almost uniformly antagonistic, not to say hostile.

There would be little or no profit in going into an examination of the causes of this condition of affairs if it did not afford an opportunity to point out the steps that must be taken by the Amalgamated in order to make itself not only impressive but respected and to establish a confidence which does not now exist. Only by doing this can the resistance now made to the association be lessened and the good of all parties concerned be furthered. For the most radical of both of these parties must admit this much, that the more responsible, law-abiding, honest and well-managed the association is, the better it will be both for the union and the employers. The latter will not be impressed or frightened by the gathering of 500 men at Salt Lake City. They would be impressed and gratified by sincere declarations against lawlessness, condemning the breach of contracts, demanding the observance of awards and upholding discipline, and some evidence that a higher order of national and local officials and board members will be chosen to conduct the affairs of the association. Having reached the point in its career when it can be reasonably proud of its bigness, the Amalgamated may with profit consider means of becoming great and respected.

That it is not respected at the present time is certain. Few experienced railway men regard the 174 contracts of which boast is made as being worth the foolscap on which

they are written, and it is doubtful if a dozen of these contracts were signed by railway managements except under some degree or form of coercion. They were obtained by the employees at the cost of immense losses, and but for the disbelief in the Amalgamated's good faith there might be many more than 174 out of the possible 1200 or 1500 contracts to be made with American electric railways.

The reasons for the distrust referred to are not at all obscure. Within easy recollection railway men have seen an Amalgamated agreement to arbitrate thrown overboard in Cincinnati; an agreement as to hours signed in Massachusetts and prompt steps taken to subvert it by legislation; in Chicago they have heard the result of an arbitration abusively condemned by the Amalgamated's president; in Detroit within a few weeks they have heard the declaration that if an arbitration "does not go their way they [the union men] will strike." Railway managers have come to expect violence and lawlessness as the unfailing accompaniments of any strike under Amalgamated auspices, and nearly everywhere it is the rule that Amalgamated grievance committees by upholding and defending men unquestionably at fault have subverted discipline and as far as they could do so made the life of operating officials a burden.

It is because they know these things and many others of similar import that the Amalgamated is opposed by railway managements. No demonstration of strength will lessen this opposition. Such a demonstration is more likely to reinforce determination never to deal, when it is possible to avoid it, with an organization that cannot be trusted and which is dangerous—not desirable—in proportion to its size. Dealings with labor unions are a matter of course in the steam railway field, and there is little resistance to this rule, mainly because the steam railway men form not only large but permanent and responsible bodies with which it is possible to do business. The closer the electric railway men approximate this condition, the better it will be for them.

To be fair, as it is the wish of the *ELECTRIC RAILWAY JOURNAL* to be, it must be admitted that the electric railway organizers have troubles of their own, due to the shifting character of electric railway employment. But this very condition makes it all the more necessary that the Amalgamated as an institution should stand for honesty and square dealing, whatever may be the demands of immediate expediency or however loud may be the clamor of irresponsible and loosely organized men. The kind of labor leadership that consists simply of going along with the crowd is scarcely worthy of the name. To be more specific, an international officer recently acquiesced in the rejection of an arbitration agreement and another in the rejection of an award because the prospects were good for extorting more favorable terms. These officials would have done more for their cause by insisting that the given word of their followers should be kept even if this had to be done at the risk of local dissatisfaction.

Evidently there is something more important than self-congratulation for the Amalgamated delegates to do at the Salt Lake convention. They may well look to Amalgamated faults and weaknesses and begin a reform of its methods and standards if they aspire to occupy in the electric railway business a position comparable to that enjoyed by the steam railway brotherhoods.

Way Construction of the Connecticut Company

This Article Describes the Division of Duties Between the Construction and the Way Departments of the Connecticut Company in Handling the Track Work of the Latter, the Methods of Carrying Out a Job, Construction Standards, Etc.

The New York, New Haven & Hartford Railroad Company owns and operates electric properties of a total single-track mileage of 1350 miles, these being electric street and suburban lines in the States of Connecticut and Rhode Island, the western portion of Massachusetts, southern Vermont and the suburban district of Westchester County, New York.

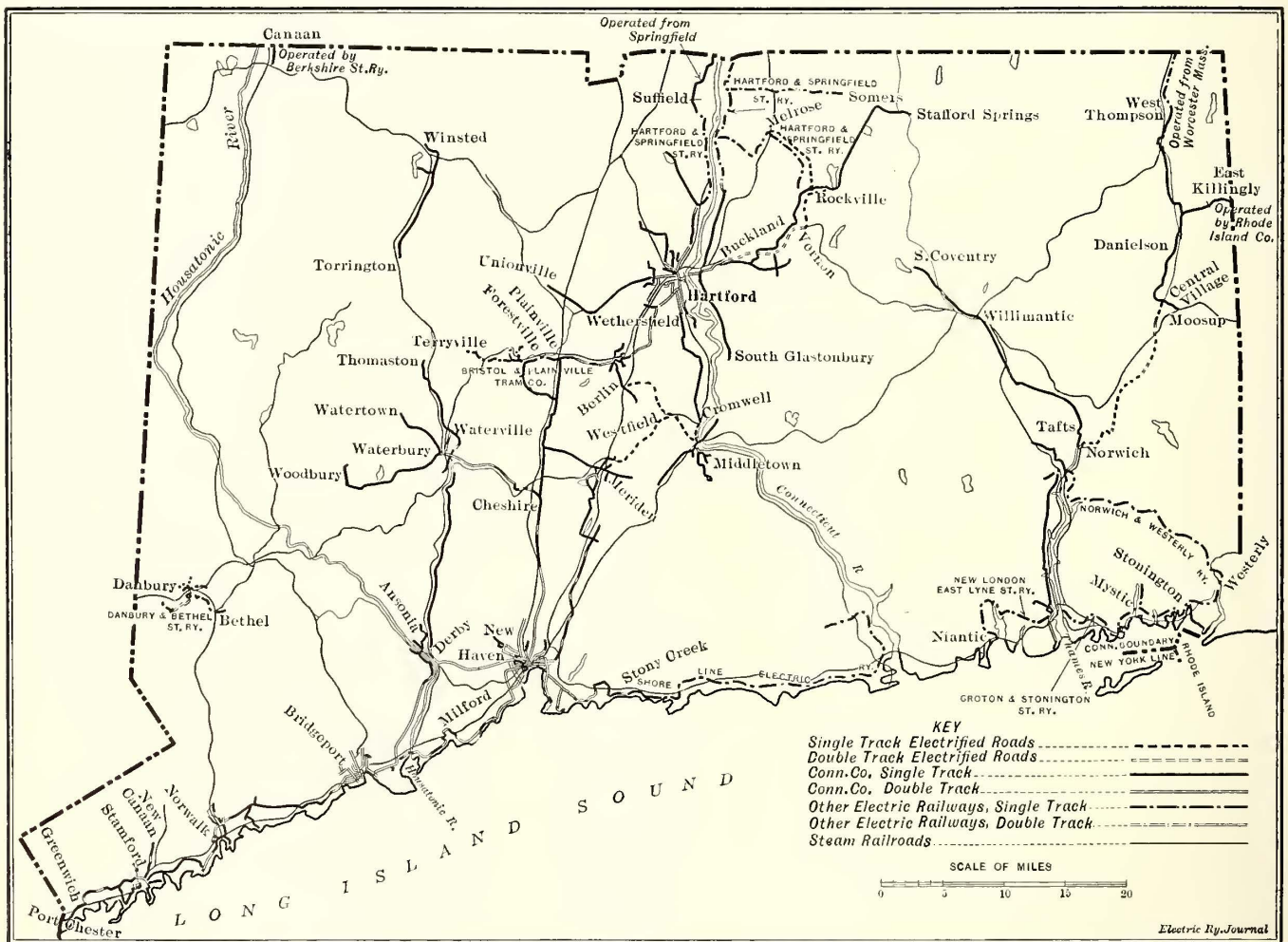
The several classes of electric railways in Connecticut may be divided as follows:

(1) The city and suburban lines of the Connecticut Company, over which no steam cars are operated.

(5) Direct-current electrified lines between Westfield and Berlin and between Rockville and Melrose, operated exclusively by the New Haven company.

(6) Alternating-current single-phase railways of the New Haven company, comprising the main line from New York to Stamford, the extension to New Haven now under way and the interurban line between New Canaan and Stamford.

The New Haven company cares for the track of all lines over which any of its cars are operated. New work of the Connecticut Company relating to the right-of-way, includ-



Connecticut Way—Electric Railways of Connecticut, Showing Lines Owned or Operated by Different Interests

(2) Trackage rights from the New Haven company for the operation of a trolley passenger service from Hartford over steam freight and passenger track between Middletown and Cromwell, between Buckland and Vernon and similarly from Norwich between Taft's Station and Central Village.

(3) Trackage rights from the New Haven company between Middletown and Westfield and between Vernon and Rockville for operation of electric passenger service by the Connecticut Company in addition to the electric passenger and steam freight service of the New Haven company.

(4) The Connecticut Company's passenger service and New Haven company's steam freight service over the latter's tracks between Westfield and Meriden.

ing carhouses, etc., is divided between the construction and way maintenance departments of the Connecticut Company. There is no distinct line of cleavage between the two departments, but in general it may be said that the way department cares for all maintenance and handles new track construction when the work is in the nature of additions to existing lines, such as double-tracking, while all larger new work is undertaken by the construction department. The following paragraphs will describe the organization and work of each department.

THE CONSTRUCTION DEPARTMENT

The construction department does trolley and transmission work for both the New Haven and Connecticut companies, carries out experiments and researches in catenary

and other line constructions, is responsible for standard line specifications in conjunction with the supervisor of electrical power and lays out high-tension transmission lines. The designs for transmission work come from the office of the supervisor of electrical power, but the construction details are handled by the construction department.

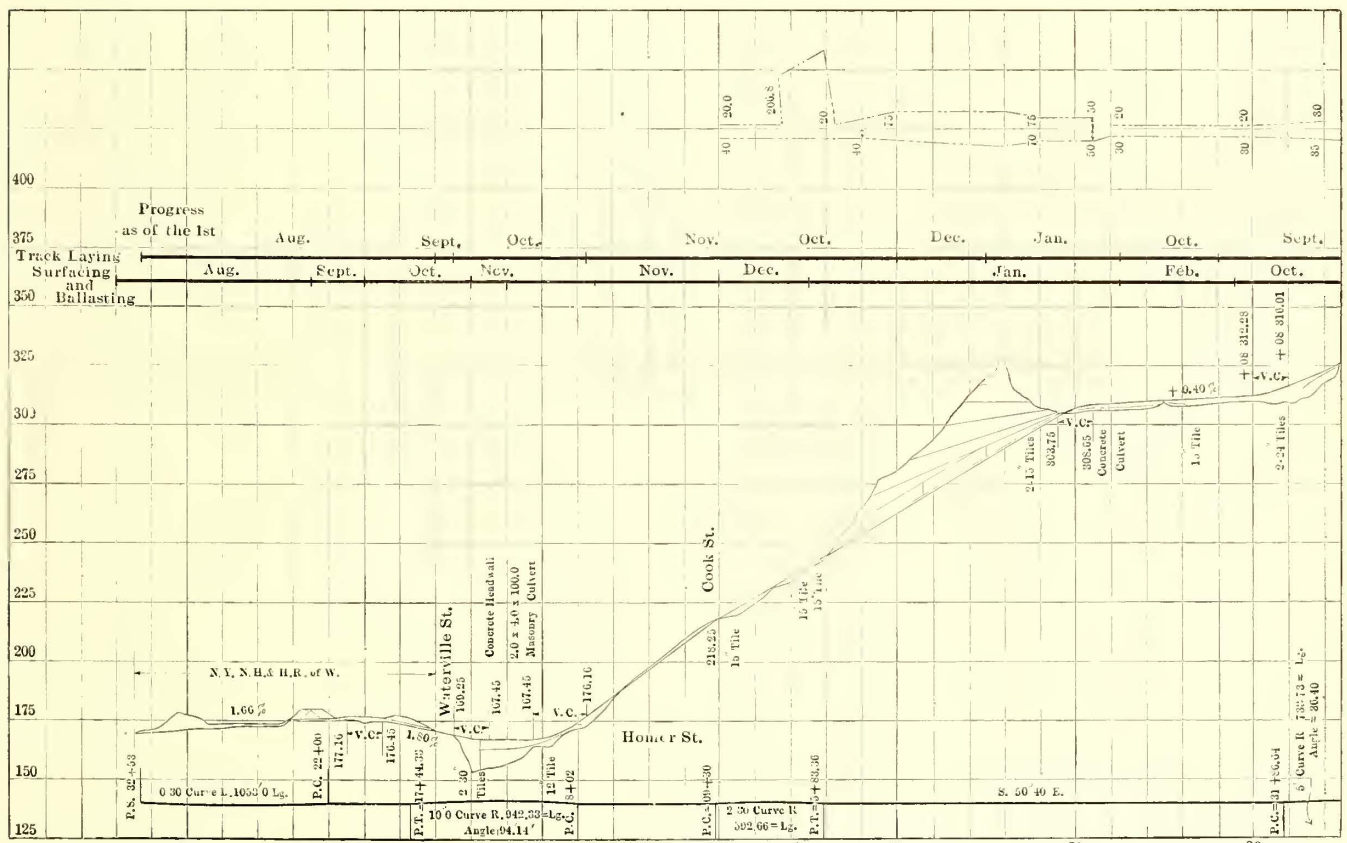
Another important field of the construction department is the design and construction of carhouses and shops. After the management has advised the construction department that a carhouse of stated capacity is desired for a given territory, location studies are made, and, later, the design and construction proceed after conferences with the Connecticut Company's operating department and with the insurance department of the New Haven company.

For instance, the following mode of operation was actually applied to the authorization of a given job, known as the Waterbury-North Main Street extension. After the project had received preliminary approval, the construction department filled out a standard authorization request as the first step toward actual construction. This sheet gave:

with the knowledge gained during the progress of the job, the information being recorded in Form 3.

The comprehensive report which was furnished every month by the auditor's office is also reproduced in Form 4. This posts the detailed expenditures on the various parts of the job under consideration and shows the balance available. Necessarily the auditor's figures are several weeks behind those of the construction department, but they are very useful in catching any improper charges which might be made against the appropriation number under review. When the job was completed the engineer in charge furnished a final report in which he gave the original estimate, the expenditures to date and full explanation of any overages or shortages that appeared.

Much of the work is of a character which cannot be accurately estimated. For instance, after a line has been authorized, the alignment may have to be seriously modified because of changes demanded by property owners or by municipalities. On the other hand, the weekly and monthly reports described do permit a running comparison of esti-



Connecticut Way—Part of Progress Profile of Connection Between Waterville and North Main Street, Waterbury

(1) the amount of expenditure required, \$258,800; (2) the nature of the proposed work; (3) a statement of its necessity and probable saving, and (4) the course that the authorization was to follow from the construction engineer to the vice-president. The request was accompanied by a detail of the estimated expenditures for each part of the work, all arranged according to account numbers which followed very closely the Interstate Commerce Commission's classification. This detail sheet was divided into four heads as reproduced in part on the accompanying Form 1.

Upon executive approval of the authorization request the auditor assigned to it an appropriation number by which it was identified thereafter. From the commencement of the work by the contractor, weekly progress reports of the form reproduced (in part) in Form 2 were forwarded to the construction department. This report was signed by the engineer who supervised the job. As the work proceeded, the estimates of cost were revised in accordance

with the knowledge gained during the progress of the job, the information being recorded in Form 3. If the expenses appear to vary materially from the estimate, a detailed report bringing out the fact and the reasons therefor is forwarded to the vice-president through the same routine as an entirely new job. If an increase in cost is involved, a supplementary improvement form is forwarded to the executive offices. As all appropriations are taken from a reserve fund, it is not necessary to go into the market for a definite amount of money whenever a given job is authorized. When an expenditure has been approved it is available for use as needed by drafts directly upon the treasury. Consequently, a little additional expenditure which would improve conditions materially can be obtained more quickly than if it was necessary to issue bonds for amounts as needed.

Two drawings on pages 329 and 331 show the graphic progress records used on this and similar contracts. The originals are far more effective than the reproductions, owing to the use of the New Haven Company's standard

progress report colors, as indicated, for different months. The monthly progress report shows the percentage of grading, track, signals, etc., completed. The work done each month is made to stand out not only by the use of colors but also by tapering off the junctions between the different periods. The progress profile and plan is of particular interest, since it shows so clearly the location and advancement of each class of work.

As a rule, all of the engineering is done by the construction department itself, but the actual construction is carried out either by outside contractors or partly by contractors and partly by the company's forces. Work that is likely in any way to involve interference with operation is usually handled by the company's men.

THE CONNECTICUT COMPANY, WATERBURY-NORTH MAIN STREET EXTENSION

A. Total estimated cost of work, (1) incidental expenses, (2) balance of cost:

651—Engineering	\$13,907.00
652—Right-of-way	22,510.00
654—Grading	71,465.00
672—Distribution system	49,360.00
690—Legal expenses	2,320.00
	\$258,800.00

B. Chargeable to operating expenses:

1—Superintendent way and structure	\$305.00
3—Ties	1,880.00
4—Rail	3,660.00
23-C—Bonding	615.00
	\$13,550.00

C. Estimated time to complete 6 months

D. Method of distribution:
 To operating expenses, as above \$13,550.00
 C. & D., recolectible, Chase Rolling Mill Company 21,000.00
 To additions and betterments account new construction 224,250.00
\$258,800.00

Connecticut Way—Form 1—Preliminary Estimate

THE WAY DEPARTMENT

The way department, headed by the civil engineer of the Connecticut Company, has four divisions in charge of local roadmasters as follows:

(1) Trolley properties belonging to the New Haven railroad and located in New York State, but including lines in Connecticut extending from the New York State line as far as Norwalk.

WEEKLY PROGRESS REPORT FOR WEEK ENDING FRIDAY, DECEMBER 27, 1912. ELECTRICAL CONSTRUCTION DIVISION.

Author-ization No.	Nature and Location	Per Cent Work Done to Date	Per Cent Work Done During Week	Explanation and Remarks
1761	Waterbury - North Main Street.			C. W. Blakeslee & Sons, contractors.
	Grading, 54 per cent.	96.5	0.5	Average daily force: 1 superintendent, 1 timekeeper, 6 foremen, 7 engineers, 3 firemen, 75 laborers, 1 cranesman, 2 drillers, 3 helpers, 1 blacksmith, 1 helper, 1 watchman, 1 water boy, 2 carpenters, 3 double teams, 2 single teams, Plant: 4 boilers, 2 steam drills, 2 well drills, 4 donkey engines, 1 steam shovel, 4 derricks, 26 dump cars.
	Bridges, 3 per cent.	92.0	2.0	Work: Cuts from station 7+50, station 17+00. Steam shovel and donkey engines at work at station 17+34, for wasting material opposite station 5+00 and station 18+00.
	Track work, 17 per cent.	79.0	3.0	
	Overhead, 15 per cent.	82.0	1.0	
	Special work, 8 per cent.	90.0	3.0	
	Signals, 1 per cent.	0.0	0.0	
	Fencing, 2 per cent.	0.0	0.0	
	Total, 100 per cent	87.80	1.23	

Hartford, Dec. 27, 1912.

O. W. Head, assistant engineer.

Connecticut Way—Form 2—Weekly Progress Report

(2) The trolley lines in Bridgeport, Derby, Waterbury, New Britain and part of Meriden, constituting chiefly the properties formerly operated by the Connecticut Railway & Lighting Company, with the roadmaster at Bridgeport.

(3) The lines in New Haven and the rest of those in Meriden, with the roadmaster at New Haven.

(4) The lines in Hartford and adjacent towns, as fully described in the ELECTRIC RAILWAY JOURNAL for Oct. 19, 1912, with the roadmaster at Hartford.

THE CONNECTICUT COMPANY, ESTIMATE NO. 9 OF WORK DONE, WATERBURY-NORTH MAIN STREET EXTENSION, WATERBURY, MONTH OF DECEMBER, 1912. C. W. Blakeslee & Sons, Contractors. Jan. 1, 1913. Appropriation No. 1761

Nature of Work	Unit	Total to Date	Previous Estimates	Present Estimate	Price	Total
Earth excavation	Cu. yd.	23,502	23,176	326	\$0.36	\$117.36
Foundation excavation	Cu. yd.	935	895	40	1.50	60.00
Solid rock	Cu. yd.	29,558	24,831	4,727	1.40	6,617.80
Loose rock	Cu. yd.	3,035	2,981	54	0.65	35.10
Concrete	Cu. yd.	483.4	446	37.4	6.00	224.40
Pipe, 15-in.	Lin. ft.	404	372	32	1.50	48.00
Track ballast, delivered	Cu. yd.	3,641	3,146	495	0.55	272.25
Teaming material	Ton-mi.	195	135	60	0.75	45.00
Less 10 per cent retained Amount payable this month						\$8,032.41 803.24
						\$7,229.17

Distribution	100 per Cent	10 per Cent	90 per Cent
Charge appropriation No. 1761, account No. 654	\$6,970.26	\$697.02	\$6,273.24
Charge appropriation No. 1761, account No. 655	272.25	27.23	245.02
Charge appropriation No. 1761, account No. 661	457.50	45.75	411.75
Charge appropriation No. 1761, account No. 665	332.40	33.24	299.16
	\$8,032.41	\$803.24	\$7,229.17

Correct, O. W. Head, Asst. Engr.
 Approved, Charles Rufus Harte, Asst. Engr.

Connecticut Way—Form 3—Comparison of Estimates and Actual Distribution Charges

THE CONNECTICUT COMPANY, WATERBURY-NORTH MAIN STREET EXTENSION, WATERBURY, CONN. Appropriation No. 1761. New Haven, Conn., Dec. 31, 1912.

Account	Estimate	Ex-pended to Novem-ber 30, 1912	Ex-pended During Month Decem-ber, 1912	Ex-pended to Date, Decem-ber 31, 1912	Balance Avail-able
Road:					
651—Engineering and super-intendence	\$13,917	\$8,279	\$581	\$8,860	\$5,057
652—Right-of-way	22,510	23,610	—298	23,312	—801
654—Grading	71,465	52,934	12,934	65,868	5,597
655—Ballast	5,860	3,235	1,813	5,048	812
656—Ties	9,142	3,993	1,410	5,407	3,739
657—Rails, fastenings and joints	23,660	16,366	2,913	19,279	4,381
658—Special work	15,750	13,037	—6	13,031	2,719
660—Paving	7,546	1,791	174	1,965	5,581
661—Track laying and surfac-ing	14,500	5,125	1,370	6,494	8,005
662—Roadway tools		135		135	—135
665—Bridges, trestles and cul-verts	8,510	3,752	161	3,913	4,597
666—Crossings, fences, cattle guards and signs	4,560		299	299	4,261
667—Interlocking and other signal apparatus	2,500				2,500
668—Telegraph and telephone lines		3		3	—3
669—Poles and fixtures	7,200	4,189	312	4,501	2,699
672—Distributing system	49,360	28,036	2,712	30,748	18,612
681—Substation equipment		358		358	—358
Sundries		206		206	—206
General Expenditures:					
690—Law expenses	2,320				2,320
692—Injuries and damages				3	—3
Totals	\$258,800	\$165,052	\$24,379	\$189,431	\$69,369

Connecticut Way—Form 4—Detail Distribution of Charges

This arrangement leaves some territory in eastern Connecticut under a general foreman who reports indirectly through the local manager at Norwich. There are also foremen at Middletown and on the Torrington and Win-

chester lines who report through their local superintendents.

The plans for track reconstruction during each season are formulated at the office of the civil engineer after conference with the local managements. If, for example, the management at Hartford desires certain reconstruction, the cost of the work is estimated at the office of the civil engineer. He then asks for the money, sends out specifications and bids and checks all contracting jobs. The details of the job, however, are supervised jointly by the local manager and roadmaster. Ordinary maintenance is left almost entirely to the judgment of the roadmaster, except that he must not exceed his appropriation. The office of the civil engineer prepares schedules showing the weekly labor and material allowances, and the local managements are



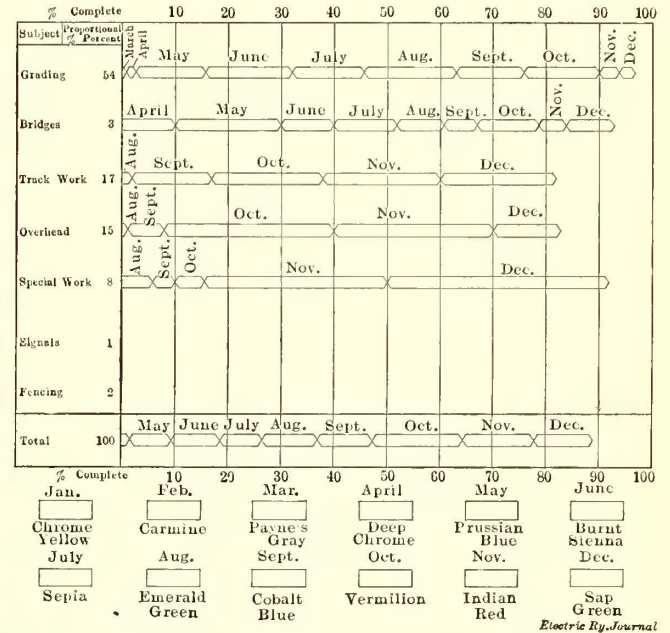
Connecticut Way—Steam and Street Railway Crossing, New Britain

expected to work within the limits shown by these tables.

TRACK STANDARDS

The three standard rails used by the Connecticut Company are 5-in., 80-lb. A. S. C. E. for suburban and interurban work, 7-in., 95-lb. Pennsylvania 272 T-section for most city work and 9-in., 125-lb. Pennsylvania 273 Boston

The standard joint for the 95-lb. T-rail is the 24-in. Continuous joint with four bolts spaced 1 15/16 in.—5 in. from ends of rails, although the rails are drilled at 1 15/16 in.—5 in. 6 in. from ends to provide for use of ordinary joints with six bolts if desired. A 32-in. twelve-bolt joint,



Connecticut Way—Progress Diagram of Chase Rolling Mill Line (Original in Colors Indicated)

section 273-A, Pennsylvania Steel Company, is used in connection with the 9-in., 125-lb. groove girder rail. In this case the drilling calls for an upper row spaced 2 1/2 in.—5 in.—5 in. and a lower row spaced 3 1/2 in.—5 in.—5 in.

The six sections on the next page show various combinations of rails and paving which have been made to



Connecticut Way—View of Completed Special Steel Center Construction at Pearl and Main Streets, Hartford

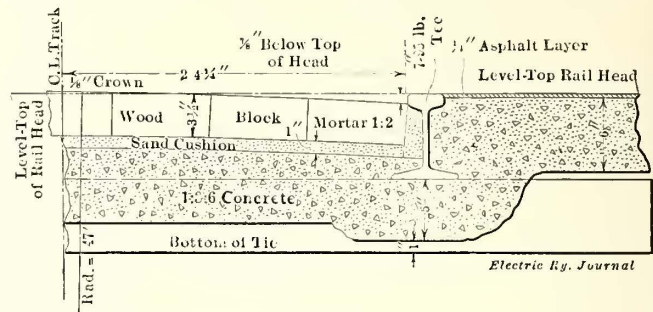
meet local requirements. The feature common to most of these constructions is the use of a sub-foundation of 5 in. or 6 in. of concrete below the base of the rails. Little stone is used for ballasting city track except at Hartford, which has a spongy, clay soil. The asphalt block construction at

profile grooved rail in a few cases where grooved rails are used. These sections have been the company's standards since 1906. They are gradually replacing T-sections of 40 lb. upward and girder and grooved rails from 70 lb. upward.

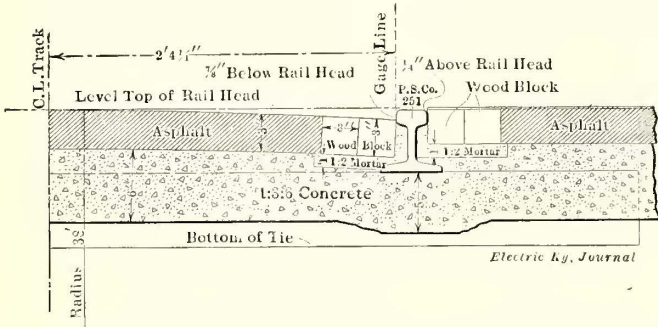
Rye and the sheet asphalt at New Britain were used with an old 7-in., 70 lb. rail which was electrically welded, but the work in the other towns named was done with new rails.

The three drawings of recent sections are of particular interest. The first, of wood block in New Haven, is similar to the construction in Norwalk but deserves particular notice since it indicates the construction for the year 1913 as approved by City Engineer F. L. Ford. The second of the new sections is a combination of wood block and Roman road paving in South Norwalk, showing the use of wood block between the rails of the track where the city is paving with Roman road which is brought up to the rails outside the tracks. The third section, which is used in Hartford, shows a 5-in., 80-lb. T-rail in a street paved with 3-in.

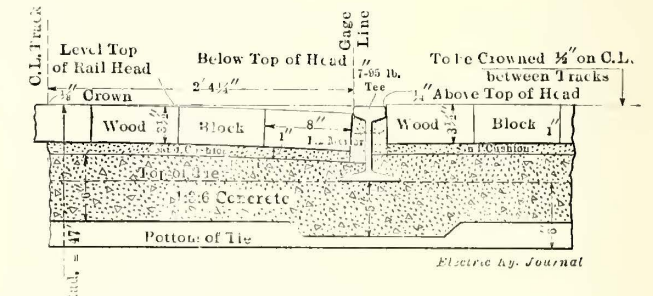
2-ft. centers. Chestnut (55 cents each for the first quality) and white-oak ties are commonly used, but are not treated except on the River Bridge at Hartford. In macada-



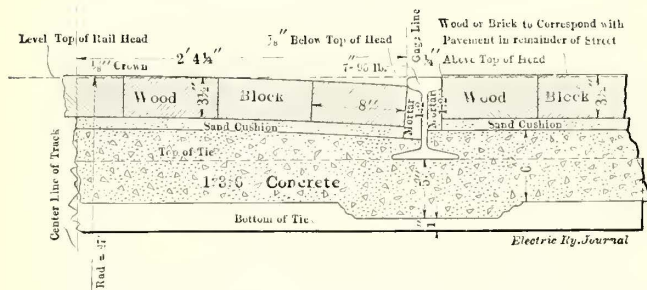
Connecticut Way—Wood Block, New Haven



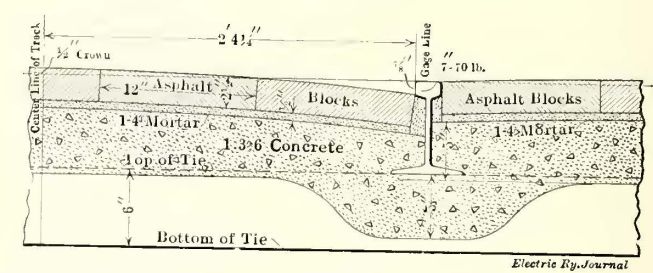
Connecticut Way—Asphalt and Wood Block Pavement, Morgan Street, Hartford



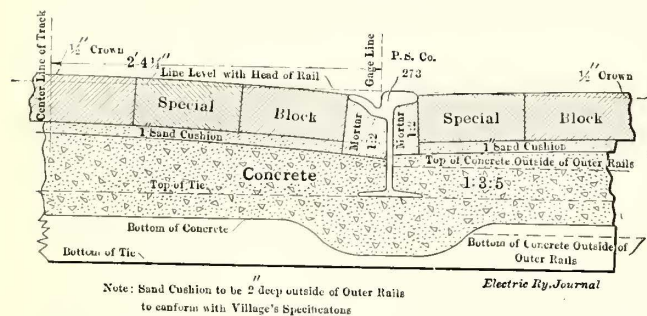
Connecticut Way—Roman Road Pavement, Railroad Avenue, South Norwalk



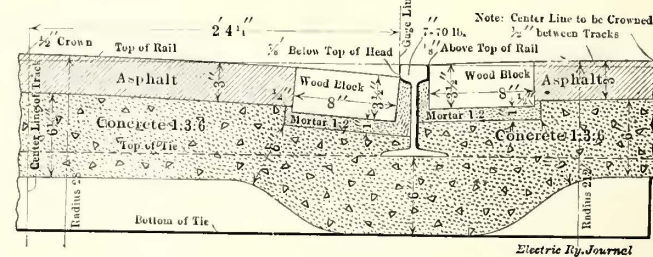
Connecticut Way—Wood Block, Norwalk



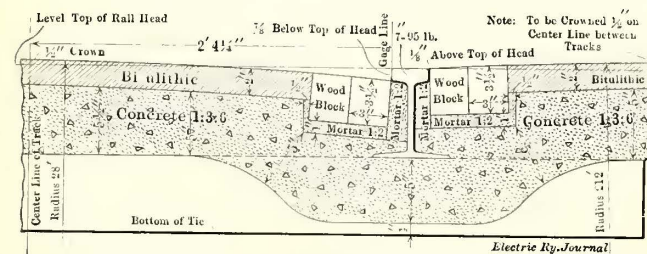
Connecticut Way—Asphalt Block Construction, Rye



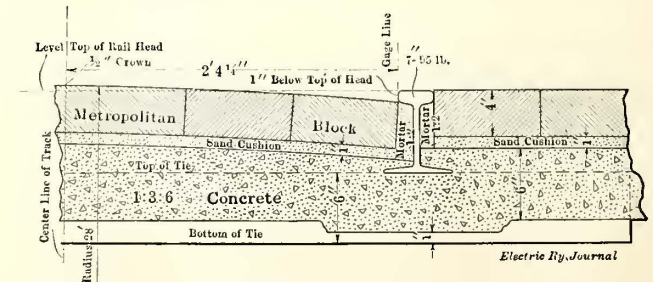
Connecticut Way—Special Block Construction, Mamaroneck



Connecticut Way—Asphalt and Wood Block Construction, New Britain



Connecticut Way—Bitulithic Construction, Greenwich



Connecticut Way—Metropolitan Block Pavement, Stamford

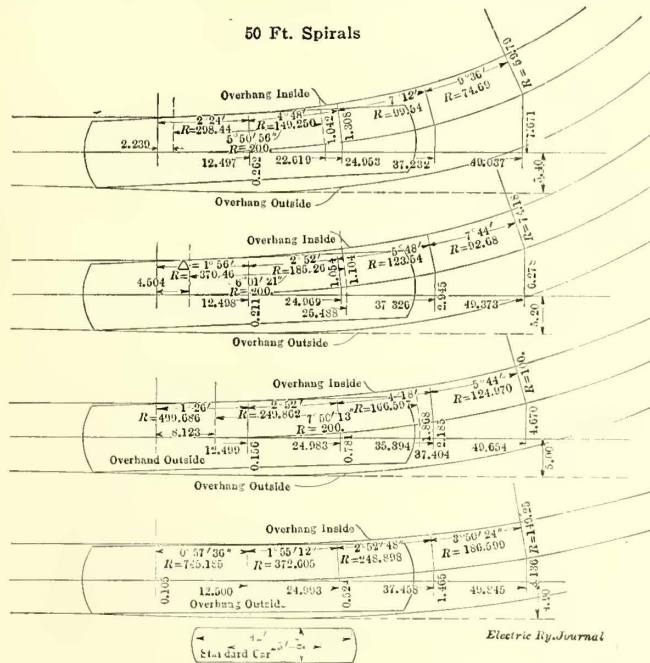
asphalt. In the last construction it will be observed that 3-in. rather than 3 1/2-in. wood blocks were used so as to clear the bottom flange at the rail.

All of the ties are 8 ft. x 6 ft. x 8 in. in size, spaced

mized streets the company lays 6 in. to 7 in. of macadam, in accordance with the practice on the rest of the roadway. In a few cases where the rails were only 5 in. high the highway commissioner and others interested per-

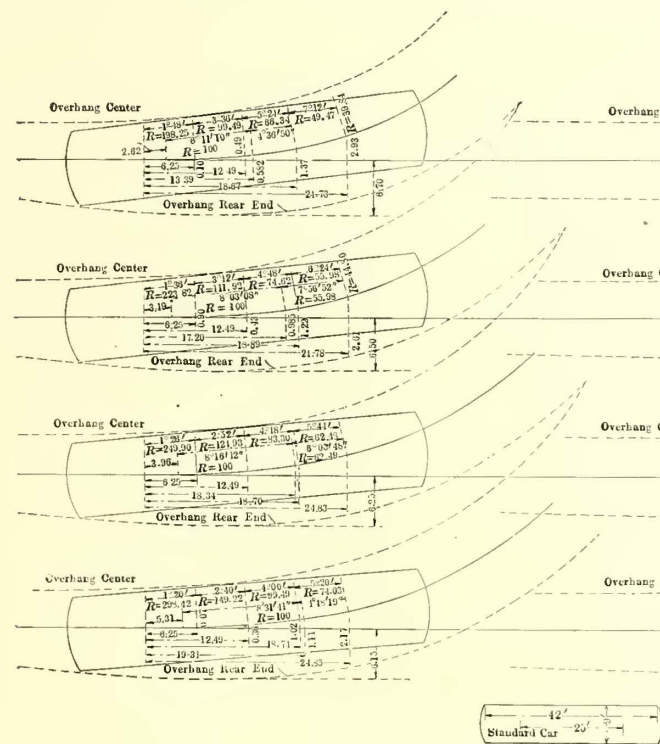
mitted a depth of macadam equivalent to the height of the rail.

The standard interurban track is an 80-lb A.S.C.E. rail and ordinary six-bolt joints with holes spaced 1 15/16 in.—5 in.—6 in. from ends of rails. On tangents the rails are



Connecticut Way—Standard Spirals and Easements with 200-Ft. Radius Switches Cut Into the Spirals

laid in 33-ft. lengths with eighteen ties per rail. The ballast is of trap rock or gravel, the minimum being 6 in. under the tie at the center of the fill. A 3-in. crown is given to the sub-grade. Embankments more than 16 ft. high are 16 ft.

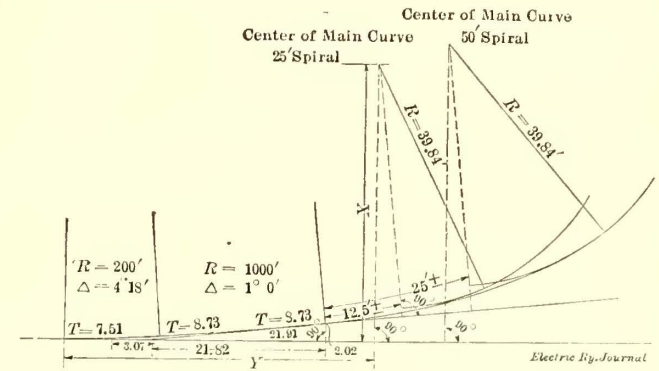


Connecticut Way—Standard 25-Ft. Spirals and Easements

wide at sub-grade. Cuts in rock are 16 ft. wide at sub-grade and 20 ft. wide when cut in earth. Rock slopes are 1/4 to 1, and earth slopes, while varying with the nature of the material, are sometimes as much as 1 to 1.

SPECIAL WORK

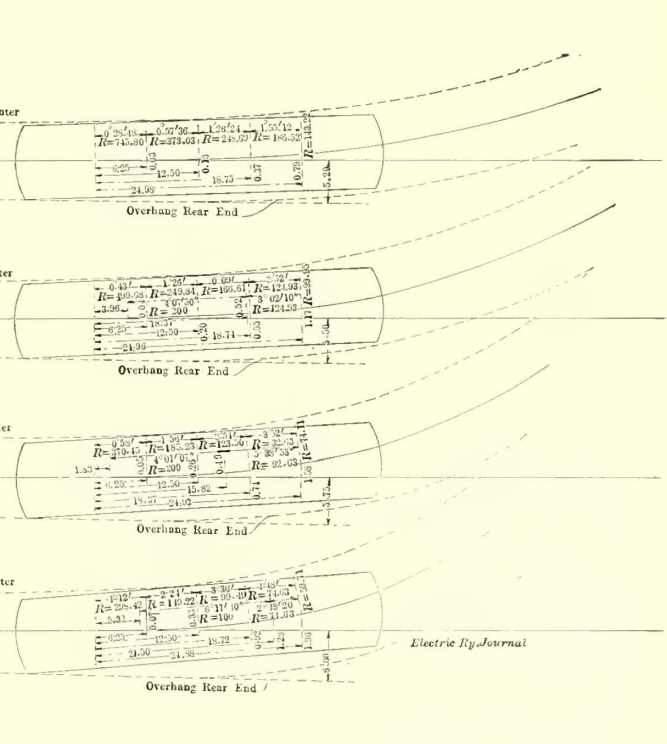
Practically all special work is hard-center construction, solid manganese being used to a limited extent for steam railroad crossings while built-up work serves at storage



R	25-FT. SPIRAL		50-FT. SPIRAL		R
	X	Y	X	Y	
39.84	43.82	41.00	47.87	52.60	39.95
44.80	48.65	40.57	52.42	52.31	44.91
50.00	53.74	40.11	57.25	51.96	50.10
53.75	57.42	39.77	60.77	51.70	53.84
59.71	63.28	39.23	66.42	51.25	59.79
74.11	77.48	37.93	80.28	50.06	74.18
99.95	103.09	35.57	105.45	47.81	100.00
149.22	152.01	31.03	154.00	43.36	149.25
198.95	201.47	26.46	203.25	38.80	198.98

Connecticut Way—Standard Branch-off Clearance Curves

carhouses. Two accompanying illustrations show an important Manard steel center layout furnished in 1909 by the Pennsylvania Steel Company for the City Hall loop at Hartford. Another illustration shows a type 24 Barbour-



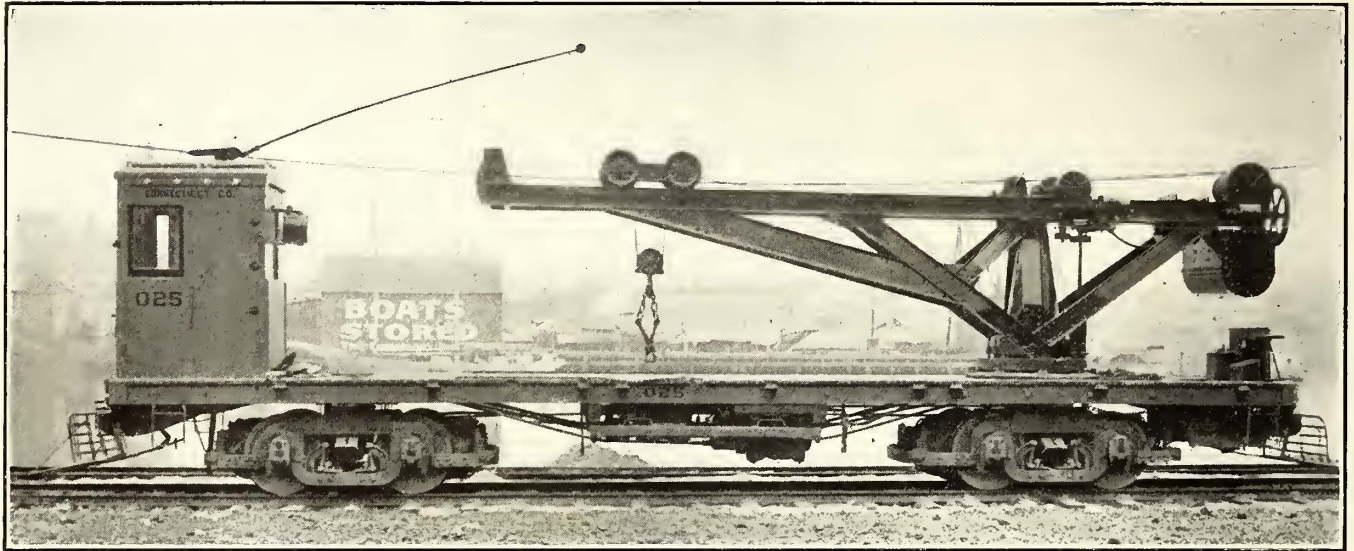
Stockwell crossing, containing solid manganese in the steam run, which was installed at New Britain in 1910 on the main line of the New Haven railroad between Hartford and Waterbury.

Systems of standard spirals and easements, standard branch-off clearance curves and switch radii have been developed as reproduced in accompanying drawings and tables. A switch radius of 200 ft. is standard on all turnouts and on the inside curve of all double-track branch-offs. The turnouts have no guard rails. A switch radius of 100 ft. is used in special layouts, depending upon the radius of the outside curve, and in cross-overs of emergency character. The standard branch-off clearance curves

number of the location for which it is intended and to show that number on all accompanying detail plans. Later, these plans are folded and filed in envelopes numbered with the location numeral and filed in numerical order. All plans of any one location are placed in the same envelope.

SUPPLIES, RAIL WELDING, BONDING, CARS, ETC.

The general storekeeping department has standardized many track appliances for both the steam and electric roads. On requisition from the division roadmaster the



Connecticut Way—Bridgeport Derrick Car with Depressed Platform for Control Apparatus at Derrick End



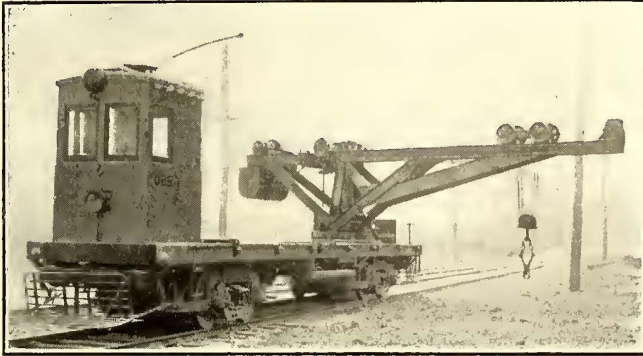
Connecticut Way—Special Work with Special Steel Center Construction Being Installed at the Corner of Pearl and Main Streets as Part of Loop Around Hartford City Hall

are laid out to give 6-in. clearance for a car 9 ft. wide, 42 ft. long over all and 25 ft. truck centers with the tracks placed 10-ft. centers.

A sketch of every piece of special work operated by the Connecticut Company is kept in a book of locations at the office of the civil engineer. Each special-work location has a distinguishing number so that in furnishing material the manufacturers are required to mark all work with the

local storekeepers secure from the general storekeeper any track tools and other small supplies desired, but requests for the service of rail grinders, rail benders, portable cross-overs and the like must be made directly to the civil engineer. The principal portable crossover used by the company is of the Pennsylvania type with adjustable lead rails for use on tracks varying from 9-ft to 10-ft centers. The Wharton crossover of similar type is also used.

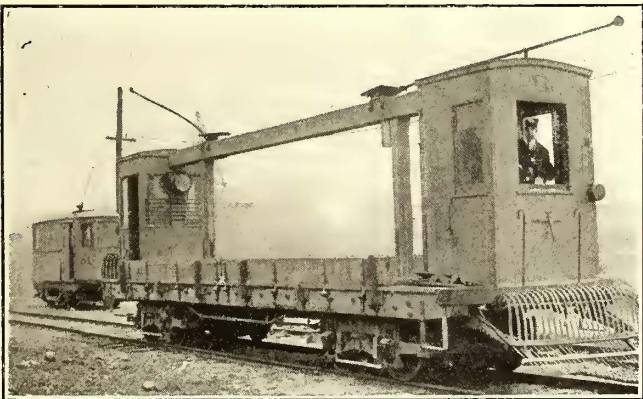
Since 1908, the Connecticut Company has placed four contracts with the Lorain Steel Company for the electric welding of old rails. Up to June 1, 1913, 19,679 joints had been completed. A Cleveland bond-brazing machine furnished by the Electric Railway Improvement Company is also in service. Recently the company purchased a track-grinder from the Railway Track Work Company of Phila-



Connecticut Way—Derrick Car with Motorman's Cab at One End

delphia to take care of worn joints before cupping and to grind joints in new work.

Whiting crane cars of 6-ton capacity each for handling special work, etc., are used at New Haven, Hartford, Bridgeport and Waterbury. The Bridgeport car, representing the latest type furnished for that place and Waterbury in 1911, is illustrated on page 334. The principal dimensions of the crane cars are as follows: Length over all, 42 ft. 10 in.; maximum height, 13 ft. 1½ in.; minimum height, 12 ft. 1½ in., and width, 8 ft. The New Haven car, furnished in 1909, weighs 64,320 lb. The track yards at New Haven, Bridgeport and Waterbury are each equipped



Connecticut Way—Bridgeport Motor Flat Car, Showing Box Car for Distributing Supplies to Track Gangs

with a stiff-legged derrick with a 50-ft. boom for unloading rails from steam cars, either to pile the rails or transfer them directly to the supply cars.

NOTE

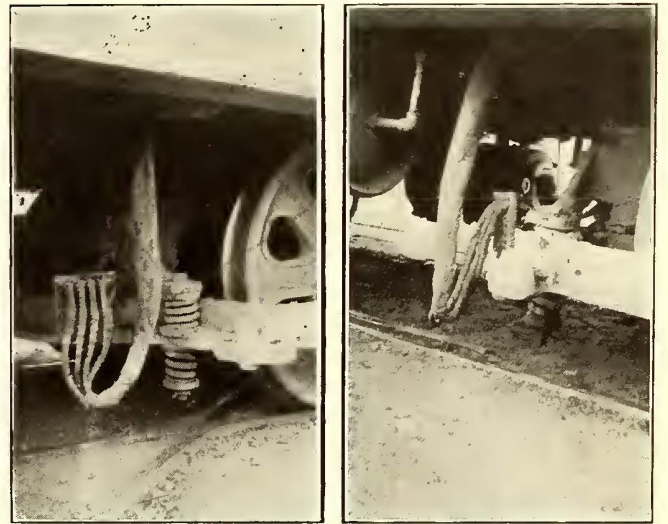
A later article will describe the bridge construction and maintenance practice of the Connecticut Company.

The thirty-seventh annual report of the Department of Public Works of the City of Chicago for the year 1912 contains, under the report of the Bureau of Streets, a statement of the various permits issued to electric railways for construction work or alterations in connection with the streets and a full description of the work done on the pavements and the various materials used. The report covers the work of the Chicago Railways, the Chicago City Railway and the Calumet & South Chicago Railway.

MOTOR LEAD CONNECTIONS AT SAN ANTONIO, TEX.

A novel method of connecting lead wires to motors has been devised by H. Fink, Jr., master mechanic San Antonio Traction Company, and tested by two years of actual service. The motor leads are brought out on the suspension side of the motor and passed through holes in an angle-iron bracket riveted to the truck end frame. This bracket serves as a fixed support to the leads and keeps them from chafing on any of the truck parts. To eliminate any possibility of wear to the lead wires where they pass through the holes in the angle-iron bracket, rubber bushings are provided of a size to give a snug fit on the leads. The motor leads are drawn through this bracket about 6 in. and are provided at the ends with connectors for attaching the cable leads.

From the point where leads are brought out from the cable box in the car body they are incased in 3-in. cotton cable cover and a sufficient length of this cable is provided to allow for the maximum sweep of the truck. All con-



Motor Lead Connections in San Antonio

nections are made on the cable side of the bracket, with the exception of the field lead. This enters the bottom motor casing and is provided with a connector on each side of the bracket to make it unnecessary to remove the lead from the bracket when the bottom casing of the motor is taken down.

Experience has shown that considerable care must be exercised in the length of cable cover which is employed. The leads from the car body should not be wrapped to any greater length than the distance between the car body and the lowest point reached in any truck position. If the covering is carried beyond the low point, thus forming a pocket, water will collect and cause rotting and short-circuits between the leads.

It is stated that the new scheme effects a reduction in motor-lead trouble of 75 per cent. Motor-lead connections on the axle side of the motor have not been found satisfactory by this company, probably because the wheelbase of all trucks is only 4 ft. 6 in. This leaves a very small space between the truck centers and motor, a part of it being required by the pull rod and air-brake levers.

The electric railway system of Calgary, Alberta, was hired by the Hudson Bay Company for the afternoon of Aug. 18, the day the company's new Calgary store was opened by G. H. Bulyea, Lieutenant-Governor of Alberta. Arrangements were made whereby the sixty-five cars of the municipal system were at the disposal of the Hudson Bay Company for four hours on that day and the residents of Calgary were invited to ride free between the hours of 2 p.m. and 6 p.m.

New Power Station of Northern Ohio Traction & Light Company

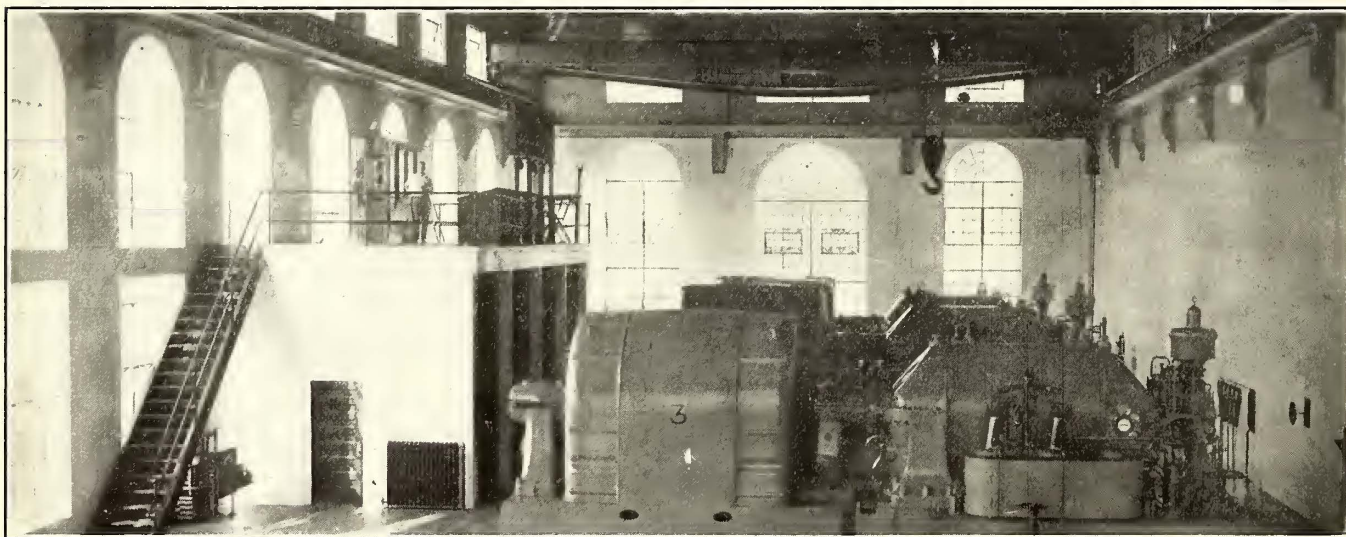
A Plant of Large Capacity Has Been Constructed Recently to Replace a Number of the Company's Smaller Stations in the Northern Section of the State of Ohio

Chief among the numerous improvements now being made by the Northern Ohio Traction & Light Company, of Akron, Ohio, is the system for the generation and distribution of electrical energy. This includes a steam station, known as the Gorge power station, with a present rating of 20,000 kw and an ultimate rating of 50,000 kw, a hydraulic station of 2000-kw rating, eight substations and the necessary transmission lines.

The company owns and operates approximately 216 miles of single track, consisting of the city lines in Akron and Canton and the interurban lines from Akron north to Cleveland, south to Canton, Massillon, Urichsville, Canal Dover, etc., east to Kent and Ravenna, and southwest to Barberton and Wadsworth. In addition, it supplies electricity for all services in the city of Akron and numerous

sylvania Railroad, the only railroad which runs near the site. The company has a siding from this road which runs along the top of the river bank at an elevation about 90 ft. above the boiler-room floor. A trestle with coal bunkers underneath is now nearing completion on which loaded cars will be shifted by the company's motor car. From the bunkers the coal will pass through valves into the crusher car and through this crusher car into individual bunkers for each boiler.

The power station proper consists of the boiler room, 56 ft. wide by 330 ft. long, and the turbine room, 63 ft. wide by 227 ft. long, separated by a division wall, the turbine room being on the river side. The turbine room was located on this side because this decreased the length of the condensing water tunnels and also simplified the delivery



Northern Ohio Power—View of East End of Turbine Room Showing Turbines and Operating Gallery Over Oil-Switch Compartments

towns and villages on the railway lines. The latter business has developed more rapidly during the past few years than the company's facilities for handling it, and in several instances proffered business has necessarily been refused. The gross receipts of the company during 1912 exceeded those of 1911 by 11.2 per cent.

The Gorge power station, supplemented by the hydraulic station, will replace stations at Akron, Silver Lake Junction and Bedford and furnish all energy required north of Canton. The existing stations at Canton, generating alternating current at 25 cycles, will, however, continue to supply the city lines in Canton and the interurban lines south of Canton.

The station is located in the valley of the Cuyahoga River, just below the Cuyahoga Falls, Ohio. As the low-water flow of the Cuyahoga River was not sufficient for condensing purposes, it was necessary to build a dam so that a suitable pond for cooling water would be provided, and as the fall of the Cuyahoga River is quite rapid at this point, it was found possible, by utilizing the head from this dam in connection with a fall below the dam, to secure a head of about 100 ft. one-half mile below the dam.

The coal for the station will be delivered over the Penn-

sylvania Railroad, the only railroad which runs near the site. The company has a siding from this road which runs along the top of the river bank at an elevation about 90 ft. above the boiler-room floor. A trestle with coal bunkers underneath is now nearing completion on which loaded cars will be shifted by the company's motor car. From the bunkers the coal will pass through valves into the crusher car and through this crusher car into individual bunkers for each boiler.

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BOILER-ROOM EQUIPMENT

The boiler room contains sixteen 604-hp Babcock & Wilcox boilers and superheaters, eight of which are in service at this time. These boilers are arranged in a single row, the stack being placed in the center of the boiler room, with eight boilers on one side and eight on the other. All boilers are equipped with Taylor stokers. Sturtevant fans, driven by Sturtevant engines, which are located in the blower room, just south of the boiler room, furnish the

forced draft for these stokers. Engines were chosen to drive the fans instead of motors so that it would be possible to regulate the speed of the fans directly from the steam pressure.

The ashes are dumped into ash pockets underneath the grates and thence into a small car running on a track in the basement. For the present the ashes are wheeled out by hand, but an elevator will soon be installed at the end of the boiler room so that the small cars can be lifted from the basement level to a trestle of sufficient height and thence be dumped into wagons or standard railroad cars for removal.

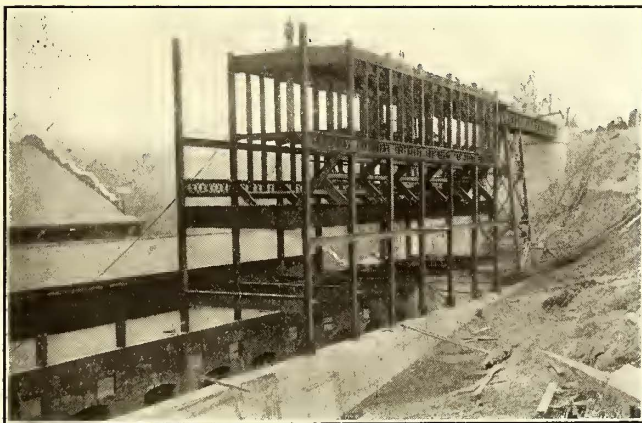
Steam at a pressure of 200 lb. will be used with a super-heat from 75 deg. to 90 deg. Each boiler will be equipped with recording instruments in order that a complete comparative record of coal consumption and steam furnished may be kept.

The stack was built by the Alphons Custodis Chimney Construction Company and is 275 ft. high and 16 ft. in diameter inside at the top. The stack is unusually high because the station is about 90 ft. below the surrounding country. There are two openings for the breeching, each 20 ft. high and 7.5 ft. wide. This breeching was manufactured by the Babcock & Wilcox Company, and the novelty in its construction was the use of $\frac{1}{4}$ -in. American ingot iron plates.

PIPING

The main steam header has been so arranged that the boilers may be divided into four groups, one or more of which may be out of service at any time. All nozzles were welded on by an electric arc. Van Stone flanges were used throughout on all high-pressure piping 4 in. and above in diameter.

The main steam piping consists of a 12-in. header in the boiler room, connected to each boiler by 8-in. compound bends. This header is connected to the three turbines by 12-in. leads, each of which is provided with a suitable separator at the lowest point and an angle valve adjacent to the throttle valve. This arrangement allows the separator to drain the header at all times, whether the turbine is in service or not. There is an 8-in. auxiliary header in the turbine room basement, connected to this 12-in. header at



Northern Ohio Power—Steel Structure for Coal Bunkers on Bluff in Back of Station

three points, from which all connections are taken to auxiliaries.

The blow-off main is taken outside the building at each end and the blow-off water conducted through a tile drain to the pond.

A 50,000-gal. steel tank which is set on the bluff just above the station, with a head of about 100 ft., supplies the general service water, the cooling water for transformers, the water lines for cooling ashes, and the fire lines.

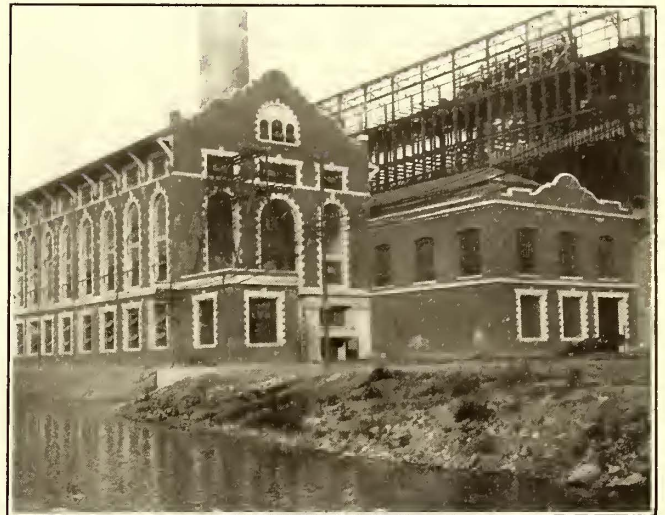
Air piping has been carried throughout the building, as compressed air will be used in cleaning the generators,

rotaries, etc., in the turbine room, and for operating turbine-tube cleaners in the boiler room.

The oil piping for the transformers is so arranged that the oil from any transformer may be removed through this pipe to barrels which are set in the pit at one end of the pipe line; or, in case of fire, this oil can be run to a pit outside of the building.

TURBINE ROOM EQUIPMENT

The present installation of generating equipment consists of three Westinghouse 6300-kw, 2300-volt, 60-cycle, three-phase turbo-generators, 1800 r.p.m., directly connected to



Northern Ohio Power—Front View of Gorge Station Showing Initial Transmission Tower at End of Turbine Room

three Westinghouse horizontal double-flow steam turbines. The contractors have guaranteed a steam consumption not to exceed 14.8 lb. per kw-hr. at 100 per cent of rating and 15.4 lb. at 150 per cent. Space has been provided for two additional similar or larger units in the future.

Two 150-kw steam-driven exciters have been installed and an additional motor-driven unit will soon be provided. These exciters are placed on the turbine room floor between main units and directly in front of the main switchboard. The exhaust from the turbines discharges into Westinghouse Le Blanc condensers, which are in the basement, immediately underneath the turbines. The circulating and air pumps for these condensers are on a single shaft and are driven by a 228-hp Westinghouse steam turbine. As there was a possibility that at some time the level of the pond would be drawn below the spillway of the dam, Alberger single-stage booster pumps were provided in the turbine room basement, near the condensers, driven by 75-hp, 2300-volt, three-phase Westinghouse motors.

Three boiler-feed pumps driven by Kerr steam turbines have been provided in the basement of the turbine room. The pumps normally take their water from three Hopves feed-water heaters which are placed on a platform midway between the turbine room floor and the basement floor. The feed-water heaters are filled from the hot-well or discharge tunnel by means of two pumps directly connected to Westinghouse motors. Two service pumps directly connected to Westinghouse motors, each having a rating of 150-gal. per minute, are also located in the basement. These pumps are used filling the service tank on the bluff.

ELECTRICAL EQUIPMENT

The electrical operation of the station is controlled from a gallery about 40 ft. long on the river side of the turbine room between main units No. 2 and No. 3. A benchboard on this gallery contains fourteen panels. Three of these are used for the control of the main units, two for the exciters, three for outgoing high-tension lines, three for

2300-volt lines to substation No. 3, one for 2300-volt lines to the booster pump motors, and two are blank for future connections. Indicating and recording instruments are on vertical panels above the benchboard.

The structure for the busbars and oil switches is on the main floor under the front of this gallery. The ends of this structure are inclosed, forming a room in which the high-tension circuit-breakers are installed. The main cables



Northern Ohio Power—View of West End of Turbine Room Showing Engineer's Office and Local Substation

from the generators are carried under the turbine room floor to the 2300-volt busbar. From this bus cables lead to three 3000-kw transformers. Additional transformers will be installed soon. The transformers are located in the turbine room basement directly beneath the switchboard gallery and step up to 22,000 volts for the outgoing high-tension lines which feed the substations mentioned before. The high-tension cables pass through ducts in the turbine room floor to the lightning arrester room. In this room are installed three sets of electrolytic lightning arresters. Directly above this room is an initial transmission tower which is the starting point for all lines.

Substation No. 3 is located in the northwest corner of the turbine room and consists of three 500-kw Westinghouse six-phase, 60-cycle rotaries and three step-down transformers, which are fed directly from the 2300-volt main busbar. The switchboard for this substation contains the necessary panels for the rotaries and outgoing feeders. Sixty-cycle rotaries were finally selected for this service to avoid frequency changes in view of the fact that remarkable progress has been made during the past few years in their design. Additional panels for switches and circuit-breakers for lighting and auxiliary motors were placed on the turbine room floor near the substation board.

STATION OPERATION

The station is now being operated by two shifts. The organization consists of one chief engineer and four assistant engineers. One engineer is expected to be on duty in the turbine basement and one on the main turbine room floor at all times. In addition there is an operator on the main switchboard and one on the switchboard for Substation No. 3.

The boiler room is under one boiler room foreman, and each shift consists of one water tender, one fireman and four coal handlers at the present time until the completion of the coal bunkers. Additional laborers are now employed removing ashes and wheeling coal into the boiler room, but when the ash-handling system is completed it will require very little attention and one or two ash handlers on each shift should be able to take care of all the ashes. When the coal bunkers are completed two men will be required to

shift and unload coal and operate the coal crushers. In addition, one clerk or timekeeper and one porter have been employed and from two to six boiler cleaners or laborers will be required.

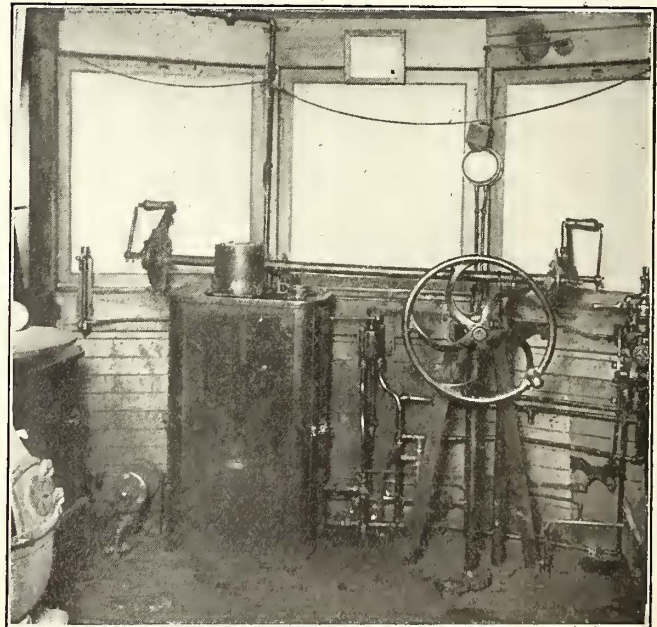
J. T. Ross, of Cleveland, was consulting engineer on the work, and J. C. Lathrop had immediate charge of the civil and mechanical engineering features.

A NOVEL ARRANGEMENT OF MOTOR CONTROL

The Cedar Rapids & Iowa City Railway & Light Company has several express cars which are frequently used for switching service. In order to permit motormen to observe signals given by a switchman from the rear during such movements the cars have been equipped so that the controller can be operated from either side of the cab. The arrangement, which has been developed by Charles Munson, electrical engineer of the company, consists in a bevel gear mounted in a cast-iron casing in place of the controller handle and operated by means of a horizontal shaft extending across the car. The shaft is made of gas pipe and has a handle at each end equipped with a "dead man's button," so that a man seated at either side of the cab and leaning out of the cab window has a handle within easy reach. The reverse lever is arranged in the same manner with a horizontal rod attached to the reverse lever through a pair of bell cranks.

The cars are equipped with automatic air brakes for road service as well as straight air brake for use in switching. The straight air control valve is connected by rods to hand levers on each side of the cab and within easy reach of the motorman, the automatic air being controlled through an engineer's brake valve in the customary position on the right-hand side of the cab.

The control equipment is of the Westinghouse K-14 type,



Standard Controller Arranged for Switching Service

and a four-pole switch is provided in the motor circuit which enables the motorman to throw all four motors into series for starting an extremely heavy load.

The Monza-Lecco Railway, Italy, which is 42 miles long and joins the Valtellina Railway, is now being electrified for three-phase, fifteen-cycle, 3200-volt operation. The completion of this line will give an all-electric route, 155 miles long, from Milan, Italy, to the Swiss border at Tirano, where the road will connect with the electrically operated Bernina Railway.

INDIANAPOLIS & CINCINNATI TRACTION COMPANY'S OPERATING RULES WITH CAB SIGNALS

On June 8, 1912, a complete description of the new signal equipment of the Indianapolis & Cincinnati Traction Company appeared in the *ELECTRIC RAILWAY JOURNAL*. At that time the installation included only a portion of the Shelbyville division affording protection between the city limits of Indianapolis and Shelbyville. The initial installation has since been extended so that the complete division between Indianapolis and Greensburg, a total distance of 38 miles, is now in operation. Each block extends from siding to siding, an average distance of about 2 miles.

The installation between Shelbyville and Greensburg was completed about March 1, at which time a movement of all trains over this division was protected by the Simmen system of signaling. As this was the first installation of its kind, a set of operating rules was prepared as a result of experience on the first section of this type of signaling. These rules have since been adopted by the company and approved by the Indiana Railroad Commission. Since these rules governing the operation of trains under the Simmen system of signaling are the first of their kind, considerable interest should be attached to their publication. Charles L. Henry, president and general manager of the Indianapolis & Cincinnati Traction Company, prepared them, and, as will be noted, they are brief yet cover all the points which may arise in the operation of trains. An abstract follows:

In the operation of all trains, both scheduled and extra, on the Shelbyville division, from the Junction to Greensburg, the section upon which the Simmen system of railway signaling and train dispatching is installed, dispatchers, motormen and conductors will be governed by the following special instructions:

1. (a) Regular scheduled meeting points are fixed on the time table and may also be fixed by train orders either for regular or extra trains. On approaching such meeting points the motorman must be on sharp lookout. If he does not get a green light at the distant rail, he must slow down prepared to stop; and if at the home rail he still does not get a green light, he will report to the dispatcher, as hereinafter directed. If, on approaching such meeting point, he gets a green light at the distant rail, he will stop with the shoe on the home rail, and if he then has a green light, he will remain with the shoe on the rail until the dispatcher momentarily gives him a red light followed afterward by a green light. This will indicate to him that the dispatcher desires to make a new meeting point, and the train will then proceed. The new meeting point will be indicated to the motorman later by failure to get a green signal at the distant rail and again at the home rail at some other siding, and upon such failure the motorman will be governed the same as if it were the regular scheduled or train order meeting point.

(b) In such case the opposing train will be notified that its rights have been restricted by failure to get a green light at any distant rail and home rail. When thus notified the motorman will understand that a new meeting point is fixed at that siding, and he will be governed accordingly, the same as for any other meeting point.

2. A relay switch is placed in the car near the relay. This switch may be turned in any one of three positions: (a) Turned to the right for eastbound movement; (b) turned to the left for westbound movement; (c) turned to central position disconnects the relay entirely.

Before reaching the Junction with an eastbound train the conductor and motorman will unlock and turn the relay switch to the right for an eastbound movement, at once relocking the switch in that position. Before leaving the third-rail in the Greensburg station the conductor and motorman will unlock the relay switch, turn it to the left for westbound movement; relocking it at once in that position.

In taking a car out of the Shelbyville shops the relay switch must be unlocked and set either for an eastbound movement or a westbound movement, as the case may be, before starting, and then relocked in that position. In case a train, eastbound or westbound, is required for any reason to back up, before backing up, the motorman and conductor will change the relay switch so as to provide for the movement either east or west, as the case may be.

3. Motorman will not move without green light. All rights to move a train as given by the book of rules or by bulletins are of no avail unless the motorman gets a green light. Only a specific order from the dispatcher will authorize a motorman to move his train without a green light. (a) When at siding for a "meet," motorman will call dispatcher and report whether in siding or not and whether opposing train has appeared. (b) If in siding and opposing train is there, dispatcher will call "No orders" and give motorman a green light. (c) If the opposing train is to take the siding, then as soon as it is in the siding, the motorman of the other train which first arrived will report to the dispatcher and he will answer "No orders" and give motorman a green light. (d) Neither train must pass by home rail without green light. In backing out of siding, train will always back up far enough for the shoe to rest on the home rail. In heading out of a siding, it will go forward far enough to close the switch, then back up until the shoe rests on the home rail.

4. Disappearance of the green light in the cab at any point when the shoe is not in contact with a third rail may be attributed only to some trouble in the car wiring, battery or lamps, and should be disregarded by motorman until he reaches the next third rail. If at that rail he does not get a green light, he will at the nearest telephone connection call the dispatcher and report the situation.

5. Motorman will always disconnect car battery (by turning the cutout switch) when he passes the Junction going west. Also always connect up the battery, going east, before reaching the home rail at the Junction, so as to get proper signal at that rail. Whenever leaving a car at either carhouse or at Greensburg, Connersville or Indianapolis, at the end of a run or when it is exchanged for another car, the battery must be disconnected.

6. In case of any defect in operation, motorman will immediately report to dispatcher and in no case proceed otherwise than with green light unless under regular train order from dispatcher. (a) In such case dispatcher will note on his record the fact, in order to keep account of "failures," no note being taken of the same at subsequent sidings, until there has been opportunity for repair. (b) Dispatcher will also at the time make notation of any and every failure in any part of the signal system. This is important in order that we may perfect the system as well as keep an accurate record of its efficiency.

7. Do not let a car stand with the shoe on a third rail except for a short interval of time, as by so doing you will injure the relays. This especially applies while a train is stopped at Greensburg or the Junction but is applicable to all places.

8. At the Shelbyville station a relay switch has been placed in the registry box. This switch must always be thrown in and out by the motorman or conductor of an eastbound or westbound train so as to complete the record at the dispatcher's office by showing the train at that point. This switch is also intended to give the motorman or conductor a red or green signal, whether to proceed or not, the same as when the shoe touches a third rail. For this purpose two sets of lights have been placed at the Shelbyville station, one for eastbound trains and the other for westbound trains. When the relay switch is thrown in and out, unless a green light is received for the direction in which the train is to move, it must not proceed. If a red light is received, the dispatcher must be called for orders.

HOW SERVICE REQUIREMENTS ARE ASCERTAINED IN BOSTON

BY EDWARD DANA, ASSISTANT SUPERINTENDENT OF SURFACE LINES BOSTON ELEVATED RAILWAY

Probably no two patrons of a street railway have like ideas as to the adequacy or inadequacy of the service provided to meet their varying needs. Some are radical, oth-



Boston Traffic Count—Method of Dividing Route into Sections

ers conservative, in their estimate of what the company should do in carrying them from the point of departure to the location they desire to reach. Incidentally it might be added that few of these persons in their own pursuits would long attempt to supply a commodity the demand for which is so erratic that at times a great deal more is served than can be used, while at other times it is impossible to furnish a satisfying amount. It may be of interest to outline the methods of the Boston Elevated Railway in ascertaining what service is required at different hours upon its many arteries of travel.

Changes in service are made to suit either permanent or temporary needs. The latter are provided for through information from street inspectors or extraneous sources almost entirely and the changes made are purely dependent upon the exigencies of the day or hour. Permanent changes are those which are embodied into timetables intended for use for a longer or shorter period, except such changes as are made of the timetables themselves to meet varying conditions of weather, affairs of more than normal magnitude on the lines, etc.

Information in regard to permanent so-called conditions of traffic is obtained from three sources, each of which is useful, but the last is of the greatest ultimate value.

Street inspectors supply one source. Their observation, report and comment upon the needs of the service are quite pertinent and highly desirable. The accuracy and consequent value of their statements, however, are frequently marred by the fact that they usually move over a considerable area, have many other matters demanding their attention and are apt not to secure the correct relationship between time and conditions. Quite often a condition of serious overcrowding exists through irregular operation by which the first car becomes much overcrowded and is followed directly by others of the same line comparatively light-laden. As likely as not this overcrowding makes an impression upon the mind of the inspector, and this impression is sometimes accentuated by comments from outsiders. He reports heavy riding and the need for more service before he has seriously endeavored to discover the cause for the apparently inadequate accommodation. To add service under such conditions is but to pay a high price for inefficient street supervision. Nevertheless such reports are of some value, and the Boston Elevated Railway secures reports of such conditions from its inspectors and provides special blanks for their use.

Conductors, by means of trip reports filled out after finishing their work, supply a second source of information. Their reports give a record of the passengers carried on each trip. While many inaccuracies exist due to the varying degree of ability of the men and the care with which

they perform their work, these sheets form a permanent and fairly complete record of the service not secured through the first source. Necessarily, however, these reports show only the total passengers carried by half trips. While such information is of some relative value from day to day and week to week, it is more in the nature of a reminder to study the service more carefully at certain times than a basis for actual addition to or subtraction from the service. The reason why such information is spoken of as a reminder is that while the total number of passengers for a half trip may be excessively large, two conditions might exist which could not be determined from such a record. For instance, one case might show a comparatively small number of passengers carried, but if most or all of these were through passengers, the car on at least some portions of its route would have been excessively crowded. On the other hand, the trip might have secured several interchange freights and the register would have a high reading, although the car at no one time would have carried more than a normal load. It will be seen, therefore, that a company that goes no further than to base its service upon register readings is satisfied with rule-of-thumb methods and is willing to waste many dollars of hard-earned revenue in ill-adjusted service.

The third source mentioned is by means of systematic traffic checking on the street. By a comparatively small annual outlay permanent records can be secured which offer endless opportunities for study, scientific analysis and ammunition for defense against unjust criticism of the service. Moreover, it is modern efficiency to meet representations by accurate and convincing figures at once rather than to take the matter in hand with the understanding that it will be investigated to learn whether or not conditions are as represented.

SUMMARY OF TRAFFIC COUNT												
Date	191									Point taken at		
	Rte			Rte			Rte			Rte		
	Cars	Pass	Average per Car	Cars	Pass	Average per Car	Cars	Pass	Average per Car	Cars	Pass	Average per Car
6 - 6:30 AM												
6:30-7 AM												
7 - 7:30 AM												
7:30-8 AM												
8 - 8:30 AM												
8:30-9 AM												
9 - 9:30 AM												
9:30-10 AM												
10 - 10:30 AM												
10:30-11 AM												
11 - 11:30 AM												
11:30-12 NOON												
12 - 12:30 PM												
12:30-1 PM												
1 - 1:30 PM												
1:30-2 PM												
2 - 2:30 PM												
2:30-3 PM												
3 - 3:30 PM												
3:30-4 PM												
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7:30-8 PM												
8 - 8:30 PM												
8:30-9 PM												
9 - 9:30 PM												
9:30-10 PM												
10 - 10:30 PM												
10:30-11 PM												
11 - 11:30 PM												
11:30-12 PM												

Boston Traffic Count—Portion of Blank Used for Summary

It was found desirable on the 472 miles of surface track in Boston to designate seventy-six traffic points, thereby dividing the trackage into districts. These traffic points are determined by knowledge of the local conditions of riding, many being at points of maximum load and at headway junction points. A schedule of traffic-count periods has been drawn up for each division. It was found advisable to allot such work by divisions in order that the company

might the more readily train for the work men who were thoroughly conversant with the trips and lines passing through the division to be counted. Moreover, such a method provides the division superintendent with the information at the earliest moment before it is forwarded to the department of surface lines. It likewise entails less traveling time on the part of the checkers and consequently allows the maximum checking time without unduly severe working hours.

Every traffic point on the system of the Boston Elevated Railway is checked every fifteen days, which is equivalent to five points checked daily. The car number, arriving time and passengers are recorded and every half hour the number of passengers is totaled and averaged by the checkers. A summary is then prepared and gives at a glance a knowledge of the conditions existing at one or several points on a line. If some undesirable condition shows up on the summary, attention can then be directed to the detailed count.

Many times, where complaints have been made about the service, the summary gives the company all the information which is necessary to substantiate its position. The chart attached shows the traffic points upon a line $6\frac{1}{2}$ miles long originating in a sparsely settled district and terminating at the Park Street subway station. It will be seen that a complete analysis of the traffic is possible as well as information as to the headway and the point where time is lost.

When it is considered that in Boston there are 125 all-day routes, increased in rush hours to 337, that daily the car mileage amounts to more than 125,000, and that 1,475,000 people are carried on 15,551 trips, it can readily be seen what an endless task is presented properly to adjust the service to the needs.

A SIPHON FOR EMPTYING OIL BARRELS.

For use on the Western Ohio Railroad a novel device has been developed for the purpose of transferring oil and other liquids from barrels to storage tanks. In brief, the device consists of a siphon head which is screwed into the bung hole of an oil barrel and through which a piece of pipe is extended to the bottom of the barrel. A small hole in the siphon head is connected to a compressed-air supply, and the air pressure thus established in the barrel forces the oil out through the discharge pipe, transmitting it, in fact, to considerable distances if necessary.

The storage house of the company at Wapakoneta, in which the oils are kept, is somewhat isolated, and the compressed-air system used in the shop is not extended to it. In consequence, a portable tank has been arranged for supplying compressed air at the storehouse. This tank is an ordinary main reservoir, 16 in. in diameter by 48 in. long, such as is used on an interurban car. It is mounted on a two-wheel truck and after being charged with air in the shop is wheeled from there to the oil house. When charged at a pressure of 60 lb. per square inch it affords sufficient air to transfer the contents of a 50-gal. barrel to any desired receptacle.

The discharge pipe is made up of a piece of $\frac{1}{2}$ -in. standard gas pipe, which is turned in a lathe to give it a smooth surface capable of making a close fit in a stuffing box. The siphon head through which the discharge pipe is extended is made of cast iron. It is about 3 in. long,

threaded on the outside with sixteen threads per inch and cut on a taper of $2\frac{1}{2}$ in. per foot, as this taper appears to be the general standard used for the sides of bung holes in oil barrels. A stuffing box is inserted in a threaded recess at one end of the siphon head to hold packing around the discharge pipe.

The siphon head is drilled with a $\frac{1}{4}$ -in. hole, and into this is inserted a $\frac{1}{8}$ -in. air-supply pipe on which are mounted a pressure gage and an air cock for the purpose of releasing the pressure in case of accident to the barrel or to the discharge line.

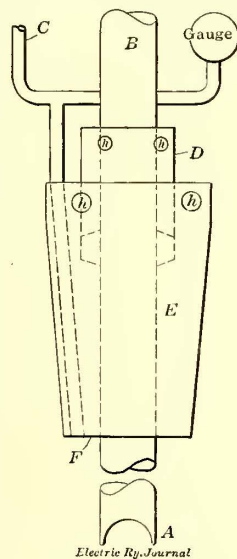
In operation, the siphon head is screwed into the bung hole of the barrel until it is air-tight, and the $\frac{1}{2}$ -in. discharge pipe is shoved down through the siphon head until it reaches the bottom of the barrel. Air is then turned on to the air-supply pipe marked *C* on the accompanying illustration, the pressure being read on the gage. This air pressure is transmitted to the barrel through the hole in the siphon head marked *F* and the oil is forced up through the pipe, emerging at the point marked *B*, from which it is delivered into any desired receptacle.

The holes shown in the upper part of *E*, the siphon head, and *D*, the stuffing-box nut, are bored to provide a means for screwing the two castings into place, as a pin inserted into one of the holes takes the place of a wrench and aids in assembling the apparatus at points far away from the shop.

The object of the pressure gage is to enable the operator properly to adjust the air pressure and to prevent the barrel from being subjected to a pressure of more than 10 lb. or 12 lb. per square inch. This pressure has been found to be sufficient to transfer the most viscid oils to the storage tanks, which are set at an elevation of about 7 ft. above the top of the barrel.

The device has been found to be very satisfactory and decidedly convenient. It is easy to assemble, and about five minutes' work is sufficient to make complete preparations to transfer liquids, as it is necessary only to drive in the bung and screw the head into place in the bung hole. The bottom end of the discharge pipe is notched out as shown in the illustration, and this permits draining the barrel practically complete.

With the device it has been found that about ten or fifteen minutes is required to transfer 50 gal. of such oils as turpentine, signal oil, boiled linseed oil or compressor oil. Oils of greater viscosity than those, such as car oil or cylinder oil, require a proportionately longer time.



Siphon Head for Oil Barrels

WELFARE WORK AT MANILA

With the aim of gaining the good-will of the public and of its employees, the Manila (Philippines) Electric Railroad & Light Company has been conducting a series of concerts on the Luneta, or city park grounds, every Saturday night during the hot season. The concerts have proved highly popular with the public, and on April 19 nearly 20,000 people were present. On this special occasion the Luneta was brightly illuminated and a pyrotechnic display was held in honor of the Toyo Kisen Kaisha's liner, the *Shinyo Maru*, which lay at anchor opposite the Luneta. The fireworks opened with a royal bomb salute to the United States army and navy and closed with a salute in honor of Governor-General Forbes.

The Manila Electric Railroad & Light Company has made conspicuous efforts in other lines, realizing that the promotion of the happiness and co-operation of its men is a valuable factor which cannot be ignored. It has encouraged sports among them by preparing a large baseball park near the carhouses. Careful attention is also bestowed on the health of sick or injured employees, who are allowed free medical attendance, including all hospital charges, without being struck off the pay roll.

FARE COLLECTING AND RECORDING IN BUFFALO

In the issue of the *ELECTRIC RAILWAY JOURNAL* for March 11, 1911, the then new Dayton fare recorder system was described. The International Railway Company has more than 700 of these in use at present, and a number have been in operation long enough to demonstrate that it is practicable to handle the collection of fares in a manner similar to that employed in selling goods in a store, while the bookkeeping and checking in the auditor's office are much simplified.

In Buffalo the recorders give the following data: date, line number, trips, cash, 5-cent fares, transfers, 3-cent fares, passes, total passengers, total registered, inspector's number, time of starting each trip, conductor's number and car number. These records are printed on a strip of paper 12 in. wide, which is torn off from time to time. Two records are taken from the recorder, one by the conductor when he leaves the car, the other by the station clerk when the car is turned in the carhouse at night. The conductor does not have access to the second sheet, which records the total fares collected by all conductors operating the car for the day. On the records are given not only the items mentioned trip by trip, but also the totals at the top of each sheet.

The clerical work required of conductors is very much reduced by this system. In addition to operating the recorder, each has a trip sheet to fill out giving the car number, the place of arrival and starting by station number and the time of arrival at and departure from each station. Both actual and schedule times of starting are given. In addition to this very simple record there is merely set down the serial number of the transfer first issued on each trip. For each round trip each conductor is provided with an envelope in which he places the transfers, passes and tickets received and notes on the outside the number of each. He carries his cash with him until the end of the day, when it is turned in and counted by the receiver at the carhouse. Each conductor is required to carry \$5 of his own money for change. He is bonded for \$50 at his own expense, or can in place of this deposit \$25 in cash.

An important feature of this system as used by the International Railway Company is the provision for checking the various records. The sets of sheets from each recorder are checked for totals, and as the machine does all of the arithmetic there is no reason why the figures should not tally. The auditor also checks against the register readings the contents of the envelopes turned in. If the counters find that the contents of the envelopes do not check with the register record the conductors are charged full cash fares for all shortages. A number of such mistakes are found, but the fact that such careful checking is possible makes the conductors watchful. In the near-side cars the conductors are relieved of all duties connected with the boarding and alighting of passengers, hence they have not the usual excuses for making mistakes.

The auditing department, in addition to checking the records, makes out very complete tables of operation. The usual mileage records are made out from the timetables furnished by the transportation department and from deviation sheets turned in by the carhouse clerk. The deviation sheets shows accidental departures from schedule after a car leaves a carhouse. Deviations are reported to the carhouse clerks for entry on the deviation sheets. One of the carhouse men notes the time at which each car leaves the carhouse and turns in a copy of this record daily to the auditor.

By means of a Burroughs adding machine the total data for each car are tabulated from the recorder records, a special form being used for this purpose. From these, a standard statement sheet, comparing the most important statistics for the corresponding period of the preceding year, is made out weekly and monthly. These statements of

receipts give the data desired by the officers and directors, including for each line the receipts, the car hours, the receipts per car hour, the actual car miles, the receipts per car mile and the actual speed. All of this work is comparatively simple by the system outlined above. It is evident that the use of the Dayton recording system in the near-side cars has turned the conductor into a clerk. If this plan becomes general, a new name for this functionary will be required. The substitution of mechanical recording devices for written records by car conductors certainly eliminates the chief cause of inadvertent error. The only mistake which can be made is the result of careless operation of the recorder lever. Of course, no mechanical system will make men accurate, but, as the conductor's work is done at the front of the car in plain sight of all of the passengers, he is under close inspection and is not apt to be careless.

GASOLINE EMERGENCY WAGON OF THE SYRACUSE RAPID TRANSIT COMPANY

A gasoline emergency wagon which was put into service late last summer by the Syracuse Rapid Transit Company has demonstrated its usefulness on many occasions. During the past ten or eleven months it has made a large mileage and it responds to six calls, more or less, per day. It is housed in a part of the Townsend Street substation near the center of the city, and an expert operator is always on duty ready to respond to a call. It is tested every hour by starting the engine.



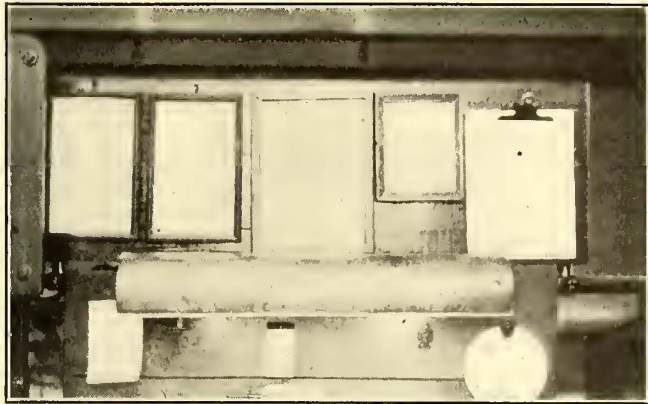
Gasoline Emergency Wagon, Syracuse Rapid Transit Railway

The truck has a heavy steel underframe, the chassis being designed for a 5-ton load, although the springs and body are of but 3 tons capacity. The specifications called for a truck which should be suitable for emergency line and wrecking work, assisting in the handling of derailed cars and vehicles stalled upon the railway company's tracks. The body is provided with two longitudinal seats 6 ft. long, 16 in. wide and 16 in. high. Underneath the seats are lockers for tools, with doors opening downward on the outside. The roof is removable and is of strength sufficient to support the weight of two men. It is at a height of about 11 ft. above the ground. Access to the body is by a flight of steps in the rear.

This truck has been found useful in numerous ways. It responds to all fire calls and to calls for help for derailed cars, etc. Being geared for the moderate speed of 15 m.p.h., it can exert an enormous drawbar pull. This speed, however, is sufficient to enable it to reach scenes of trouble quickly. In fact, this speed is as high as would be practicable for use in crowded city streets.

POWER PLANT CONVENIENCES AT PROVIDENCE

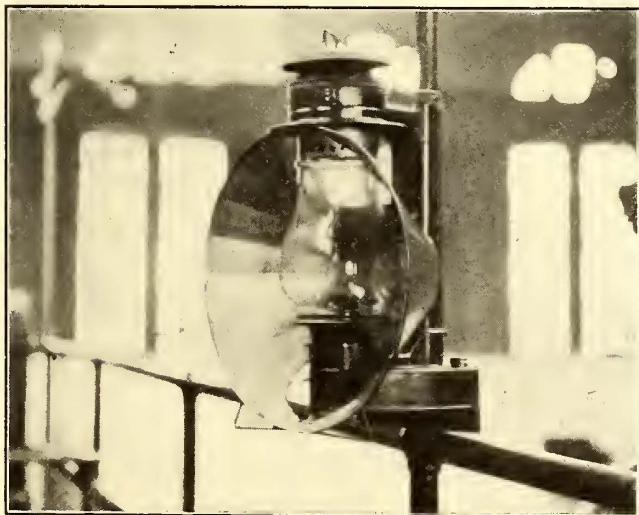
In the operation of a large power plant from day to day labor-saving methods often play an important part. Such simple matters as the prevention of eye strain at the desk where switchboard readings are written on the log sheet, the use of transparencies for signaling machine manipulation, and the provision for emergency lighting even of a



Power Conveniences—Illumination of Log Table

comparatively crude type count in the easier operation of the station. The following paragraphs give an outline of a few of these devices in use at the Manchester Street station of the Rhode Island Company at Providence, R. I. The apparatus is of the home-made type and simple in its construction, but it is of demonstrated usefulness in the handling of the station.

The first illustration shows an effective means of lighting the log table in the switchboard gallery so that the fifteen-minute instrumental readings may be put down without the eye strain which so often accompanies this work, especially when it is done under glaring lamps. The feature of this lighting arrangement is a semi-cylindrical copper reflector 7 in. in diameter and 30 in. long, lined with tin on the inside and containing two 110-volt, 16-cp incandescent lamps, placed with their axes horizontal so as to throw the light



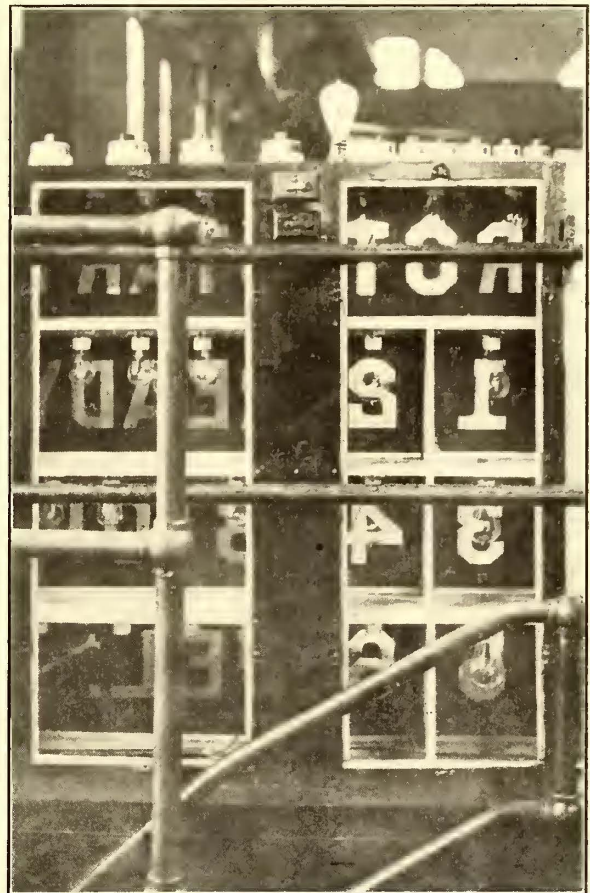
Power Conveniences—Kerosene Lamp for Emergency Use

most effectively upon the table. The lower edge of the reflector is carried about 12½ in. above the table surface, and its dull outside surface is thoroughly satisfactory to the eye in a location where more or less light is transmitted to it from lamps on the nearby switchboard. The reflector is fastened to a bulletin board at the rear of the desk by a screwed metal strap running from end to end, the whole

device being hung on the pipe railing bordering the gallery.

Even in the largest plant, the operators do not care to take chances with total darkness, and the second cut shows how the old-time kerosene lamp is kept at hand on the switchboard gallery of a 25,000-kw station as a precautionary measure. This station has no storage battery of sufficient size to light it temporarily in emergencies, but in case the generators are disabled, leaving the switchboard without light, the operator simply turns to old-fashioned methods. The location of the oil lamp with a duplicate at another point on the gallery rail in front of a conical reflector insures that a strong beam of light will be thrown just where it is most needed on the panels and instruments.

At the top of the stairway in this plant is located an annunciator cabinet, shown in the third view. This cabinet is divided into compartments which contain incandescent lamps and fronted by transparencies which are easily read



Power Conveniences—Rear View of Annunciator Cabinet

from the operating floor some 40 ft. below. The lamps in each compartment are controlled by switches shown on the top of the cabinet, and the indications tell the floor operators just when to start up or stop any of several rotary converters or when to go to the telephone. Thus, if the operator on the switchboard wants the floor attendant to start up rotary No. 1, he throws the corresponding snap switches on the top of the compartment, lighting the lamps that illuminate the transparencies "Rot.," "1," "Start," and in spite of the noise caused by a large steam turbine in the same room the signal is quietly but effectively transmitted. Bell signals are also connected to call the attention of floor operators to the transparencies. Ten switches are required for this device. The compartments are about 10 in. deep, and the cabinet is 4 ft. square, the lamps being of 8-cp and 32-cp rating. Usually one of the larger size is employed in the narrower compartments, from three to five of the smaller lamps being connected in each division on the left-hand side of the annunciator.

MULTIPLE DUMP CARS FOR THE CONNECTICUT COMPANY

The Connecticut Company has lately received from the Wason Manufacturing Company five multiple dump cars of the type shown in the accompanying illustration. These cars are designed to draw gravel or trap rock from the stone crusher to the various points where the railroad may need this material, or to draw the material for State road work.



Dump Car with One Section Lowered

A feature of the construction of these cars is the use of metal, except that the cabs are of wood. The trucks are of the Wason No. 30 arch-bar motor type with 5-in. x 9-in. journals. The total weight of a car with load and operating equipment, including air brakes, is approximately 105,000 lb.

The dump cars are 48 ft. 8 in. over the buffers, 27 ft. 5½ in. truck centers and 8 ft. 3 in. wide. A car underframe carries four independent dumping bodies, each one of a capacity of 162 cu. ft., or a total capacity of 24 cu. yd. The cars are so arranged that the operator in the cab can dump each body separately in either direction from the cab by using a GE crane motor. A cab is located on each end of the car, but only one of these cabs contains the dump control apparatus.

The sideboards are so arranged that they open and close automatically with the raising or lowering of the dumping body, and when opening they make an extended shelf or apron so that the trap rock or other material dumped will be left far enough away from the track to avoid interference with car steps. This arrangement is a very important feature in the mechanism of the car. The hoisting devices are arranged to cut out automatically so that when the body is raised high enough to dump the motors stop working; also, when the body comes back in place the motors are automatically cut out and stop, thereby making it impossible for an inexperienced man to harm either the motor or mechanism. These cars will undoubtedly be of great service in reducing the cost of handling trap rock, etc., as only two men are required to operate the car and control the dumping.

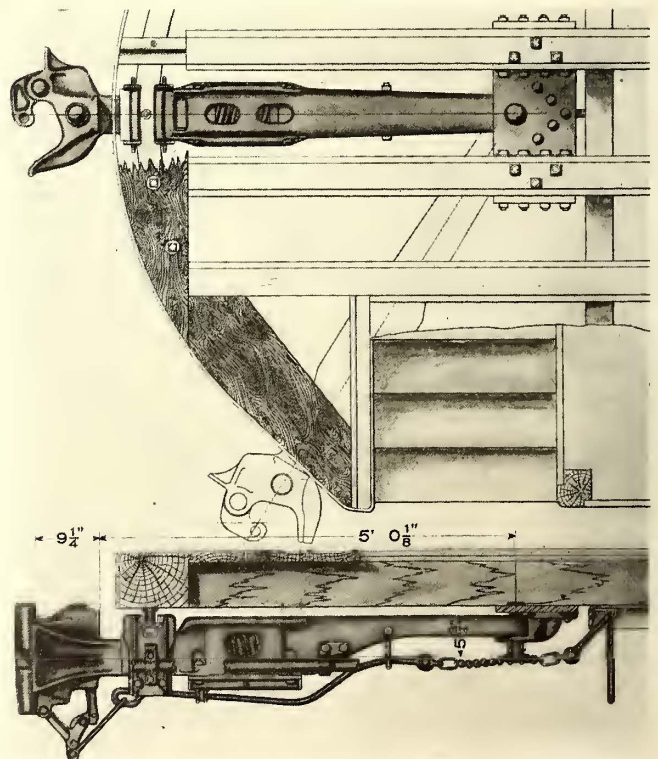
The year book of the Japanese Ministry of Finance contains figures showing the growth of electric railways in that country for 1911 as compared with 1910. The number of companies increased from thirty-four to forty, the paid-up capital from £9,438,000 to £9,687,900, the length of lines in operation from 363.6 to 431.5 miles, the length of lines under construction from 180.44 miles to 221.05 miles, the number of passengers from 325,066,000 to 395,666,000, and the net earnings from £811,900 to £898,700. The total number of motor cars operated to the end of the year 1911 was 2459. It is not anticipated that the increase in the mileage of electric railways during the coming years will equal the ratio shown in the past years, as much of the work done in 1911 was stimulated by a pending increase in the tariff on electric railway supplies. The government has taken up the subject of electrification of steam railroads, and it is proposed to experiment between Tokyo and Yokohama.

RADIAL COUPLER AND DRAFT RIGGING FOR ELECTRIC CARS

The new "National" radial coupler and draft rigging shown in the accompanying illustration has been developed by the National Malleable Castings Company, Cleveland, Ohio, in response to a demand for the application of automatic couplers to electric traction equipment. It consists of an automatic coupler of the approved Master Car Builders' type, pivoted by means of a radius bar to the car body. The pivotal point is located adjacent to the truck center, and the coupler is permitted a large degree of unrestricted lateral displacement, thus allowing coupled cars to pass around very sharp curves without throwing any strain on the car structure.

Either the company's well-known Sharon or Vulcan automatic couplers can be used with this device, and both of them have the required lock set, lock-to-lock and knuckle throwing features, couple automatically by impact, operate without the necessity of anyone going between the cars and also interchange with standard steam railroad equipment. Both of these couplers when used with the new device are equipped with lateral wings or buffing lugs, which, when two couplers are interlocked, engage and prevent the couplers from buckling under buffing stresses. Substantial springs located in the radius bar connection absorb all the normal shocks which are apt to occur in train operation, both in buffing and pulling.

It is stated by the manufacturer that the new radial coupler has been in successful service for several years on a few of the large electric traction lines. In one particular application in which the Sharon coupler is used sufficient



Views of Radial Coupler and Draft Rigging

lateral displacement is provided so that coupled cars each 50 ft. long can pass without strain around curves of 33-ft. radius.

The knuckle of 16-in. depth used on these couplers will be found ample to provide for changes in height of track. Provision is also made in the contour lines for the vertical angling which is necessary in passing from one grade to another.

WEED KILLER IN ROCHESTER

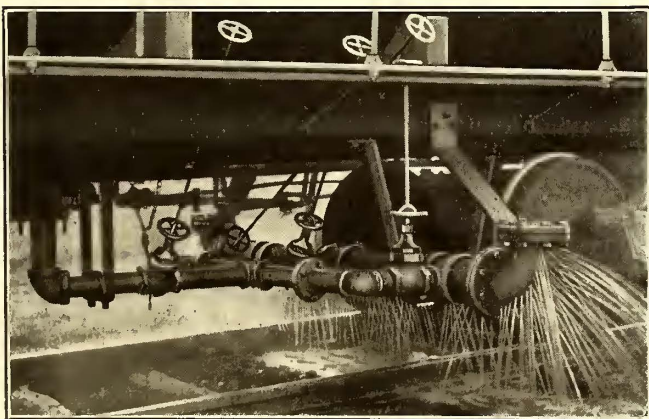
The New York State Railways, Rochester, N. Y., has recently applied Atlas A weed killer and track preservative, which is manufactured by the Atlas Preservative Company, on its Sodus Bay line, which runs between Rochester and Sodus Point, a distance of 39 miles. The chemical was shipped in a large tank car direct from the factory to the



View of Tank Car, Showing Hand Pump

line on which it was to be used. The car was coupled to a spray car with a capacity of 5000 gal. and using a 5-in. spray pipe with three rows of 3/16-in. holes running ten to the foot, the rows being about 1 in. apart. This car, as shown in one of the accompanying illustrations, contains a structure work over the center of the tank on which two barrels are placed for measuring the liquid, which is forced into them from the first car by means of a hand pump, as shown in the other illustration. In this 5000-gal. tank 243 gal. of the chemical is placed, the rest of the tank being filled with water, which is agitated and mixed with the chemical by means of air pressure introduced through an air-pipe inserted into the tank from above. This amount of chemical is enough to spray 3 miles of track. In all, 2810 gal. of the Atlas "A" were used to spray thoroughly the 39 miles of track of the Sodus Bay line.

This application killed practically all the vegetation permanently with the exception of some of the roots of the

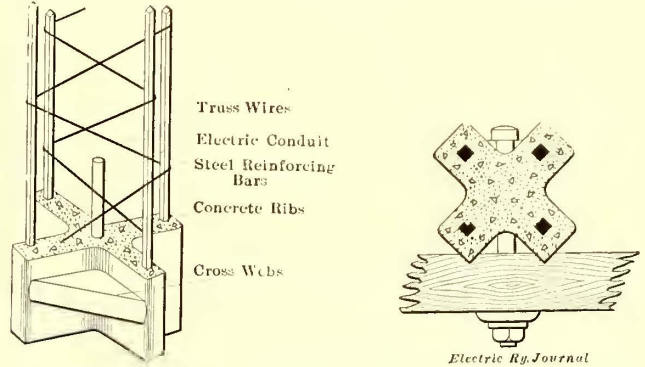


Weed Killer in Operation

hardier weeds which go down several inches in the ground, and these after several weeks are just beginning to sprout again. This operation will be repeated very soon, after which the company claims that all vegetation will be entirely extinct. By this method the railway company feels that it can keep its lines free from weeds at considerably less expense than it has been able to do with the methods previously employed.

REINFORCED CONCRETE POLE OF STAR SECTION

W. H. Lienesch, a consulting engineer of Chicago, is preparing to make for general sale a reinforced-concrete pole of the star-shaped section shown in the accompanying drawing. It is asserted that the new design weighs but two-thirds as much as square-type reinforced-concrete poles for the same service; thus it is not necessary to pour it under the disadvantageous conditions of field work. Another important difference is that cross webs are used as steps, thus



Star-Shaped Concrete Pole, Showing Character of Reinforcement and Provision for Conduit

eliminating the cost and maintenance of metal spikes. The new pole is designed to utilize a minimum amount of concrete, which is compressed into metal molds so constructed that the steel reinforcement is absolutely held in its proper position until the initial set has occurred. The concrete is merely a protection for the fabricated steel reinforcement, which is figured to develop the entire strength of the pole. Other features claimed for these poles are freedom from exposed metal parts, superior flexibility and greater stability against wired pressure owing to the bearing of the "saw-buck" section against the earth.

The following table is the maker's comparison of this pole with square reinforced and round wooden poles.

Length, Ft.	COMPARATIVE POLE DATA.			Cost Set Up		
	Square	Star	Cedar	Square	Star	Cedar
25	2400	1500	350	\$9.71	\$5.00	\$4.10
30	3150	1900	450	11.63	7.00	8.25
35	3900	2450	600	14.45	8.50	11.15
40	5400	3150	950	20.05	11.00	15.00
45	6450	4000	1200	24.78	14.00	22.20
50	7500	5000	1500	29.50	17.50	26.70
Ave.	4800	3000	842	18.35	10.50	14.56

In the foregoing table the word "square" refers to ordinary concrete poles with a square cross-section reinforced with vertical steel bars and poured into the top of vertical wooden forms erected in place; the word "star" refers to star-shaped poles, using special mixed concrete and vertical reinforcing bars, and the estimates, while including freight and setting up, are exclusive of any royalty; the word "wood" refers to a good grade of cedar poles dressed, graded, ruffed, bored, hauled and set.

The figures on wood poles were copied from treatises on concrete poles published in 1910 by the Universal Portland Cement Company. They represent the total cost, including all profits. In general, for any given length, the star-shaped pole is 1 in. to 2 in. less in diameter at the top and 2 in. to 3 in. less at the bottom than are the wood and square poles respectively.

Notices have been placed in all cars on the city and inter-urban lines of the International Railway, Buffalo, N. Y., offering a reward of \$25 in gold for information leading to the arrest and conviction of persons maliciously removing electric light bulbs or otherwise interfering with the equipment of a car.

News of Electric Railways

Short Strike on Indianapolis Interurban Lines

After the failure of the Three Star Organization to unionize the interurban trainmen on the lines operating out of Indianapolis, the committee of the Three Stars voted to affiliate with the Amalgamated Association of Street & Electric Railway Employees. This action, taken Aug. 16, was concurrent with the arrival of Rezin Orr, international treasurer of the Amalgamated Association. J. J. Thorpe, first vice-president of the Amalgamated, arrived in Indianapolis from Pittsburgh on Aug. 19, bringing the charter of the local organization. A meeting was held the same night and officers of the local union were elected. On Aug. 21 forty-six trainmen of the Terre Haute, Indianapolis & Eastern Traction Company sent in resignations to Messrs. Orr and Black, withdrawing from the Three Stars and refusing to be assigned by that organization to any other union, reserving the right to themselves to take such future action as they might see fit. The trainmen stated that the organization had failed to keep its promise and that its action of Aug. 16 demonstrated that it was incapable of carrying out its announced purposes. Resignations of other trainmen were turned in to the organization on the day following.

On Aug. 22 Mr. Orr announced that a general strike would be called at 4 a. m. on Aug. 23 because the companies had "ignored" the demands of the "union." On Saturday morning practically all the main interurban trunk lines operated their trains on regular schedules without interruption, and the service continued during the day. On the Martinsville, Crawfordsville, Rushville and Shelbyville lines only partial service was in effect, a few men having gone on strike and others being intimidated by the labor men. In all not more than from fifty to sixty men out of a total of 600 failed to report.

A special meeting of the board of safety of the city of Indianapolis was called, and instructions were sent to the superintendent of police to the effect that no one "must be permitted to interfere with the running of the street cars in the city limits"; that it was the duty of the police to see that the cars were run for the accommodation of the public as long as there were men willing to operate them; that as many special police as might be necessary should be employed, and that the board would back the superintendent in enforcing order. Superintendent Hyland at once instructed the police force to arrest all persons preventing or undertaking to prevent the running of cars or doing anything to prevent the regular operation of cars and transportation of passengers.

On Saturday evening Mr. Orr stated that if the companies would treat with individual committees from their roads he would not ask that they deal with the Amalgamated Association as an organization. The companies take the position that they have never received any intimation of any grievance from any of their employees. The very efficient police protection at the Traction Terminal Station and on the interurban cars prevented any attempted disturbance by the organizers or sympathizers. On Aug. 24 normal service was resumed on all but one of the interurban lines, and over 90 per cent of the trains due to leave the Traction Terminal Station pulled out on schedule. By Sunday evening many of the men who had failed to report were seeking to man their cars.

Charles L. Henry, president of the Indianapolis & Cincinnati Traction Company, posted notices on Aug. 25 to striking motormen and conductors that they must return to their work by 5 o'clock the following morning if they expected to continue in the employ of the company. He said his decision was final, declaring that his men had no grievances against the company and that none had been presented to him. He said the regular schedule would be resumed at the earliest possible date whether his men wanted to work or not, but that he preferred they should have their places again if they would accept them.

All cars in and out of Seymour, Ind., were running without interference on Aug. 25. There had been no disturbance at Seymour up to Aug. 25 on account of the strike.

Arbitration of Terms of Service in Detroit

The demands of the motormen and conductors of the Detroit (Mich.) United Railway were presented to the board of arbitration on Aug. 19 by W. D. Mahon. Following the reading of the document, Judge Phelan, a member of the board, offered a resolution to have the officials summoned before the board to answer certain questions he desired to ask. Attorney Edwin Henderson, another member, assured Judge Phelan that no resolution was necessary and that J. C. Hutchins, president, and F. W. Brooks, general manager of the company, would answer any questions that might be asked of them. The principal demands of the men are as follows:

"The workday for all motormen and conductors in city service shall be nine hours, to be completed in eleven consecutive hours in any one day of twenty-four hours. The time between the early and late runs to be divided as nearly equally as possible. One relief for meals or swinging from one run to another shall be paid for at straight time. No run of any kind shall pay less than eight hours' time.

"On interurban and suburban lines the workday of motormen and conductors shall be upon straight time, the workday to be as nearly nine hours as the division of time will permit. The time between early and late runs shall be divided as nearly equally as possible and no run shall pay less than eight hours' time.

"All crews in city, suburban and interurban service shall start and get off at the same carhouse or station. All motormen and conductors in city, suburban or interurban service shall be paid for all time in excess of ten minutes that is required for them to go from their reporting place to the place where reliefs are made, and where men are called upon to do any work they shall be paid for ten minutes after they have been instructed to report and twenty minutes shall be added to each man's run on the different timetables to cover actual time consumed.

"The wages for all motormen and conductors shall be for the first year in service 30 cents per hour, and for one year and thereafter in the service 35 cents per hour. No single trip shall be considered less than one hour."

On Aug. 20 the statement of the company was submitted to the board by Mr. Brooks. It contained no concession in regard to wages and provided that nine to ten hours with one-half trip leeway, to be completed in thirteen hours, should constitute a day's work on the week-day schedule. The company stated that it would reduce the number of swing runs wherever it was possible to do so, but did not agree to the proposition made by the men.

Mr. Brooks stated that many of the runs on which the men were compelled to work long hours are swing runs and do not come under the provision calling for the completion of the day in twelve hours.

Mr. Mahon contended that they are regular runs and that the men's period of work should be considered. He admitted, however, that the public must be considered in any readjustment that is undertaken. He thought that the runs could be adjusted so that the men could finish their day within the time fixed in their demands. Mr. Mahon presented figures to the board on Aug. 21 showing the high cost of living for workmen in Detroit and the comparative wages paid them. He said that an extremely modest living would cost \$1,146.87 per family per year and that the conductors and motormen should receive at least \$1,300 annually. Mr. Mahon admitted that he had not made an investigation of the cost of operation of the company.

Judge Phelan insisted that any award should date back to the time when the men agreed to submit the question of wages to arbitration.

Mr. Brooks presented a communication from the company on the forenoon of Aug. 22 in which it was stated that conditions and wages are just as favorable in Detroit as in any other city in the United States; that the present demands of the employees are prohibitive and beyond the ability of the company to pay; that the Detroit city government has reduced the company's income by compelling it to sell seven tickets for a quarter, and that enormous

sums must be spent for improvements and extensions. Other businesses may raise or lower their prices to meet the changing cost of doing business, but the company has been compelled to reduce the price of service while its expenses have been increased.

A number of division superintendents were questioned relative to the company's claim that free transportation to employees has been abused. These men testified that a number of the men had torn sheets of tickets from their transportation books and kept them for use after they went out of the company's service. Judge Phelan thought that the names of these men should be presented, but Mr. Brooks objected to this. He said that he did not wish the names of the men to appear in the newspapers. The court as a whole did not insist upon the names being made public. William D. Bonthron, an expert accountant, testified that the company had issued to motormen and conductors during the first six months of the year transportation amounting to \$53,316 and that for the entire year the free transportation would be at least double that amount. Mr. Brooks said that the company was considering the withdrawal of free transportation from firemen and policemen. Mr. Mahon asserted that the men considered free transportation part of their compensation and that if the tickets issued to employees are withdrawn the men will be compelled to ask for 45 cents an hour instead of 35 cents.

At the opening of the session on Aug. 25 Chairman Naylor refused to entertain a motion made by Judge Phelan to require the company to furnish the board with a classified list of the persons who ride free on its lines. Almost the entire session was spent in hearing testimony and arguments relative to the company's desire to limit free transportation.

At the hearing on Aug. 26 Mr. Bonthron outlined the results of his investigations of the probable effect of the increase in wages demanded and the reduction in fare, as secured from the books of the company while operating under conditions which prevailed prior to Aug. 15. He said that, taking the figures of 1913 as a basis, the reduction in fares would cause a deficit of \$1,185,757. The gross earnings, he estimated, will be only \$8,278,166, as against \$10,202,621 for the year ended June 30, 1913. Taking the figures of 1913 without any reference to the reduced fare, Mr. Bonthron estimated that the increase asked by the men would cause a deficit of \$674,688. The combined effect of the decrease in fare and increase in wages, he said, would leave the company \$2,598,143 behind the preceding year.

Mr. Mahon objected to any testimony bearing upon the cost of extensions on the ground that no contracts had been made between the city and the company for the construction of extensions. Mr. Brooks asserted that the company had a right to build extensions. Judge Phelan interrupted to request that Mr. Brooks produce a copy of any contract that had been made to that effect on the following day and was told this would be done. As a matter of fact the Common Council was at that time passing such legislation.

General Superintendent Bullen presented a lengthy statement dealing with the difficulties of traffic in the factory districts and said the company wants to serve the factories, but that the factories do not adjust their hours to the railway company's desires nor to the wishes of their employees. Several witnesses testified that the schedules were formulated to give the men the best possible working conditions and that the swing runs were changed wherever it was found possible to do so.

Fender Tests in Vancouver

Tests of street car fenders and wheel guards were held in Vancouver, B. C., on Aug. 15 and 19 by the British Columbia Electric Railway, in the presence of company officials, representatives of the fender manufacturers and William Rae, provincial tramway inspector. Tests were carried out, in general, according to the methods prescribed by the Public Service Commission of New York, which were published in this journal Aug. 22, 1908. These methods were used in the tests at Schenectady, Wilmerding and Pittsburgh in 1908.

The following types of fenders were subject to the full number of tests; Watson fender, Watson wheel guard, Pogue fender, Hudson-Bowring wheel guard and the Nel-

son fender. The Pogue fender was invented by a local man.

For all the tests calling for prostrate positions, 50-lb. and 100-lb. dummies stuffed with sawdust and sand were used, while for the upright tests a jointed wooden dummy was employed. The speeds of the cars were 6 and 15 m.p.h., as specified, except for the upright position, in which case the lower speed was considered sufficient. Tests were made both over macadam and cobble pavement.

The results of the tests are now being tabulated in the office of the provincial tramway inspector.

Patrick Calhoun to Retire as President at San Francisco

M. B. Starring, president of the United Railways Investment Company, which through its stock ownership of the California Railway & Power Company, controls the United Railroads of San Francisco, makes the following statement in regard to the retirement of Patrick Calhoun as president of the latter corporation:

"The statement to the effect that Jesse W. Lilienthal will, at an early date, become president of the United Railroads of San Francisco is correct. Mr. Lilienthal is a man of unimpeachable integrity and high standing. It is my understanding that he will surround himself with a board of directors composed of some of the strongest and most influential local men. The management of this property in California and by Californians should redound greatly to the benefit of the city of San Francisco and the owners of the property. The public may expect fair treatment from Mr. Lilienthal and the very best service from the railroads under his management that is practicable in existing conditions. The retiring president has borne the brunt of many personal attacks and brought the railroads through a long and severe struggle, but the press of his private affairs having in the past required prolonged absences from San Francisco and the fact that such absences will inevitably continue and probably increase in duration fully explain his retirement."

James Dalrymple on Visit Here

James Dalrymple, general manager of the Glasgow (Scotland) Corporation Tramways, has arrived in this country to tour the principal cities of the United States and Canada and study electric railway practice. He left Glasgow on Aug. 9 and, after a few days in New York, left that city Aug. 20 and visited Buffalo, Toronto and Cleveland on his way to Chicago, where he arrived Aug. 28. His tentative schedule after leaving Chicago calls for visits to Milwaukee, Minneapolis, Winnipeg, Vancouver, Seattle, San Francisco, Los Angeles, Denver, St. Louis and Washington. Mr. Dalrymple is accompanied by Thomas Nesbit, master of works of Glasgow, who was instructed by the Glasgow Corporation to inspect the river bridges with a view to obtaining ideas for use in connection with the plan to construct a bridge over the Clyde. Interviewed in New York, Mr. Dalrymple said:

"I am especially interested in the experiments New York is carrying on with the double-deck street cars. They are primarily a British institution, although they are found here and there on the Continent. They have proved successful abroad in the large cities and it is possible to handle in a satisfactory way many people on one car.

"No public utility can be operated under a spoils system. To my mind, good service and continuity of service, so far as public servants are concerned, are synonymous. In Glasgow, if a man is making good at the head of a city department, he is kept there no matter how frequently the administration changes. John Young, my predecessor at the head of the Glasgow Tramways, had been in the municipal service thirty years and connected with the tramway management ten years. I have been in the employ of the city thirty-three years. The city corporation can fix the wage rate and the hours of labor of the men under me, but it has nothing to say about whom I shall employ. I am on the same status as the head of a mercantile establishment."

In an interview with Mr. Dalrymple which appeared in the New York *World* he was quoted as discussing the question of fares, referring to the zone system of Glasgow and the flat rate prevalent in the United States. He was reported as unwilling to say that the New York lines could

carry passengers profitably for less than the current 5-cent charge. He explained that a careful examination of running expenses and general conditions would be necessary before this could be determined. He was then quoted as follows:

"In comparing the expenses of the New York companies and our own, a great difference will be found in the cost of labor. Motormen and conductors on our tramways get on an average from \$8 to \$9 a week, less than half what they receive here. This does not mean that we are paying our men poor wages. Our schedule compares very favorably with that paid throughout Scotland for unskilled and even skilled labor. The cost of living is much lower for them there than it would be here, and they are perfectly satisfied. Two years ago we had a strike, but the men were glad to come back without the city making any concessions to them. Aside from this labor cost, the expenses of the two cities would probably be the same as far as materials are concerned. We pay just as much for construction. Nor are we free from taxes. The city treats us just exactly as if we were a private corporation and our property is assessed and taxed accordingly. We pay into the municipal treasury \$250,000 annually. Our investment represents an outlay of \$17,500,000."

Additional Subway Construction Contracts in New York

The Public Service Commission for the First District of New York on Aug. 19 opened bids for the construction of Section No. 1 of Routes Nos. 36 and 37, known as the Woodside, Astoria and Corona rapid transit railroad. The Snare & Triest Company, New York, submitted the lowest of ten bids, its bid aggregating \$884,850. The Astoria, Woodside and Corona line, now partly under construction in Queens Borough, begins at the Queens Plaza of the Queensboro Bridge and runs respectively through Second Avenue to Ditmars Avenue, Astoria, and through Queens Boulevard and Roosevelt Avenue to Sycamore Avenue, Corona. Both are to be elevated railroads and are to be operated jointly by the Interborough Rapid Transit Company and the New York Municipal Railway Corporation. Section No. 1 covers the junction point of the two lines and the joint station near the Queensboro Bridge. Contracts for the Astoria line, Section No. 2, and the Corona line, Section No. 3, were let several months ago and construction work is now in progress. The contractors for the Astoria line are Cooper & Evans, New York, and for the Corona line the E. E. Smith Contracting Company, New York. It is expected that the contract with the Snare & Triest Company for the construction of Section No. 1 will be executed within a short time.

The commission has disapproved a plan submitted by W. S. Menden, chief engineer of the New York Municipal Railway Corporation, for proposed changes in the Eighty-sixth Street station of the Fourth Avenue subway, Brooklyn. This subway, now under construction, is to be operated by the Brooklyn company and the station at Eighty-sixth Street will be the terminal station of the line. The station is to be centered on Eighty-sixth Street and will give direct access from the center of a train to the trolley tracks on the surface through stairways which will be built at that point.

In connection with the construction of the Broadway subway in Manhattan the commission has issued an invitation to building wreckers for bids, to be received Sept. 2, for the demolition of the southerly half of the Astor House at the northwest corner of Broadway and Vesey Street.

Protest Against Fare Ordinance in Portland

In protesting against the ordinance now before the City Council of Portland, Ore., to fix the fare over the lines of the Portland Railway, Light & Power Company at six tickets for 25 cents, good at all hours, Franklin T. Griffith, president of the company, said:

"The Portland Railway, Light & Power Company is always ready to meet the city on any issue of vital importance to the public. I have the interest of Portland just as much at heart as any citizen, even though I am president of a public service corporation. It is unfair that the city should attempt to regulate the fares when so little is known about the company's business. A force of from thirty-five

to forty men is appraising the company's properties, and until the work of these men is completed I myself will not know just what the company owns. We invite inspection, however, at all times. The popular impression is that a public service corporation is always trying to hide. This is not the case with the Portland Railway, Light & Power Company. The books of the company are always open to the city officials and public. My only request is that the city withhold action on the proposed ordinance until a correct appraisal of the company's properties is made. These figures will be submitted to the State Railroad Commission and to the members of this Council and can be easily checked."

Mr. Griffith stated that engineers of the company are making plans for a rearrangement of all seats on street cars. Some of the seats, according to Mr. Griffith, will be placed across the cars instead of lengthwise, as is the practice at present.

Vote on San Francisco Municipal Railway Bond Issue

The electors of San Francisco, Cal., voted on Aug. 26 to adopt the \$3,000,000 bond issue for the extension of the municipal electric railway system. The vote was light. It was 51,649 for the issue and 13,720 against. A vote of two-thirds was required to carry.

It is proposed to construct a double-track street railway on Van Ness Avenue from Market Street to North Point Street, a distance of 2.07 miles. Cars can be operated on this line at a half-minute headway, making the maximum carrying capacity 12,000 passengers per hour. The road will be built with the track centers 14 ft. 6 in. apart and trolley wires will be supported on reinforced concrete poles in the center of the street. These poles will be so constructed that electric lamps for lighting the street can be mounted on each pole.

For ordinary operation it has been estimated this railway should be equipped with twelve cars and that the maximum carrying capacity will be 3000 per hour. If it is desired to operate it independently of the United Railroads at its maximum carrying capacity of 12,000 per hour, sixty-two cars will be required, and it will also be necessary to construct a loop from Van Ness Avenue and Fell Street to Franklin Street, thence to Oak Street and thence returning to Van Ness Avenue in order that passengers may be loaded and unloaded and the direction in which cars are traveling may be reversed without interfering with the headway.

Should it be decided to operate the road in conjunction with the United Railroads, it will be necessary that connections be made with the United Railroads at Market Street in order that eastbound cars on Market Street can be deflected to Van Ness Avenue and southbound cars on Van Ness Avenue to the westbound tracks of the United Railroads on Market Street. If the Fillmore Street tunnel is constructed, additional connections between the United Railroads' tracks and the municipal railway will not be necessary, but if the Fillmore Street tunnel is not constructed some turnouts will have to be installed so that eastbound cars of the United Railroads can be deflected into Van Ness Avenue and southbound cars on Van Ness Avenue can be deflected to the westbound United Railroads' tracks.

The estimated cost of the 2.07 miles of the Van Ness Avenue line follows:

	Ordinary Operation	Extraordinary Operation	Joint Operation
Construction Oak to North Point Street	\$341,200	\$341,200	\$341,200
Additional electric work	.....	20,700	20,700
Terminal loop Fell, Franklin and Oak Streets	.....	16,000	.....
Special track work, Market Street and Van Ness Avenue	.....	.....	4,700
Cars and carhouse (twelve cars)	138,000	.....	138,000
Cars and carhouse (sixty-two cars)	.....	713,000	.....
Total	\$479,200	\$1,090,900	\$504,600
Special track work:			
Sutter Street	.....	.....	4,800
O'Farrell Street	.....	.....	2,200
Ellis Street	.....	.....	2,700
Eddy Street	.....	.....	2,200
Turk Street	.....	.....	2,700
McAllister Street	.....	.....	4,800
Hayes Street	.....	.....	4,800
	\$479,200	\$1,090,900	\$528,800

The Boston Arbitration Hearings

Hearings were continued during the week ended Aug. 30 at Boston by the board of arbitrators designated to settle the differences between the Boston Elevated Railway Company and its employees, the time being entirely occupied by witnesses called by counsel for the men. On account of the large attendance, the hearings have been transferred to Ford Hall, where ample accommodations are available. Following the visits of the board to various carhouses and shops of the company, testimony was presented by J. B. Eastman purporting to show that the cost of living had increased 54 per cent in Boston since 1897, and that it is impossible for a man to support a family of five in reasonable comfort on wages of \$850 per year. He quoted extracts from the report of the Massachusetts Commission on the Cost of Living and other governmental bodies purporting to show that a family budget of \$1,154.40 is necessary for proper living conditions. On cross-examination, Mr. Eastman admitted that few of the data quoted by him applied strictly to conditions in Boston, they having been assembled for Massachusetts as a whole or for the North Atlantic States. He had made no inquiries as to how long certain quoted high prices of foodstuffs and fuel prevailed, and in many cases he took only a single price for a given month's conditions. Counsel for the company brought out the fact that there has been no material increase in rents in suites of the type renting for \$18 to \$20 per month in the past decade. Notably in South Boston, tenants are better housed than in 1901. Many old houses have been renovated. An excellent flat of five rooms and bath, with hot and cold water fixtures, in a building for three families only, separated 10 ft. on each side from the nearest house, can now be rented for from \$17 to \$18 per month, whereas fifteen years ago the same accommodations would have cost \$20 as a minimum.

Among the officials of the company called for examination by the employees' counsel were C. S. Sergeant, vice-president; Alfred J. Guyon, head of the employment department; Cyrus S. Ching, chief instructor; George R. Tripp, superintendent of transportation; J. Henry Neal, general auditor, and George H. Benjamin, trainmaster of rapid transit lines. The following data were presented regarding hourly wage scales for different classes of employees:

WEEKDAY WAGES ON RAPID TRANSIT LINES IN CENTS PER HOUR

	Year					
	First	Second	Third-Fifth	Sixth-Tenth	Eleventh-Fifteenth	Sixteenth and Onward
Brakemen	21.2	21.7	22.4	23	23.7	24.5
Guards	23.9	24.5	25.2	25.8	26.5	27.3
Motormen	26.2	27.8	29.6	30.3	30.9	31.7
Gatemen	16.7	17.3	17.9	18.6	19.3	20

SUNDAY WAGES ON RAPID TRANSIT LINES IN CENTS PER HOUR

Brakemen	22.4	23	23.7	24.4	25.1	25.9
Guards	25.3	25.9	26.6	27.2	28	28.9
Motormen	27.7	29.5	31.3	32	32.7	33.6
Gatemen	17.7	18.3	19	19.7	20.4	21.3

WEEKDAY WAGES ON SURFACE LINES IN CENTS PER HOUR

Conductors and motormen	25.6	26.2	26.8	27.5	28.2	28.9
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SUNDAY WAGES ON SURFACE LINES IN CENTS PER HOUR

Conductors and motormen	27.1	27.7	28.4	29.1	29.8	30.6
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It was brought out that surface line motormen and conductors received \$2 per day in the days of horse traction, and that an increase to \$2.25 was granted when electric motive power was substituted. The first-year regular man now receives \$2.30 per day. During the period of instruction in the company school new employees are paid a flat rate of \$1 per day, and when a man goes upon the extra list he is guaranteed a minimum weekly wage of \$12. The maximum daily wage is \$2.60 for a nine-hour period.

The details of employment, physical and other examinations and an outline of the instruction furnished to applicants for positions in the car service were presented during the hearings. Upon request of counsel for the men the company submitted figures showing that for the year ended July 1, 1911, 6729 men applied for "blue-uniform" work, and of these 1974 were rejected before passing the eyesight tests and physical examination. In the year ended Aug. 16, 1913, 4905 men applied for work and 2650 passed the above preliminary examinations. About 5 per cent of the appli-

cants for medical scrutiny are rejected by the company doctor on their first examination. In the written examinations taken by the average motorman there are 132 questions. A sixty-day probation period is required, and about 23 per cent of the men are dropped from the ranks at the end of this. The company has issued five instruction bulletins to help its employees obtain better results in the operation of semi-convertible cars of different types, in the handling of air brakes and multiple-unit control. There are now 2522 surface line conductors, 2421 motormen, fifty-seven inspectors, eighty-five starters, twenty-five special police, four crossing tenders, eighteen station masters, thirteen collectors, thirty-five gatemen, nine watchmen and five carhouse division inspectors in the service, making a total of 5194 blue-uniformed men on the surface car system, including the gatemen. On the average, a man may become a regular conductor in two years or a motorman in three years. About 75 per cent of the men leaving the service have been in it less than one year; perhaps 15 per cent of those leaving are two-year men, and by resignation and discharge about 720 men leave the service per annum. On the surface lines are 4943 motormen and conductors, of whom 4099 have yet to attain the maximum wage. The graduated scale of wages was adopted in 1903.

On the surface lines 2454 conductors and motormen have been in the service three years or less, while 3009 have been in service five years or less. There are 659 listed in the six-year to ten-year class, 431 in the eleven-year to fifteen-year class, and 844 who have been in the service fifteen years or more. Of 2532 men entering the service in the year ended July, 1911, 487 are now in the company's ranks, and of 1069 entering in the year ended Aug. 16, 1913, 801 are now in the service. Considerable detailed evidence was submitted to show the shortening of running times on surface car routes since 1901, and the company summarized this by stating that in 1898 the average running time on all round trips was 77.4 minutes compared with 50.4 minutes at present, and that the allowed time, including layover, was 93.5 minutes in the former case and is 60.7 minutes at present. The schedule speed is 10.36 m.p.h. compared with 8.5 m.p.h., or, including layovers, 8.59 m.p.h. against 7.1 m.p.h. Counsel for the men contended that increased speeds, larger cars, increased density of traffic on streets, the larger use of automobiles and the installation of signals have tended to add to the responsibilities of the motorman in the past few years. The company maintained that the introduction of electric track switches, prepayment type cars and mechanically operated doors has actually made the work of the motorman and conductor easier in many respects.

A feature of the hearings was an attempt of Mayor Fitzgerald of Boston to enter the corporation counsel of the city in the proceedings, but the board of arbitrators decided that it had no authority to hear arguments by any party outside the parties to the agreement under which the proceedings are being held. The Mayor issued a statement later in which he said that as Boston has investments amounting to \$23,000,000 in subways and looks to the company to provide sinking funds and interest on the bonds and to share in bridge and street repairs and the removal of snow and ice, the financial condition of the road is a matter of much concern to the city. The company expressed no opposition to the appearance of counsel for the city, but the protest of the representatives of the employees' organization was allowed.

Keokuk Plant Dedicated

On Aug. 26 the Keokuk hydroelectric plant, installed by the Mississippi River Power Company, Keokuk, Ia., was officially dedicated. On Aug. 25 Governor Dunne of Illinois, on his way to the conference of Governors at Colorado Springs, Col., attended by his full military staff, celebrated the dedication of the water power on the Illinois side. On the following day Governor George W. Clark of Iowa, with his retinue, dedicated the hydroelectric plant on the Iowa side. The gates in the more than fifty arches were closed and the water above the structure soon submerged the historic and troublesome Des Moines rapids. At the same time the government triple lock in the Keokuk Canal was drawn and "Cooper Lake" was christened after Hugh L. Cooper, who largely conceived and carried out the project.

Receivers Reject Offer of the City of Seattle.—The offer of the city of Seattle, Wash., to take the entire property of the Seattle, Renton & Southern Railway for \$1,200,000, which is \$200,000 less than the offer made by the company, has been rejected by Scott Calhoun and Joseph Parkin, receivers for the company. In a communication which the receivers addressed to the City Council their offer to sell that portion of the line and all its physical assets within the city limits for \$1,200,000, and that portion outside the city for \$200,000 additional, is renewed.

Violation of Labor Law Charged.—An inspector of the State Labor Bureau of New York applied to Magistrate Voorhees in the Adams Street court, Brooklyn, on Aug. 23 for summonses against the officials of the Brooklyn Rapid Transit Company on the charge that it had violated the labor law by permitting conductors and motormen to work for longer periods than fixed by the statute governing the hours of labor. The inspector is reported to have said that the prosecution was friendly and that the officers of the company had facilitated his work of investigation. The summonses issued to the officers of the company were made returnable on Sept. 15.

Renewal of Short-Term Notes in California.—The California Railroad Commission has issued an order permitting the renewal of notes issued by public utility corporations for not more than a twelve months' period without formal application for such renewal to the commission, but such notes may not be refunded by stocks, bonds, notes or evidences of indebtedness without the consent of the commission. In case the combined terms of the original notes and the renewing notes shall not exceed twelve months, the renewal may be made without application to the commission, but a full statement of the transaction must be filed with the commission immediately.

Receipts Under New Fare in Detroit.—In the issue for Aug. 22, 1913, *Electric Railway Service*, which is published in the interest of the Detroit (Mich.) United Railway, said in regard to the receipts of the company from the sale of seven tickets for 25 cents: "Like most of the guesses newspapers make regarding the Detroit United Railway, the guesses by the press as to the receipts of the company from the sale of the new seven-for-a-quarter tickets last Friday, the first day of the sale, were very bad. One of the guesses was \$90,000. As a matter of fact the sale of these tickets for Aug. 15 and 16 totaled only \$37,878.75—less than an average of \$19,000 a day."

Hearing on Proposed Public Utility Bill for Minnesota.—The special committee on public utilities of the Senate of Minnesota, after a four-hour session on Aug. 18, adjourned until Sept. 17 for further hearings. Frank N. Stacy, former deputy public examiner, took about half of the time arguing in favor of state control, and Stiles P. Jones, secretary of the Voters' League of Minneapolis, the other half, speaking against it. Chairman J. M. Hackney said after the meeting that as the committee is instructed to bring in a bill the members desire to hear what different people think ought to go into the bill, rather than addresses for and against state control. Only five of the seven committee members were present at the hearing.

Changes in Pacific Electric Railway Organization.—J. McMillan, general manager of the Pacific Electric Railway, Los Angeles, Cal., has announced the appointment of F. L. Annable, formerly superintendent of the northern division, as general superintendent of the system. A. C. Bradley, formerly superintendent of the San Bernardino division, succeeds Mr. Annable as superintendent of the northern division. The San Bernardino and Riverside divisions are consolidated as the eastern division, and M. P. Groftholdt, formerly superintendent at Riverside, has been appointed superintendent. Edwin Clark, assistant superintendent of the northern division, has been transferred to the western division. H. E. Rodenhouse succeeds Mr. Clark on the northern division.

Progress with Kansas City Negotiations.—The conferences between the receivers of the Metropolitan Street Railway, Kansas City, Mo., and the officers of the city in connection with suggested modifications of the franchise draft submitted by Mayor Jost of Kansas City, Mo., are being continued and the ordinance is being gone over section by section. So far a number of questions of policy have

arisen, but none of the points which have been brought up is regarded as insurmountable. Perhaps the question that has caused the greatest concern so far relates to whether the management of the property shall be vested in a single head. It would be a mere guess to attempt to predict when the negotiations are likely to be concluded. It is, however, regarded as more than likely that each point will be disposed of in turn or that arrangements will be made for the satisfactory future adjustment of such points as cannot be disposed of at this time. The agreement will then be amended to meet whatever new conditions it may be decided are to be part of the franchise pact.

Blanket Franchise Sought in Portland.—Proposing to terminate all leases and contracts under which street cars are operated over bridges owned by the city of Portland, Ore., the Portland Railway, Light & Power Company, has applied to the City Commission for a blanket franchise covering all bridges. The old contract and lease system has caused much trouble and even some litigation on account of its clumsy and indefinite form. The proposed grant is now in the hands of City Attorney La Roche, who is checking the provisions to see that the city's interests are properly safeguarded. Following this the franchise will be advertised for twenty days and will then go before the commission for action. The length of the new franchise is twenty-five years. Under it the company will pay the city at the rate of 3 cents for each car operated over a bridge. At present the company is using the bridges under an agreement to pay this amount pending a franchise settlement. Owing to the fact that the franchise as presented to the city cannot be granted before the middle of September at the earliest, a revocable permit will probably be granted for the use of the Broadway bridge.

Franchise Decision Reversed in Brooklyn.—The Appellate Division of the Supreme Court of New York on July 26, 1913, reversed the decision of Justice Kelby, who dismissed the application for a writ of mandamus to compel the city authorities to permit the Brooklyn, Queens County & Suburban Railroad to build an electric railway along Troy Avenue from Bergen Street to the city line. The company holds a franchise granted in 1892 and including eight extensions, of which the Troy Avenue line is one. Section XII of the railroad law provides that franchises are void unless at least 10 per cent of the construction work is completed within five years; and although the seven other extensions have been built, no work had been done on the Troy Avenue line. The attorneys for the Brooklyn Rapid Transit Company contended that all of the eight extensions are really one, and that the completion of 10 per cent of the eight lines within the time limit held the franchise. The lower court, however, dismissed the writ of mandamus on the theory that the franchise had expired covering the street in question, but the Appellate Division has directed that the writ issue against the city authorities to permit the construction of the line.

Reconstruction Plans for Sea Beach Railway.—Plans for the reconstruction of the Sea Beach Railway have been filed with the Public Service Commission for the First District by the New York Municipal Railway Corporation (Brooklyn Rapid Transit Company). Under the dual system contracts the Sea Beach line, which runs to Coney Island, is to be reconstructed by the company and connected with the Fourth Avenue subway in Brooklyn at about Sixty-fifth Street, so that trains from Manhattan may run through to Coney Island by way of the Fourth Avenue subway and the Sea Beach line. The plans call for the reconstruction of this line as a four-track depressed railroad from the connection with the Fourth Avenue subway to a point immediately south of Eighty-sixth Street. Timothy S. Williams, president of the corporation, in submitting the plans, asked permission of the commission, in order to save time, to let the construction contract immediately without competitive bidding to Major George W. McNulty, who is ready to begin work at once. With the commission's consent, the company proposes to make a contract with McNulty on the unit price basis for the completion of the work within seventeen months, with a bonus for finishing it within that time and a penalty if the time is exceeded. The company points out that it will take at least three months to prepare detailed plans, advertise for bids and award the contract,

which would probably defer the beginning of work until next spring, whereas if work is commenced this fall it can be finished about the time that the extension of the Fourth Avenue subway to Sixty-fifth Street is ready for operation.

PROGRAMS OF ASSOCIATION MEETINGS

Central Electric Railway Traffic Association

The members of the Central Electric Railway Traffic Association will meet on Sept. 16 at the Beckel House, Dayton, Ohio.

Central Electric Railway Association

The members of the Central Electric Railway Association will meet on Nov. 20 at the Hotel Severin, Indianapolis, Ind.

Conference of Presidents of Electrical Associations

The Association Island Corporation is extending an invitation for a conference of the presidents of the electrical associations, societies and clubs in the United States to be held Sept. 3 to 6 at Association Island, Henderson Harbor, N. Y. The letter from J. Robert Crouse, Nela Park, Cleveland, Ohio, explaining the character of the meeting contains a program of addresses which includes the following subjects and speakers:

"Distribution of Electric Energy, Present and Future," by Samuel Insull, president of the Commonwealth Edison Company, Chicago, Ill.

"Future Technical Development in the Electrical Business," by Charles P. Steinmetz, General Electric Company, Schenectady, N. Y.

"State Commission on Control," by John H. Roemer, chairman of the Railroad Commission of Wisconsin, and Martin S. Decker, chairman of the Public Service Commission, Second District, of New York. It is expected that the chairmen of the Massachusetts Commission and New York Commission, First District, will also speak.

It is also expected that addresses will be made by J. B. McCall, president of the National Electric Light Association; A. W. Berresford, vice-president of the American Institute of Electrical Engineers; George H. Harries, president of the American Electric Railway Association; Preston Millar, president of the Illuminating Engineering Society; S. O. Richardson, Jr., president of the Manufacturers' Club; Franklin Overbath, secretary of the Electrical Supply Jobbers' Association; Ernest McCleary, representing Ernest Freeman, president of the National Electrical Contractors' Association, and F. E. Watts, Jupiter of the Jovian Order.

Federation of Trade Press Associations

The tentative program for the eighth annual convention of the Federation of Trade Press Associations in the United States, which is to be held at the Hotel Astor, New York, N. Y., Sept. 18, 19 and 20, 1913, has been issued in pamphlet form. The general subject of the keynote meeting on the morning of Sept. 18 is "Business Promotion Through Trade Press Efficiency." On the afternoon of Sept. 18 there will be an editorial symposium and a circulation symposium, at both of which papers and subjects on editorial and circulation work will be presented and discussed. On the morning of Sept. 19 there will be an advertising symposium at which papers will be presented by educators, publishers, advertisers, advertising managers and advertising agents. Later the same morning there will be a "big business" meeting at which the inside stories of some of the big trade paper publishing successes will be told. On the afternoon of Sept. 19 there will be a mass meeting with inspirational addresses by representative business and professional men on subjects of live interest to editors, publishers and advertisers. On the evening of Sept. 19 the annual banquet will be held at the Hotel Astor. On the morning of Sept. 20 there will be a publishers' symposium at which aggressive policies, standards and the ideals of the trade press publishing business will be discussed. The convention will be concluded with the election of officers, etc. Copies of the program may be obtained from William H. Ukers, chairman of the committee on arrangements, 79 Wall Street, New York.

Financial and Corporate

Stock and Money Market

Aug. 27, 1913.

Trading on the New York Stock Exchange to-day was extremely sluggish and the market continued unsettled until the end, although some issues recovered fractionally from the lowest prices. The special movement included a gain of three-quarters of a point in Brooklyn Rapid Transit. At the close Interborough issues lost all of their earlier substantial gains. Third Avenue also sold off at the close. Rates in the money market to-day were: Call, 2 1/4 @ 2 1/2 per cent; sixty days, 3 1/2 @ 4 per cent; ninety days, 4 1/4 @ 4 1/2 per cent; four months, 4 1/2 @ 4 3/4 per cent; five months and six months, 5 per cent.

In the Philadelphia market heaviness was displayed to-day. The bond transactions totaled about \$20,000.

In the Chicago market the tendency of the general list was toward lower levels. Dealings were moderate.

In the Boston market to-day there was a greater degree of activity at the expense of values. Declines were established in many issues. The tone was heavy.

The Baltimore market to-day was featureless. The only significant sale was 830 shares of the United Railways & Electric Company. The bond transactions totaled \$40,000.

Quotations of traction and manufacturing securities as compared with last week follow:

	Aug. 20	Aug. 27
American Brake Shoe & Foundry (common).....	91	91
American Brake Shoe & Foundry (preferred).....	131	132 1/4
American Cities Company (common).....	35	36 1/2
American Cities Company (preferred).....	63 1/2	64 1/2
American Light & Traction Company (common).....	356	347
American Light & Traction Company (preferred).....	104	104
American Railways Company.....	38 1/4	38 1/4
Aurora, Elgin & Chicago Railroad (common).....	40 1/2	40 1/2
Aurora, Elgin & Chicago Railroad (preferred).....	82 3/4	82
Boston Elevated Railway.....	87	88
Poston Suburban Electric Companies (common).....	7	7 1/2
Boston Suburban Electric Companies (preferred).....	55	55
Boston & Worcester Electric Companies (common).....	*8	*8
Boston & Worcester Electric Companies (preferred).....	42	42
Brooklyn Rapid Transit Company.....	88 7/8	89
Capital Traction Company, Washington.....	115	115
Chicago City Railway.....	*170	*170
Chicago Elevated Railways (common).....	*25	*25
Chicago Elevated Railways (preferred).....	*70	*70
Chicago Railways, ptcptg., ctfr. 1.....	94	94
Chicago Railways, ptcptg., ctfr. 2.....	29 1/2	30 7/8
Chicago Railways, ptcptg., ctfr. 3.....	7 1/2	8
Chicago Railways, ptcptg., ctfr. 4.....	3	3
Cincinnati Street Railway.....	102 1/2	102 1/2
Cleveland Railway.....	103 1/2	103 1/2
Cleveland, Southwestern & Columbus Ry. (common).....	*5 1/2	*5 1/2
Cleveland, Southwestern & Columbus Ry. (preferred).....	*30	*30
Columbus Railway & Light Company.....	18	18
Columbus Railway (common).....	69 1/2	69 1/2
Columbus Railway (preferred).....	88	88
Denver & Northwestern Railway.....	104	*104
Detroit United Railway.....	75	a80
General Electric Company.....	145 1/4	145 1/4
Georgia Railway & Electric Company (common).....	114	114 1/2
Georgia Railway & Electric Company (preferred).....	84	83
Interborough Metropolitan Company (common).....	16 1/4	16 1/4
Interborough Metropolitan Company (preferred).....	61 7/8	62 1/2
International Traction Company (common).....	*30	*30
International Traction Company (preferred).....	95	*95
Kansas City Railway & Light Company (common).....	18	*18
Kansas City Railway & Light Company (preferred).....	37	*37
Lake Shore Electric Railway (common).....	5	*5
Lake Shore Electric Railway (1st preferred).....	92	*92
Lake Shore Electric Railway (2d preferred).....	26	*26
Manhattan Railway.....	128	128
Massachusetts Electric Companies (common).....	16	14
Massachusetts Electric Companies (preferred).....	71	*71 1/2
Milwaukee Electric Railway & Light Co. (preferred).....	95	95
Norfolk Railway & Light Company.....	25	25
North American Company.....	71 1/8	71 1/4
Northern Ohio Light & Traction Company (common).....	62 3/4	60 3/4
Northern Ohio Light & Traction Company (preferred).....	100	a100
Philadelphia Company, Pittsburgh (common).....	42 1/2	43 1/8
Philadelphia Company, Pittsburgh (preferred).....	40	40
Philadelphia Rapid Transit Company.....	22 1/2	23
Portland Railway, Light & Power Company.....	55	55
Public Service Corporation.....	109	109
Third Avenue Railway, New York.....	36 3/4	37 3/4
Toledo Railways & Light Company.....	*6	*6
Twin City Rapid Transit Co., Minneapolis (common).....	106 1/8	105 3/8
Union Traction Company of Indiana (common).....	5	*5
Union Traction Company of Indiana (1st preferred).....	80	*80
Union Traction Company of Indiana (2d preferred).....	20	*20
United Rys. & Electric Company (Baltimore).....	27 1/4	27 1/4
United Rys. Inv. Company (common).....	23	21
United Rys. Inv. Company (preferred).....	44	39 1/2
Virginia Railway & Power Company (common).....	52 1/2	52
Virginia Railway & Power Company (preferred).....	90 1/2	91
Washington Ry. & Electric Company (common).....	89 7/8	89 1/2
Washington Ry. & Electric Company (preferred).....	86 1/2	88
West End Street Railway, Boston (common).....	72	72
West End Street Railway, Boston (preferred).....	88	88
Westinghouse Elec. & Mfg. Company.....	71 1/2	72 1/2
Westinghouse Elec. & Mfg. Company (1st preferred).....	114	114

*Last sale. a Asked.

ANNUAL REPORTS

Montreal Tramways

The statement of income, profit and loss of the Montreal (Que.) Tramways for the year ended June 30, 1913, is as follows:

Gross earnings.....	\$6,754,227
Operating expenses.....	4,032,664
Net earnings.....	\$2,721,563
Deductions:	
City percentage on earnings.....	\$489,080
Interest on bonds and loans.....	721,152
Interest on debenture stock.....	800,000
Taxes.....	73,000
Total deductions.....	2,083,232
Net income.....	\$638,331
Dividends.....	156,382
Surplus.....	\$481,949
Less:	
Proportion of discount on bonds sold.....	\$63,714
Transferred to contingent account.....	200,000
Transferred to capital reserve.....	23,670
Total.....	287,384
Transferred to general surplus.....	\$194,565

E. A. Robert, president of the company, says in part:

"In view of this being the first complete year's operation of the company, the figures submitted cannot be compared with the figures of the last statement, which covered a period of nine months only, but the increase in gross earnings and the ratio of operating expenses to earnings are satisfactory.

"The sum of \$200,000 has been appropriated from surplus for a contingent account in addition to \$300,000 appropriated from earnings for the same purpose, making a credit to this account during the year of \$500,000, which, added to the amount carried forward last year of \$127,648, makes a total credit of \$627,648, against which has been charged the sum of \$442,892, leaving a balance of \$184,756.

"During the year there has been expended on capital account the sum of \$976,008.

"According to the policy adopted by the company of insuring its properties against fire, a large sum of money has been spent in changes and additions, which has resulted in a substantial reduction in premium rates, as well as improving the properties.

"During the year the company has issued \$2,890,000 of its 5 per cent thirty-year gold bonds, and from the sale of these bonds there remains a balance of \$1,637,954.75 for extensions and improvements.

"On the authority of a by-law passed by the shareholders 9993 shares of common stock have been issued and allotted to the shareholders at par.

"The bonds, debentures and common stock of the company have been listed on the Montreal Stock Exchange. Application has also been made to have the company's bonds listed on the London and New York stock exchanges.

"During the year an interim dividend of 5 per cent was paid, and a dividend of 2½ per cent was declared for the quarter ended June 30, 1913, payable on Aug. 1.

"The following exclusive franchises have been granted to the company: Parish of St. Laurent, twenty-five years; town of Mount Royal, twenty-five years; town of Pointe aux Trembles, forty years; town of Montreal East, forty years.

"The company has continued its liberal policy toward its employees in respect to wages, having increased them during the year.

"In addition to the large sum spent on maintenance and upkeep there has been expended on extraordinary renewals of track and rolling stock the sum of \$442,892."

At the annual meeting of the Montreal Tramways on Aug. 5, 1913, the number of directors, pursuant to an amendment to the by-laws previously authorized, was increased from seven to nine. The old directors were re-elected, and two new directors were elected, W. G. Ross, formerly managing director of the Montreal Street Railway, and P. J. McIntosh, New York. Mr. Ross is president of the Asbestos Company of Canada. Mr. McIntosh is a director of the Halifax Tramways Company and private secretary to William Rockefeller. Officers were elected as follows: President, E. A. Robert; first vice-president, J. W. McConnell; second vice-president, F. Howard Wilson; secretary-treas-

urer, Patrick Dubee; assistant secretary-treasurer, A. E. Shaw, and general manager, J. E. Hutchinson.

The board of directors is now constituted as follows: E. A. Robert, J. W. McConnell, Hon. J. M. Wilson, F. H. Wilson, W. C. Finley, J. M. McIntyre, G. G. Foster, K. C. W. G. Ross and P. J. McIntosh.

Youngstown & Ohio River Railroad

The comparative income, profit and loss statements of the Youngstown & Ohio River Railroad, Letonia, Ohio, for the calendar years 1911 and 1912, are as follows:

	1911	1912
Gross earnings.....	\$234,459	\$239,527
Operating expenses.....	122,134	127,770
Earnings less operating expenses.....	\$112,325	\$111,757
Taxes and rentals.....	16,230	17,768
Net earnings.....	\$96,094	\$93,989
Interest on bonds.....	50,000	50,000
Net divisible income.....	\$46,094	\$43,989
Dividends—preferred stock.....	35,000	45,000*
Surplus.....	\$11,094	*\$1,011
Ratio operating expenses to earnings, per cent.....	52	53

* Deficit.

The analysis of earnings and other operating statistics for these same years are given herewith:

Analysis of Earnings		
Passenger.....	\$166,835	\$168,078
Freight.....	47,928	48,156
Power.....	17,927	21,126
Miscellaneous.....	1,769	2,167
Total.....	\$234,459	\$239,527
Miles of main track.....	36	36
Gross earnings per track mile.....	\$6,514	\$6,654
Net earnings per track mile.....	3,120	3,105
Car Mileage		
Passenger.....	508,913	500,111
Freight.....	186,077	172,941
Total car mileage.....	694,990	673,052
Gross Income per Car Mile		
Total.....	\$0.3356	\$0.3559
Passenger.....	0.3665	0.3826
Freight.....	0.2575	0.2785
Passengers carried.....	816,278	816,732
Average fare per passenger.....	\$0.204	\$0.197

Will Christy, president, says in part:

"Additions and betterments have been made and paid for during the year as follows: Additions to motive power and rolling stock, \$8,319; tie plates, \$1,033; new freight sidings, \$628, or a total of \$9,980.

"Additions made to motive power and rolling stock during the year consisted of two second-hand locomotives, twelve dump cars, four flat cars, one gondola and one box car.

"The surplus of the company as shown by the condensed balance sheet of Dec. 31, 1913, is \$16,746."

Springfield & Xenia Railway

The following is a comparative statement of the earnings and operating statistics of the Springfield & Xenia Railway, Springfield, Ohio, for the two years ended Dec. 31, 1911 and 1912:

	1911	1912
Gross earnings.....	\$72,984	\$74,376
Operating expenses and taxes.....	52,162	53,486
Net earnings from operation.....	\$20,822	\$20,890
Car miles operated.....	243,846	243,758
Passengers carried.....	453,041	454,939
Gross earnings per main track mile.....	\$4.007	\$4.132
Gross income per car mile.....	0.2993	0.3052
Operating expenses and taxes per car mile.....	0.2139	0.2194
Net income per car mile.....	0.0854	0.0858
Gross revenue per pay passenger.....	0.1611	0.1635
Passenger revenue per pay passenger.....	0.1430	0.1461

Warren Bicknell, president of the company, says in part:

"During the past year two sets of new Baldwin trucks were purchased; a new turn-out was installed in Springfield; all the cars were overhauled and repainted; approximately 3000 new ties were installed in the track and the entire physical property of the company was maintained.

"The expenditures charged to the betterment account during the year aggregated but \$697.

"The preferred stock of the company is 5 per cent cumu-

lative and from the date of its original issue to Dec. 31, 1912, is entitled to preferential dividends aggregating 31 $\frac{3}{4}$ per cent. From Oct. 5, 1908, up to Dec. 31, 1913, the company has paid dividends to the amount of 29 per cent, or on Jan. 1, 1913, the unpaid preferential accumulations upon the preferred stock aggregated 2 $\frac{3}{4}$ per cent. The profit and loss surplus, as shown on the balance sheet as of Dec. 31, 1912, is \$27,938.

Northern Electric Railway Financing.

E. R. Lilienthal, president of the Northern Electric Railway, Chico, Cal., made a recent trip to New York to discuss plans for the permanent financing of his company. Discussing the matter, the *San Francisco Chronicle* says:

"All details are lacking, but the permanent financing of this system will certainly represent an investment close to \$20,000,000 for present construction and whatever additional money future plans of construction render necessary. The company is capitalized for \$25,000,000, of which \$10,000,000 is preferred and \$15,000,000 common, all outstanding. There is an authorized bonded indebtedness of \$25,000,000, of which \$5,275,000 is outstanding, \$3,784,000 reserved for prior liens and \$15,941,000 reserved for future construction. The system has not earned its full charges, although the present rate of improvement will enable it to meet from operation all essential costs in the next fiscal year. The deficit has been met in part and guaranteed in part by the group of capitalists that projected and built the system. In addition large amounts have gone into construction and improvement that have never been permanently funded. No one believes that the present bonded debt of the system represents more than half its cash cost, so that there has been accumulated a large floating obligation that has to be funded."

In an interview Mr. Lilienthal said:

"I have ordered the completion of the Vacaville-Suisun branch, and expect to have it in operation early in September, adding another important link to the system."

Concerning the report that the Santa Fé contemplated the purchase of the Northern Electric Railway, he said:

"I would not be arranging for permanent financing if the Northern Electric were about to be sold to another road."

Financing Plans for Buffalo & Lake Erie Traction Company

Although the new corporation which will take over the Buffalo & Lake Erie Traction Company under foreclosure of its general and refunding mortgage and will also acquire other properties, as outlined in the *ELECTRIC RAILWAY JOURNAL* of July 26, 1913, page 156, has not yet been formally named, substantially all of the financing which will be done in the reorganization has been decided upon.

Bonds of the underlying companies of the Buffalo & Lake Erie Traction Company will not be disturbed but will be placed in a stronger position. The Buffalo & Lake Erie Traction Company has outstanding \$7,066,000 of general and refunding bonds, of which \$6,000,000 are in the hands of the public and \$1,066,000 in the hands of the bankers for the corporation. Under the plan of reorganization the bankers will take over \$448,300 par value of the capital stock of the new company and in return will deliver to the committee for cancellation \$1,066,000 of the general and refunding bonds and \$359,000 of unsecured notes of the old company. In addition they will deliver cash to pay \$185,000 of matured coupons up to Nov. 1, 1912, on the general and refunding bonds, \$125,000 for reorganization expenses and working capital for the new company, and \$75,000 for current operating accounts of the old company.

The bankers will also subscribe at par in cash to \$935,000 of the 7 per cent preferred stock of the Canadian-American Power Company, of which \$500,000 will be used by the power company for working capital and \$435,000 for the acquisition from the bankers of all the capital stock of the Niagara Falls Electrical Transmission Company. They will sell to the new corporation the \$3,000,000 of stock of the Canadian-American Power Company, receiving in exchange \$3,000,000 par value of stock of the new company.

For 81 per cent of preferred and 81 per cent of the common stock of the Buffalo, Lockport & Rochester Railway,

the bankers will receive \$866,700 par value of stock of the new company. Holders of the \$6,000,000 of general and refunding bonds of the Buffalo & Lake Erie Traction Company will receive \$6,000,000 of Series "B" bonds of the new company. These bonds will bear interest at the rate of 2 per cent for 1915, 4 per cent for 1916 and 5 per cent for 1917 and thereafter.

With this financing completed, the new company will have no debt beyond its funded debt of \$6,000,000 and will have \$5,250,000 of capital stock outstanding. By this reorganization the capitalization of the Buffalo & Lake Erie Traction Company will be reduced \$7,154,100, or the amount of its common and preferred stocks now outstanding. Estimates of earnings of the new corporation, made by Ford, Bacon & Davis for 1914, 1915, 1916 and 1917, indicate that it will earn, from the date of its organization, the interest on its \$6,000,000 of bonds and a full dividend of 6 per cent on its outstanding \$5,250,000 of capital stock, and for the four years in addition will accumulate over \$1,000,000 of surplus, which will be available for betterments and improvements.

In addition to the series "B" bonds the new company will be authorized to issue series "A" bonds to an amount not to exceed \$19,000,000, at either 5 per cent or 6 per cent interest, for the purpose of making additions and betterments to the property and to refund the underlying mortgage bonds. They will be a lien on the entire property, and in addition will have as security all the common and the preferred stock of the Canadian-American Power Company and the Buffalo, Lockport & Rochester Railway owned by the new company which it is proposed to organize as the successor corporation.

American Cities Company, New York, N. Y.—A special meeting of the stockholders of the United Gas & Electric Corporation has been called for Sept. 24 to authorize an increase in the company's capital for the purpose of acquiring the stock control of the American Cities. It is proposed to create a new class of stock, second preferred, and to issue \$12,500,000 of this, increasing the corporation's capital from \$45,000,000 to \$57,500,000. The new stock is to bear interest at 2 per cent for 1914, the rate of interest being increased annually by 1 per cent until a rate of 6 per cent is reached, at which it will be continued. It is stated that the purchase of American Cities stock is to be made by the exchange of stock on a par basis, seventy-five shares of the new second preferred stock and twenty-five shares of the common stock of the United Gas & Electric Corporation being exchanged for each 100 shares of the common stock of the American Cities company.

American Public Utilities Company, Grand Rapids, Mich.—At the recent annual meeting of the American Public Utilities Company it was decided to increase the board of directors from seven to sixteen. The position of chairman of the board of directors was created to be filled at a later date. A resolution was adopted to the effect that instead of an increase in the common stock dividend the money should be conserved for the company's use. Immediately following the meeting of the stockholders, the board of directors met and appointed the following named executive committee: Joseph R. Brewer, chairman; C. B. Kelsey, George D. Whitworth, Joseph S. Hart, Blaine Gavett, C. A. Boalt and Charles McPherson. H. L. Nason, of the firm of H. L. Nason & Company, Boston, was elected a director.

Dry Dock, East Broadway & Battery Railroad, New York, N. Y.—Upon the application of the Dry Dock, East Broadway & Battery Railroad, a hearing was set for Aug. 26 before the Public Service Commission of the First District of New York for permission to issue a refunding mortgage for \$4,300,000 and to issue thereunder bonds as follows: \$1,500,000 series "A" bonds, \$560,000 series "B" bonds and \$2,240,000 series "C." The "A" bonds are to bear interest at 5 per cent and to be a prior lien. The series "B" and "C" bonds are to bear interest at 4 per cent and to be succeeding liens. It is stated in the petition that this refunding will effect a reduction of \$1,654,594 in the debts of the company, due to a reduction of certain claims, among them a claim of the Third Avenue Railway of \$1,822,963, scaled down to \$1,500,000.

Evansville (Ind.) Railways.—The Evansville Railways has filed a petition with the Public Service Commission of Indiana asking permission to issue \$273,000 of five-year 6 per cent notes, maturing April 1, 1918, and to sell, hypothecate or otherwise dispose of them at not less than 75 cents on the dollar; also to sell, hypothecate or otherwise dispose of shares of its common stock, not to exceed in amount 50 per cent of the notes, at not less than \$20 per share. The company sets out in its petition that it has floating debts which it wishes to pay, and that it proposes to use the \$273,000 to pay off these debts, amounting to \$204,732.

Goldsboro (N. C.) Traction Company.—Judge Connor in the United States District Court at Raleigh, N. C., on Aug. 19 ordered the foreclosure sale of the property of the Goldsboro Traction Company in the suit brought by the Merchants' Trust & Deposit Company, as trustee, which was noted in the *ELECTRIC RAILWAY JOURNAL* of July 12, 1913.

Grand Valley Railway, Brantford, Ont.—J. L. Addison, on behalf of himself and other holders of the securities of the Grand Valley Railway, has entered action at Osgoode Hall, Toronto, against A. J. Pattison, W. S. Dinnick, John Firstbrook, E. T. Fox, J. S. King and W. R. Turnbull, Toronto, and M. A. Verner, Pittsburgh, for an accounting by the directors in respect to their disposition of the company's assets.

Hudson & Manhattan Railroad, New York, N. Y.—A routine step in the reorganization plan of the finances of the Hudson & Manhattan Railroad was taken on Aug. 25 in the filing of the two new mortgages totaling \$98,574,000, under the plan of organization recently adopted by the stockholders. The mortgages are those on which are based the \$65,000,000 authorized issue of first mortgage 5 per cent bonds and the \$33,574,000 issue of adjustment income 5 per cent bonds. The trustees are the Central Trust Company and the Guaranty Trust Company.

Interborough-Metropolitan Company, New York, N. Y.—The annual meeting of the stockholders of the Interborough-Metropolitan Company will be held on Sept. 16, 1913, to determine whether the number of directors shall be reduced from twenty-one to fifteen; to elect directors to serve for a term of three years, and to transact such other business as may properly come before the meeting.

Kansas City Railway & Light Company, Kansas City, Mo.—The committee representing holders of the 6 per cent notes of the Kansas City Railway & Light Company, due Sept. 1, 1912, deposited under the agreement dated Aug. 15, 1913, announces that it has arranged for payment by that company on Sept. 2, at the office of the New York Trust Company, of interest on these notes from March 1 to Sept. 1, 1913, at the rate of 7 per cent. Notes and certificates of deposit must be presented for indorsement.

Morris County Traction Company, Morristown, N. J.—The Morris County Traction Company recently filed a new mortgage to the Safe Deposit & Trust Company, Pittsburgh, as trustee, to secure an authorized issue of \$5,000,000 of bonds due 1948, which issue was mentioned in the *ELECTRIC RAILWAY JOURNAL* of March 1, 1913.

New England Investment & Security Company, Springfield, Mass.—The regular monthly meeting of the trustees of the New England Investment & Security Company was held in Boston on Aug. 27. E. N. Sanderson, H. H. Porter and E. C. Foster were elected trustees, and E. N. Sanderson was elected vice-president of the board. Mr. Sanderson takes the place of Laurence Minot, who resigned several months ago, and Messrs. Porter and Foster take the places of Bentley W. Warren, Boston, and Charles E. Ware, Fitchburg. The board is now composed of H. L. Higginson, A. Willard Damon, J. T. Harmer, president; Augustus G. Bullock, E. N. Sanderson, vice-president; H. H. Porter and E. C. Foster.

New York Consolidated Railroad, Brooklyn, N. Y.—The Public Service Commission for the First District will hold a hearing on Sept. 3 on the joint petition of the New York Consolidated Railroad and the South Brooklyn Railway for the approval of an agreement between them dated Aug. 1, 1913. By this agreement portions of the Sea Beach line owned by the New York Consolidated Railroad are to be leased to the South Brooklyn Railway, but such portions

are not a part of the Sea Beach line which is to be used under the dual system contracts, and the proposed agreement also gives the South Brooklyn Company trackage rights over this part of the line. For the first five years the annual rental is to be \$100 and thereafter \$15,000 in addition to taxes.

New York, New Haven & Hartford Railroad, New Haven, Conn.—A petition has been filed by the New York, New Haven & Hartford Railroad with the Massachusetts Public Service Commission for authority to issue \$67,552,400 of convertible bonds, as voted by the stockholders on Aug. 22. Sept. 9, at 10.30 a. m., was the date provisionally designated by the commission for the first hearing on the petition and it has been definitely fixed upon the receipt of the amended petition in a broader and final form.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—Permission has been granted to the Oakland, Antioch & Eastern Railway to issue \$1,000,000 of 5 per cent bonds to pay for construction of the line from Bay Point to Sacramento. The bonds are to be pledged at 60 and sold at not less than 80. In explanation of the recent assessment of \$5 a share levied upon the stockholders of the company, which was noted in the *ELECTRIC RAILWAY JOURNAL* of Aug. 16, 1913, W. Arnstein, president of the company, sets forth the following reasons in a communication to the stockholders: First, the greater cost of terminal properties in Oakland and in Sacramento due to particularly advantageous locations being acquired; second, a large increase in equipment and operating facilities over the original estimate, due to the large amount of intermediate business accruing to the road through the rapid development in the territory traversed; third, the installation of an automatic block signal system, the wisdom of which, although it entailed a large expenditure not provided for at the beginning, cannot be questioned, especially in view of the recent serious electric railway accidents; fourth, the additional size of the ferry boats to take care of the increase in traffic and the additional size of the slips necessitated by the larger boats and by the desire of the company to dock its ships at its own wharf so as to be able to transfer freight to its cars in the same manner as the Southern Pacific does at Long Wharf, Oakland; fifth, the concreting in the tunnel; sixth, the building of a line on standard steam specifications in order to be able to handle any transcontinental business, either passenger or freight, in standard equipment, and, seventh, the purchase of a bridge site and the preliminary work done, the War Department permit having been granted after the estimates of costs of completion had been made.

Oklahoma Railway, Oklahoma City, Okla.—The stockholders of the Oklahoma Railway will vote on Sept. 12 on increasing the bonded debt by \$1,200,000 or any part thereof for the refunding of the present floating debt and for the construction and acquisition of other properties. At present the company is laying tracks on an 8.2-mile extension building under the name of the Norman Interurban Railway. Plans also call for the building during 1914 of a 16-mile extension from the northern terminus at Edmond to Guthrie.

Pacific Gas & Electric Company, San Francisco, Cal.—Further particulars have been received in regard to the proposed issue, subject to the authorization by the stockholders, of collateral notes of the Pacific Gas & Electric Company, \$4,500,000 of which have been sold to a syndicate headed by Harris, Forbes & Company and N. W. Halsey & Company, as noted in the *ELECTRIC RAILWAY JOURNAL* of Aug. 9, 1913. President Drum, in a circular dated July 26, states that the stockholders will vote on Sept. 10 on authorizing an issue of 6 per cent gold bonds of a maximum value of \$7,000,000 to mature June 26, 1914, and to be secured by pledge of collateral of \$5,000,000 general lien 6 per cent bonds and \$5,000,000 general and refunding 5 per cent bonds, both of which issues have heretofore been authorized by the stockholders. On Aug. 4 the company applied to the California Railroad Commission for authority to issue the \$5,000,000 of convertible general lien bonds in place of the \$5,000,000 of convertible debentures previously authorized. These two issues of collateral will be deposited from time to time with the

Bankers' Trust Company, New York, trustee, under the gold note agreement when and as the company receives the proceeds of the loan. The proceeds of these \$4,500,000 of notes are to be used to take up demand notes for advances already made by the bankers and yet to be made, pending authorization of the gold notes by the stockholders, and to pay other current indebtedness of the company for the prosecution of necessary construction work and the extension of the company's business. The remainder of the authorized issue, \$2,500,000, will be reserved to meet possible future notes. This method of financing, it is stated, has been adopted by the Pacific Gas & Electric Company as the result of scarcity of capital and the difficulty at this time of obtaining a good market for the bonds which are pledged to secure these notes. It is anticipated that before the maturity of the notes it will be possible for the company to market its bonds upon more favorable terms.

Pittsburgh (Pa.) Railways.—In the ELECTRIC RAILWAY JOURNAL of Aug. 23, 1913, reference was made to a new mortgage for \$20,000,000 filed by the Pittsburgh Railways. This is one step in the new scheme of financing brought about by certain adjustments between the Pittsburgh Railways and the Philadelphia Company, the controlling interest, whereby the subsidiary will henceforth do its own financing. Last year, after the organization of the Duquesne Light Company, the Philadelphia Company was able, by reason of an exchange of stocks and other adjustments, to increase its surplus by \$5,959,429. Because of this increase in surplus and also by a recognition of part of an increase in book values of stocks of certain gas companies in which extensive improvements and additions had been made out of earnings, it also was in position to adjust its accounts with the Pittsburgh Railways. The principal transaction involved in this adjustment was the sale to the railway company of stocks of street railway and traction companies included in the operating system of the railway company, which were carried on the books of the Philadelphia Company at \$8,265,000, and also the turning over to the railway company of the bills payable of that company and certain underlying street railways amounting in book value to \$10,640,052. For these stocks and bills payable the Philadelphia Company received from the railway company \$10,000,000 par value 6 per cent non-cumulative debentures, the interest upon which is payable as and when earned. By these transactions the railway company was relieved from a large indebtedness to the Philadelphia Company, its sole stockholder, and also from the payment of large sums of money annually as interest upon such indebtedness.

Public Service Corporation of New Jersey, Newark, N. J.—On July 7 the Paterson & State Line Traction Company, a sub-company of the Public Service Corporation of New Jersey, filed a certificate of increase in the authorized capital stock from \$100,000 to \$300,000.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—The trustees in charge of the refinancing of the San Francisco-Oakland Terminal Railways have requested an extension of time on the company's notes for a period of one year. The holders of the minority stock, about 20,000 shares, of the Oakland Traction, the San Francisco, Oakland & San José Consolidated Railway and the San Francisco-Oakland Terminal Railways were recently requested by Henry Wadsworth, Judge E. Nusbaumer and R. Whitehead, the committee representing them, to send 10 cents per share to meet the expense of preliminary examination. This committee finds after a careful examination of the statements rendered to the San Francisco-Oakland Terminal Railways by accountants that apparently injustice has been done to the minority stockholders. They desire to recommend therefore that chartered accountants be employed to make a thorough investigation of the financial conditions and expenditures of the company for the past three years. In view of the representations made by the trustees for the Smith interests, however, it has been decided to defer bringing any suit.

Southern Pacific Company, San Francisco, Cal.—A decision has been rendered by the California Railroad Commission granting the application of the Southern Pacific Company for permission to issue the remaining \$5,120,000

of equipment trust certificates previously authorized, at a discount of 6 per cent on the basis of the average maturities of the face amount of said certificates.

Third Avenue Railway, New York, N. Y.—On Sept. 3 the Public Service Commission for the First District of New York will hold a hearing before Commissioner Milo R. Maltbie on the application of the Belt Line Railway Corporation and the Third Avenue Railway for permission to increase the capital stock of the Belt Line company from \$600,000 to \$750,000, to issue capital stock of the company to defray the cost of acquiring storage battery cars and to authorize the acquisition by the Third Avenue Railway of such capital stock. The Belt Line company now has \$481,000 capital stock and \$1,750,000 bonds outstanding, all of which is held by the Third Avenue Railway. The Belt Line company has been operating storage battery cars for some time and it now proposes to purchase thirty-nine additional cars of the same type at a cost of about \$129,000.

Union Elevated Railroad, Chicago, Ill.—A jury in Judge Bowles' court recently decided in favor of the Union Elevated Railroad in a suit brought against it by the late Potter Palmer in 1900, demanding \$500,000 damages for alleged injuries to the Palmer House through the construction of the loop. In a similar suit brought by Mrs. Palmer for \$250,000 damages, a jury in Judge Stough's Court disagreed on May 20, 1913.

Union Traction Company of Indiana, Anderson, Ind.—Four one-thousand-dollar and two five-hundred-dollar first mortgage 6 per cent bonds of 1897 of the Citizens' Street Railway, of Muncie, Ind., have been called by the Union Traction Company of Indiana for payment at 105 and interest, at the Guaranty Trust & Safe Deposit Company, Philadelphia, on Sept. 1, 1913.

United Properties Company, Oakland, Cal.—It is reported that the trustees of the United Properties Company have given R. G. Hanford an option to purchase the electric lines controlled by the San Francisco-Oakland Terminal Railways, good until Jan. 1, 1914, to enable them to open negotiations in London for the sale of the properties.

ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS, PHILADELPHIA, PA.							
Period			Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m.,	July,	'13	\$490,472	.....	.....	.....	.....
1 "	July,	'12	450,606	.....	.....	.....	.....
ATLANTIC SHORE RAILWAY, SANFORD, MAINE							
1m.,	June,	'13	\$34,420	\$28,109	\$6,311	\$642	\$5,669
1 "	June,	'12	30,591	22,735	7,857	582	7,275
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, MO.							
1m.,	June,	'13	\$206,491	*\$127,300	\$79,191	\$47,537	\$31,654
1 "	June,	'12	194,426	*111,369	83,057	48,279	34,778
12 "	June,	'13	2,565,154	*1,427,091	1,138,063	584,432	553,631
12 "	June,	'12	2,336,283	*1,298,591	1,037,692	563,410	474,282
JOPLIN & PITTSBURG RAILWAY, PITTSBURG, KAN.							
1m.,	July,	'13	\$51,651	*\$31,271	\$20,380	\$12,542	\$7,838
1 "	July,	'12	48,625	*27,070	21,555	12,542	9,013
12 "	July,	'13	563,311	*332,852	230,459	150,500	79,959
12 "	July,	'12	508,833	*300,274	208,559	154,993	53,566
LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.							
1m.,	July,	'13	\$162,401	\$64,121	\$98,281	\$46,665	\$51,616
1 "	July,	'12	137,837	58,403	79,433	42,464	36,969
12 "	July,	'13	1,686,525	715,578	970,948	538,791	432,156
12 "	July,	'12	1,439,649	633,216	806,432	488,126	318,306
MONONGAHELA VALLEY TRACTION COMPANY, FAIRMONT, W. VA.							
1m.,	July,	'13	\$80,997	\$29,103	\$51,895	\$24,527	\$27,367
1 "	July,	'12	79,822	31,818	48,004	25,333	22,671
7 "	July,	'13	523,064	180,758	342,305	169,187	173,118
7 "	July,	'12	466,845	190,960	275,886	138,439	137,447
PHILADELPHIA (PA.) RAPID TRANSIT COMPANY							
1m.,	July,	'13	\$1,996,613	\$1,192,531	\$804,082	\$797,691	\$6,391
1 "	July,	'12	1,918,941	1,156,227	762,713	758,181	4,532
PORTLAND (MAINE) RAILROAD							
1m.,	June,	'13	\$93,150	*\$62,817	\$30,333	\$11,214	\$19,119
1 "	June,	'12	89,365	*60,012	29,353	10,206	19,147
12 "	June,	'13	1,007,479	*711,240	296,239	125,003	171,236
12 "	June,	'12	973,898	*704,665	269,233	116,749	152,484
UNION RAILWAY, GAS & ELECTRIC COMPANY, ROCKFORD, ILL.							
1m.,	June,	'13	\$354,373	*\$189,459	\$164,914	\$97,091	\$67,823
1 "	June,	'12	272,714	*162,152	110,562	69,302	41,260
12 "	June,	'13	4,545,575	*2,563,964	1,981,611	1,140,932	840,679
12 "	June,	'12	3,422,973	*1,984,431	1,438,542	789,944	648,598

*Includes taxes.

Traffic and Transportation

Accidents on Interstate Electric Railways

The Interstate Commerce Commission, Washington, D. C., has issued a summary for the three months ended Dec. 31, 1912, of the casualties to persons on steam and electric railways under its jurisdiction. The total number of casualties of all classes reported amounted to 2967 for persons killed and 51,323 for persons injured. This statement includes 250 passengers killed and 4334 passengers injured, 2611 employees killed and 18,729 employees injured. The casualties were sustained by employees while at work, by passengers getting on or off cars, by persons at highway crossings, by persons doing business at stations, etc., as well as by trespassers and others. In addition to the above, 106 persons were killed and 28,260 persons injured in casualties reported as "industrial accidents," which term covers accidents not involved in train operation, but occurring to railway employees, other than trainmen, on railway premises. The report for interstate electric railways by themselves shows that the list of those killed during the three months was 111, or 3.7 per cent of the total, and the list of injured 1387, or 2.7 per cent, which compare with 3.4 per cent and 2.6 per cent, respectively, during the preceding three months.

From the statement of the commission, which is appended, the columns have been eliminated which show casualties to employees not on duty and to trespassers. Of the former class none was killed and six were injured, while thirty-one trespassers were killed and thirty-six injured. The summary, with these eliminations, is as follows:

Causes.	Number of Accidents.							Total Persons Killed.	Total Persons Injured.
	Passengers Killed.	Passengers Injured.	Employees on Duty Killed.	Employees on Duty Injured.	Other Persons Not Trespassing Killed.	Other Persons Not Trespassing Injured.	Total Persons Killed.		
Collisions	61	2	347	3	39	..	..	386	29
Derailments	18	..	26	2	3	..	..	29	..
Accidents to trains, cars, or engines, except collisions, derailments and boiler explosions.....	2	..	14	..	1	..	..	15	..
Bursting of, or defects in, locomotive boilers, or boiler attachments.....	..	..	..	..	..	..	..	..	..
Total train accidents...	81	2	387	5	43	..	..	430	..
Accidents to roadway or bridges not causing derailment, such as fires, floods, landslides, explosions, etc.....	1	..	..	..	..	..	..	..	..
Coupling or uncoupling cars (exclusive of accidents with air or steam hose) .....	..	..	..	..	6	..	..	6	..
While doing other work about trains (not in shops or engine houses) or while attending switches .....	..	..	..	1	35	..	..	1	35
Coming in contact, while riding on cars, with overhead bridges, tunnels, or any signal apparatus or fixed structure above or at side of track.....	..	..	5	1	4	..	..	1	9
Falling from cars or engines .....	..	2	18	3	15	..	..	5	37
Getting on or off cars or engines .....	..	4	321	1	15	..	1	5	348
Other accidents on or around trains not here named .....	..	..	65	..	9	..	13	..	87
Being struck or run over by engines or cars at stations or yards.....	..	..	2	..	2	4	4	5	13
Being struck or run over by engines or cars at highway grade crossings .....	..	..	..	..	37	111	38	112	..
Being struck or run over by engines or cars at other places .....	..	..	4	2	2	15	66	44	93
Other causes .....	..	..	34	..	1	..	2	2	38
Total, other than train accidents	1	6	449	8	89	56	197	101	777
Grand total, exclusive of industrial accidents...	..	8	836	13	132	56	197	108	1,207
Industrial accidents to employees .....	..	..	..	3	180	..	..	3	180
Grand total.....	..	8	836	16	312	56	197	111	1,387

The bulletin published by the commission also contains the following statement of the collisions and derailments on the interstate electric railways during October, November and December, 1912:

Classes	Number	Damage to Road and Equipment and Cost of Clearing Wrecks	Number of Persons Killed Injured	
Collisions, rear	29	\$5,336	1	263
Collisions, butting	15	11,920	3	93
Collisions, trains separating .....	..	..	..	..
Collisions, miscellaneous	17	8,486	1	36
Total	61	\$25,742	5	386
Derailments due to defects of roadway	4	\$682	..	19
Derailments due to defects of equipment	5	5,938	..	1
Derailments due to negligence of trainmen, signalmen, etc.....	3	1,010	..	4
Derailments due to unforeseen obstruction of track, etc.....	3	3,555	1	4
Derailments due to malicious obstruction of track, etc.....	1	..	1	..
Derailments due to miscellaneous causes	2	586	..	1
Total	18	\$11,771	2	29
Total collisions and derailments..	79	\$37,513	7	415
Total for same quarter of—				
1911	65	33,395	10	376
1910	67	49,677	41	455
1909	66	19,316	5	222

Commutation Tickets on South Carolina Road.—The Greenville, Spartanburg & Anderson Railway, Greenville, S. C., has placed on sale commutation tickets prepared on the basis of 1 cent a mile. The fixed minimum fare is 5 cents.

Inquiry Into Operating Methods of Pacific Electric Railway.—The Railroad Commission of California rendered a decision subsequent to an investigation into the methods of operation and equipment of the Pacific Electric Railway, Los Angeles, requiring the company to submit for the commission's approval a complete plan concerning the instruction and examination of its employees, and the number and protection of its railroad crossings.

Cleveland Employees Protest to Federation of Labor.—Officials of the local branch of the union of employees of the Cleveland (Ohio) Railway have taken their grievances against the schedules arranged by Peter Witt, street railway commissioner, to the Cleveland Federation of Labor, and they have been placed in the hands of the grievance committee for investigation. The employees claim that they are not getting their lay-over periods at the end of their runs and that sometimes they find it impossible to make the runs on time.

Traffic Delayed Pending Damage Payment.—The Detroit (Mich.) United Railway had one of its lines tied up recently by a constable who seized a car to satisfy a judgment of \$138 damages. The damages against the company had been only recently assessed, but the claimant became uneasy because the payment was not made immediately after the decision was rendered. The constable refused to permit the car to move until the payment for damages was brought to him from the general office. In the interval the operation of the entire line was delayed.

Courtesy Movement in Columbus, Ohio.—In order to bring about a better understanding between the Columbus Railway & Light Company, Columbus, Ohio, and the public, the company has begun a system of instruction for employees that will create a desire for efficiency and right treatment of others. As a first step in this direction bronze watch fobs attached to a neat leather strap will be given to all motormen, conductors and carhouse men. On the face of the medallion will be the words "Safety First," and on the obverse side "Be Patient, Courteous and Attentive."

Hearing on Boston Transfers.—The Public Service Commission of Massachusetts gave a hearing to the Boston Elevated Railway on Aug. 21 upon the abuse of transfer facilities in connection with the operation of certain surface lines connecting with the Cambridge subway. The company pointed out that existing transfer arrangements enable passengers on various lines entering Kendall Square to take surface cars into the heart of Boston and return to the starting point on payment of a single fare, the abuse

being most common during the lunch hour. The company desires to curtail some of the transfer facilities, and the board took the case under advisement.

Safety First Meetings at New Albany.—Following the quarterly meeting of employes of the Louisville & Southern Indiana Traction Company, the Louisville & Northern Railway & Lighting Company, the United Gas & Electric Company and other public service properties centering at New Albany, Ind., it was announced that the meetings would hereafter be put in charge of the men themselves instead of being addressed only by officers of the companies. The quarterly sessions, which have been held for several years, are for the discussion of "safety first" principles and have been successful. The recent meeting was held on Aug. 22 at the Carnegie library, New Albany. One session was at 11 a. m., giving the night men a chance to attend, and the other at 3 p. m. Chester P. Wilson, Indianapolis, president of the Interstate Public Utilities Company; Alexander Shane, and Charles B. Scott, manager of the bureau of safety of the Middle West Utilities Company, Chicago, were the speakers.

Petition for Smoking Cars in New York.—The following petition, addressed to Edward E. McCaul, chairman of the Public Service Commission of the First District of New York, is being distributed in Greater New York: "We, the undersigned citizens of the State of New York, are in favor of the operation of smoking cars or cars having smoking compartments on all surface and elevated lines of transportation in the city of New York, on the ground that thereby a great majority of the public will be afforded a privilege to which, by reason of their overwhelming number, they have a right. We respectfully request your honorable body to take this petition under consideration and to issue such order in compliance with our request as will satisfy what we believe to be a public demand." At the top of each petition is the following notice: "Do not sign this petition unless you are a voter in this city and are uninfluenced by any other consideration than your honest desire to be inconvenienced in the matter of smoking."

Tickets Withdrawn from Sale in Seattle.—Tickets have been withdrawn from sale on local lines of the Seattle (Wash.) Electric Company in conformity with the decision of Judge Rudkin of the federal court of western Washington. The ordinance under which the city had directed the company to sell tickets, in the opinion of the court, is in conflict with the state law. Judge Rudkin said: "Such conflict of authority is not to be tolerated. For this reason I am satisfied that the act of the municipality in enacting the ordinance in question was *ultra vires*, and that the ordinance itself is null and void. The injunction must therefore issue as prayed." Waving the question whether damages of \$15,000, claimed by the railway, have been proved by competent evidence, the court says they are not recoverable, either at law or in equity. Pending the filing of a petition for rehearing by the corporation counsel's department and final decision from the Supreme Court, to which the municipality will appeal, Judge Rudkin granted an injunction to the railway.

Tacoma-Seattle Fare Case.—A further step was taken in the controversy between the Puget Sound Electric Railway and the State Railway Commission of Washington recently, when James B. Howe and John A. Shackelford, counsel for Stone & Webster, appeared before Judge Neterer of the federal court and declared that the reduction in rates on the line between Tacoma and Seattle has decreased the profits of the company until the return on the investment does not exceed 2 per cent. The reduction in rates was made effective some time ago by the State Railway Commission and was later sustained by the Public Service Commission, and the action for relief from the commission's order has been carried through the State Supreme Court and the Superior Court of Thurston County. Counsel for the State pleaded that the matter had already been passed upon by the Superior and Supreme Courts of the State and that those tribunals had found the new rates reasonable and lawful. They opposed the action of the company in seeking to secure a permanent injunction against the enforcement of the order in the federal court. Judge Neterer announced that he would take the matter under advisement.

Personal Mention

Mr. W. A. Cattell has been appointed consulting engineer of the San Francisco-Oakland Terminal Railways, Oakland, Cal.

Miss E. Maxwell has been appointed secretary-treasurer of the St. Thomas (Ont.) Street Railway by the City Council.

Mr. George F. Cooper has succeeded Mr. J. E. Tappan as auditor of the Knoxville Railway & Light Company, Knoxville, Tenn.

Mr. Samuel Z. Smith has succeeded Mr. J. M. Siegfried as treasurer of the Warren & Jamestown Street Railway, Warren, Pa.

Mr. James Myers has succeeded Mr. George Gudue as engineer of the power station of the Burlington (Vt.) Traction Company.

Mr. E. R. Lilienthal will be elected president of the United Railroads, San Francisco, Cal., to succeed Mr. Patrick Calhoun.

Mr. R. O. Thomen has been elected treasurer of the Union Light & Power Company, Junction City, Kan., to succeed Mr. S. W. Pierce.

Mr. W. E. Terry has succeeded Mr. J. Macaleese as auditor and purchasing agent of the Appalachian Power Company, Bluefield, W. Va.

Mr. P. L. Gallagher has succeeded Mr. James Cannon as master mechanic of the South Bethlehem & Saucon Street Railway, South Bethlehem, Pa.

Mr. A. Strohm has succeeded Mr. Roy Edinger as superintendent of power and equipment of the Warren & Jamestown Street Railway, Warren, Pa.

Mr. Frank Morrison has been elected chief engineer of the power station of the Union Traction Company, Coffeyville, Kan., to succeed Mr. O. E. Polk.

Mr. W. L. McKee has been elected vice-president of the Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col., to succeed Mr. J. F. Wessel.

Mr. Richard A. Taussig has been elected secretary and treasurer of the Jersey Central Traction Company, Keyport, N. J., to succeed Mr. William Moyer.

Mr. Jacob Rieder has been appointed superintendent and purchasing agent of the Capitol Street Railway line, Bismarck, N. D., to succeed D. M. Slattery.

Mr. George P. Lawrence, recently appointed a member of the Public Service Commission of Massachusetts by Governor Foss, has resigned, dating from Sept. 1.

Mr. G. S. Storrs has resigned as auditor of the Syracuse & Suburban Railroad, Syracuse, N. Y., to become auditor of the Maryland Electric Railways, Annapolis, Md.

Mr. F. L. Annable, who has been superintendent of the Northern division of the Pacific Electric Railway, Los Angeles, Cal., has been appointed general superintendent of the company.

Mr. Frederick J. Shepard, Jr., has been appointed superintendent of the Chester & Derry Railroad Association, Chester, N. H., to succeed Mr. Charles Bartlett, who continues as vice-president of the company.

Mr. D. D. McEwen has been appointed roadmaster of the London (Ont.) Street Railway. Mr. McEwen went to Canada from Scotland in 1911. He was with the engineering staff of the Caledonian Railway, Glasgow, Scotland, for seven years.

Mr. E. P. Grove, who has been connected with the Central London Railway, London, Eng., as chief engineer, has been appointed resident engineer at Melbourne, Australia, for Mertz & McClellan, to superintend the important electric railway installation to be carried out there.

Mr. Carl O. Y. Montelius, assistant chief engineer, and Mr. Hugo M. Rahmberg, electrical engineer, electrification department Swedish State Railways, Stockholm, are in this country inspecting heavy electric traction and high-tension transmission systems. They expect to stay in the United States for two months, during which time they will visit the principal developments as far as the Pacific Coast,

Mr. E. E. McCall, chairman of the Public Service Commission for the First District of New York, has been named by the Democratic designating committee for Mayor of Greater New York. Mr. McCall was nominated by Governor Sulzer on Feb. 3, 1913, to succeed Mr. William R. Willcox as chairman of the commission. Previous to that he was a justice of the Supreme Court of New York. Mr. McCall was born in Albany on Jan. 6, 1863.

Mr. M. R. Fewell has been appointed assistant general passenger agent of the Texas Traction Company and the Denison & Sherman Railway with headquarters at Dallas, Tex. On June 28, 1907, Mr. Fewell was appointed assistant general passenger agent of the companies with headquarters at Denison, Tex. Prior to his connection with the Texas Traction Company and the Denison & Sherman Railway Mr. Fewell was in the insurance business at Denison, Tex.

Mr. S. W. Cheney has been appointed assistant engineer of Kelsey, Brewer & Company, with headquarters at Grand Rapids, Mich. Mr. Cheney leaves the position of engineer and general superintendent of the La Crosse Gas & Electric Company, La Crosse, Wis., which he has filled for the past four months. He had been identified with public utilities since his graduation in 1904 from the University of Wisconsin. He was also connected with the Railroad Commission of Wisconsin.

Mr. A. B. Coryell has resigned as general superintendent, purchasing agent and chief engineer of the Waycross Street & Suburban Railway, Waycross, Ga. Mr. Coryell has been connected with the railway and lighting business for more than twenty years. Before coming to Waycross he was general manager of the Dayton Construction Company and the Greenville Railway & Light Company, Greenville, Tex. Previous to that time he was general manager and purchasing agent for the Huntsville Railway, Light & Power Company, Huntsville, Ala.

Mr. G. A. de Haseth has been appointed chief engineer of the Puget Sound Electric Railway, the Tacoma Railway & Power Company and the Pacific Traction Company, of Tacoma, Wash., Stone & Webster properties, succeeding Mr. W. M. Bosworth. Mr. de Haseth is a graduate of the University of Maine and began engineering work with the Boston & Maine Railroad in 1897. He became connected with the Stone & Webster properties in Seattle in 1901, but left Seattle to take employment with the Stone & Webster Engineering Corporation on construction work in the South in 1911. His appointment became effective on July 21.

Mr. L. E. Lippitt, formerly bookkeeper and voucher clerk for the New York State Railways, Utica-Syracuse Lines, has been appointed auditor of the Syracuse & Suburban Railroad, Syracuse, N. Y., to succeed Mr. G. S. Storrs, whose appointment to the Maryland Electric Railways, Annapolis, Md., is referred to elsewhere in this column. Mr. Lippitt entered the employ of the Oneida Construction Company in October, 1906, as cost clerk in the engineering department at Utica, N. Y., and in June, 1907, became connected with the accounting department of what is now the New York State Railways, Utica-Syracuse Lines. After holding various positions with the Utica-Syracuse Lines he was made voucher clerk, his appointment dating from January, 1911. In November, 1912, he was appointed bookkeeper of the New York State Railways at Utica and continued in that position until the time of his appointment as auditor of the Syracuse & Suburban Railroad.

Mr. Nicholas F. Brady, eldest son of the late Anthony N. Brady, has been elected a member and chairman of the board of directors of the Brooklyn (N. Y.) Rapid Transit Company to succeed his father. Mr. Brady was born in Albany on Oct. 25, 1878. He attended the public schools, and after graduating from Albany Academy entered the academic course at Yale. Immediately after his graduation with the class of 1905 he entered the employ of the New York Edison Company. Shortly after he began work with the company Mr. Brady manifested an interest in welfare work, and under his direction various technical courses have been established, a commercial school with instruction in accounting for employees has been instituted, an employees' savings and loan association founded, and a well-fitted club house presented to the employees of the com-

pany. Two years ago, when he was a member of the public policy committee of the National Electric Light Association, he helped to draw up the report on the relations between capital and labor. He is a director of the Brooklyn Rapid Transit Company, Consolidated Gas, Electric Light & Power Company of Baltimore, Consolidated Telegraph & Electrical Subway Company, Edison Electric Illuminating Company of Brooklyn, Edison Light & Power Installation Company, Louisville Lighting Company, Manhattan Refrigerating Company, Metropolitan Engineering Company, United Electric Light & Power Company and a number of other public service corporations and is president of the New York Edison Company.

Mr. C. H. Sanderson, who for several years has been engineer of switchboard and power station design for the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa., has resigned to become chief engineer of the Havana Electric Railway, Light & Power Company, Havana, Cuba. Mr. Sanderson is a graduate of Ohio State University and has been connected with the Westinghouse Electric & Manufacturing Company since 1900. A portion of this time was spent in the factory and drafting room, from which he was transferred to the engineering department and subsequently to his present position. Mr. Sanderson has been engaged on some of the largest switchboard and power station apparatus that the company has furnished. A farewell dinner was tendered to Mr. Sanderson at the Fort Pitt Hotel on Aug. 20 by about 100 of his associates in the Westinghouse Company.



C. H. Sanderson

OBITUARY

William L. Dechant Middletown, Ohio, a member of the Ohio Public Utilities Commission, died at Battle Creek, Mich., on Aug. 25. He was fifty-seven years old.

Albert E. Hewitt, superintendent of the railway lines of the Rutland Railway, Light & Power Company, Rutland, Vt., is dead. Mr. Hewitt was born in Proctor twenty-nine years ago. About sixteen years ago he took up his residence in Rutland. He was a student in the Rutland grade and high schools and on June 3, 1905, entered the employ of the auditor's office of the Rutland Railroad. On Sept. 1, 1905, he resigned because of ill health and spent some time in the Adirondacks. Mr. Hewitt was employed on the street railway at Rutland as motorman and conductor for a year or two, and in 1907 succeeded Mr. W. H. Horton as superintendent of the railway lines of the Rutland Railway, Light & Power Company.

E. J. Lawless, long a prominent railway supply man, died suddenly Aug. 27. Mr. Lawless commenced his railway career in 1877 with the Sutter Street Cable Railway, San Francisco, where he was successively a foreman of construction, assistant secretary and assistant superintendent. His knowledge of the construction and operation of cable railways in San Francisco led to his appointment in 1885 as superintendent of the Kansas City (Mo.) Cable Railway and later of the Metropolitan Cable Railway of that city. In 1888 he retired from railway work and engaged in the manufacture of cement, but in 1891 returned to the railway field as manager of the Paterson (N. J.) Railway, where he remained some three years. He then became Eastern agent of the American Car Company, St. Louis, and then successively was connected with the John Stephenson Company and the Danville Car Company, remaining with each until its purchase by The J. G. Brill Company. Recently Mr. Lawless was connected with the Walker & Bennett Manufacturing Company, and previous to that was with the Railway Motor Car Corporation, Philadelphia, manufacturer of gasoline motor cars. Mr. Lawless' death was caused by kidney trouble.

Construction News

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

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

RECENT INCORPORATIONS

***Dominion Traction & Lighting Company, Portland, Maine.**—Chartered in Maine to construct, acquire and operate railways and other public utilities. Capital stock, \$5,000,000. Officers: A. A. Richards, president, and C. G. Trott, Portland, treasurer. The operations of the Dominion Traction & Lighting Company, Ltd., Toronto, Ont., were referred to in the *ELECTRIC RAILWAY JOURNAL* for Aug. 16, 1913, page 280.

***West Stayton Power & Railway Company, Stayton, Ore.**—Application for a charter has been made by this company in Oregon to build an electric railway between Stayton and Salem. Capital stock, \$100,000. Incorporators: S. N. Arnold, E. O. Stadter and Grant Thomas.

Shippensburg, Newburg & Western Railway, Shippensburg, Pa.—Chartered in Pennsylvania to build an electric railway between Shippensburg, Newburg, Cold Spring, Roxbury and McConnellsburg. [E. R. J., Aug. 23, '13.]

North Anderson Street Railway, Anderson, S. C.—Chartered in South Carolina to build an electric railway between Anderson and North Anderson. Capital stock, \$15,000. Incorporators: John W. Linley, G. N. C. Boleman, J. D. Hammett, J. H. Anderson and J. D. Brown. [E. R. J., July 26, '13.]

***Tennessee & Kentucky Railroad, Nashville, Tenn.**—Application for a charter has been made by this company in Tennessee to build an interurban electric railway between Nashville and Springfield, Tenn., and Adairville and Russellville, Ky. Capital stock, \$10,000. Incorporators: J. P. Helms, Alfred G. Merritt, Jr., H. L. Sperry, Paul D. Denton, B. F. Cornelius, R. W. Bratton, J. C. Collins, Clyde Shropshire, J. L. Weakley, J. W. Tilford and A. C. Ferris.

***Ogden, Lewiston & Northern Railroad, Logan, Utah.**—Application for a charter has been made by this company in Utah to build an 80-mile interurban railway from Ogden over the Idaho state line through Fairview to Preston. Frederick W. Crockett, Logan, Utah, president, and A. W. Hart, Preston, Idaho, agent.

FRANCHISES

Little Rock, Ark.—The Little Rock, Pine Bluff & Eastern Traction Company has asked the Council for a franchise in Little Rock.

Redondo Beach, Cal.—The Pacific Electric Railway has received a twenty-year franchise from the Council in Redondo Beach over Wharf No. 1. The company has received permission from the Board of Supervisors to double-track its Santa Ana line between Stanton and Buaro.

Mount Vernon, Ill.—The Mount Vernon Traction Company has received a franchise from the Council to extend its lines in Mount Vernon.

Brockton, Mass.—The Bay State Street Railway has asked for a franchise to double-track its line on Howard Street in Brockton.

Corunna, Mich.—The Michigan United Traction has asked for a franchise in Corunna.

Lorain, Ohio.—The Lake Shore Electric Railway has asked the Council for a franchise in Lorain.

Lorain, Ohio.—The Lorain Street Railway has asked the Council for a franchise in Lorain on Broadway and East Twenty-eighth Street to the proposed new subway.

***Dunmore, Pa.**—The Dunmore, Ariel & Honesdale Street Railway has received a perpetual franchise from the Council in Dunmore. Gerald MacDonald, Scranton, is interested.

Beaumont, Tex.—The City Council has granted the request of the Stone & Webster Syndicate, which represents the Jefferson County Traction Company, to build switches and cut-offs on Pearl Street, Bonham Street, Orleans Street and on Broadway in Beaumont.

El Paso, Tex.—The Rio Grande Traction Company has

received a franchise from the Council over certain streets in El Paso.

El Paso, Tex.—The El Paso Electric Railway has received a franchise from the Council to build three extensions in El Paso.

Marshall, Tex.—The Marshall Traction Company has received a new franchise from the Council in Marshall in consideration of arrangements for a public park in Marshall.

San Antonio, Tex.—The San Antonio Traction Company has asked the Council for a new franchise for a double-track line on Commerce Street in San Antonio.

Charlestown, W. Va.—The Kanawha Valley Traction Company has asked the Council for a franchise in Charlestown from Duffy Street along Washington Street to Chesapeake Avenue and also on Park Avenue from Central Avenue to Jackson Street.

TRACK AND ROADWAY

Pine Bluff & Sulphur Springs Interurban Railway, Pine Bluff, Ark.—Contracts have been let by this company for the clearing of the right-of-way for its line between Pine Bluff and Sulphur Springs, and it is expected that construction will be begun at once. The company has arranged for the rails and ties and a portion of the route has already been graded. A. G. Russell, president. [E. R. J., May 24, '13.]

Pacific Electric Railway, Los Angeles, Cal.—Nearly \$500,000 will be expended by this company this fall and winter on improvements of its lines in Pasadena. Work will be begun about Sept. 1 laying new tracks on Fair Oaks Avenue from Columbia Street to Washington Street. As soon as this is completed work will be begun laying heavier double tracks on Lake Avenue from California Street to the south city limits and on Oak Knoll Avenue in Pasadena, and also double-tracking North Lake Avenue between Colorado Street and Washington Street.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—This company has received permission from the Railroad Commission to purchase from the Northern Electric Company one-half interest in certain tracks in Sacramento for the sum of \$11,403.

Peninsula Railway, San José, Cal.—Announcement has been made by this company that it will lay 6-in. T-rails on its lines into and through Los Gatos. The rails are to be imbedded in a 6-in. base of concrete.

Big Four Electric Railway, Tulare, Cal.—This company has received permission from the State Railroad Commission to begin the construction of its line within the next few days to connect Tulare, Visalia, Poplar and Porterville. Application for franchises over city streets and local terminals will be made at the next meeting of the Council. [E. R. J., Aug. 16, '13.]

Chicago, Peoria & Quincy Traction Company, Quincy, Ill.—Surveys have been begun by this company near Quincy on its line to connect Quincy and Peoria. A. S. Hadley, Chicago, engineer. [E. R. J., June 28, '13.]

Laporte, Logansport & Southern Railroad, Laporte, Ind.—About one-half of the right-of-way has been secured by this company for its line between Laporte and Logansport. It is expected to begin work on this branch shortly. Ora Boseman, president. [E. R. J., July 19, '13.]

***Iowa City & Southwestern Interurban Railway, Iowa City, Ia.**—Plans are being made to build an electric railway between Iowa City and Keota, a distance of 36 miles. Albert Tanner, Davenport, and F. J. Kipp, Milwaukee, are interested.

Kentucky Utilities Company, Lexington, Ky.—Plans are being considered by this company for the construction of a line from Somerset, Ky., to Burnside, Ky., 6 miles.

Smithland, Ky.—Engineers have been put in the field at Smithland for the survey of a proposed electric railway from Smithland through Livingston County. J. B. Trail, Smithland, is interested. [E. R. J., Aug. 16, '13.]

***Duluth, Minn.**—J. J. Frey and associates are considering plans to build an electric railway from Duluth to New Duluth. Application for franchises will soon be made.

St. Louis, Lakewood & Grant Park Railway, St. Louis, Mo.—During the next six months this company will award contracts to build about 2 miles of new track.

Red Lodge, Mont.—Preliminary surveys have been made for the construction of an electric railway to connect Red Lodge, Bearcreek and Washoe. At Washoe it will connect with the Montana, Wyoming & Southern Railroad. Final plans for the financing of the line are being made. H. A. Glasmacher, Seattle, is interested. [E. R. J., Aug. 9, '13.]

Omaha & Council Bluffs Street Railway, Omaha, Neb.—A 1½-mile extension will be built by this company to the southwestern part of Omaha.

Conception Bay Electric Company, Brigus, Newfoundland.—G. H. Field, who was noted in the *ELECTRIC RAILWAY JOURNAL* of July 19, 1913, as being one of the incorporators of the Conception Bay Electric Company, which was chartered primarily to furnish power for lighting, states that, aside from supporting the movement for electric lighting, he has no connection with the company. Mr. Field states that the charter includes the power to construct a railway but that it is unlikely that such a proposition will materialize. [E. R. J., July 19, '13.]

Brooklyn Rapid Transit Company, Brooklyn, N. Y.—The Public Service Commission, First District, has approved a contract between the Brooklyn Rapid Transit Company and Cooper & Evans, amounting to \$245,870, for construction of Section No. 1, of the Lutheran Cemetery and the Myrtle Avenue elevated lines in Brooklyn.

New York State Railways, Rochester, N. Y.—Work has been begun by this company on improvements in Syracuse. About 1 mile of double track will be built on the East Syracuse line and the tracks on the University stadium extension will be raised to grade between West Genesee Street and Park Avenue on a concrete foundation and a new pavement laid.

Lake Erie & Youngstown Railroad, Youngstown, Ohio.—This company has filed a mortgage with the Citizens' Savings & Trust Company of Cleveland, Ohio, to secure the issue of \$4,500,000 bonds. Construction is to be begun within a short time. Gasoline cars may be operated.

Lake Erie & Northern Railway, Brantford, Ont.—This company has received permission from the Dominion Board of Railway Commissioners to change the route between Brantford and Port Dover. Instead of going via Boston the line will now pass through Wilsonville.

Toronto & Eastern Railway, Toronto, Ont.—Grading has been completed by this company between Pickering and Bowmanville. West from Pickering to Toronto the exact line has not yet been definitely settled, and it is probable that the northerly route may be abandoned in favor of the Cherrywood district.

Schuylkill Railway, Girardville, Pa.—The Public Service Commission has recommended that this company reconstruct certain bridges near Shenandoah in the near future.

Rhode Island Company, Providence, R. I.—Work will be begun by this company on the extension of double tracks on Plainfield Street from Odd Fellows' Square to the entrance of Newtaconkankut Park in Olneyville.

Charleston & Summerville Interurban Railway, Charleston, S. C.—Plans are being made by this company to begin the construction of its line about Oct. 1 in order to meet the requirements of its franchise. This 22-mile line will connect Charleston and Summerville. J. L. David, president. [E. R. J., June 8, '13.]

Augusta & Edgefield Electric Railroad, Edgefield, S. C.—Surveys will be begun by this company about Oct. 1 for its 60-mile line to connect Augusta, Ga., and Greenwood, S. C., via North Augusta, Collins, Edgefield, Pleasant Lawn and Kirksey. C. W. Requarth, Charlotte, N. C., chief engineer. [E. R. J., Aug. 9, '13.]

Knoxville Railway & Light Company, Knoxville, Tenn.—This company is now using a viaduct spanning the tracks of the Southern Railway and connecting Knoxville and Park City. The work was done at the joint expense of the railway company, the Southern Railway and the two municipalities. It is of reinforced concrete construction. It is of chief importance in connection with service to the grounds of the National Conservation Exposition, located

in Park City. The exposition is held in October, and the construction of the viaduct enabled a double track line to be built to that point, taking the place of the single track heretofore used.

Nashville Railway & Light Company, Nashville, Tenn.—This company plans to expend \$125,000 for the reconstruction and extensions of some of its lines in Nashville. In addition to work already in progress the company will extend its Bucna Vista line, the St. Cecilia line and the Fatherland Street line in Nashville.

Tennessee & Kentucky Railroad, Nashville, Tenn.—This company, the incorporation of which is noticed in this issue, plans to begin surveys and secure right-of-way at once for its line to connect Springfield, Nashville, Adairville, Goodlettsville, Ridgetop, Hygeia, Greenbroier and Russellville. It is stated that financial backing has been secured and it is planned to begin work in the immediate future. J. P. Helms is interested.

Bryan & Central Texas Interurban Railroad, Bryan, Tex.—About 11 miles of track has been constructed by this company from Bryan as far as Stone City, and grading is now being done for 20 miles of track south of Stone City to Wilcox.

Cleburne (Tex.) Street Railway.—Improvements are being made by this company along all of its lines in Cleburne.

Southern Traction Company, Dallas, Tex.—This company announces that it will place in operation its lines from Dallas to Waco and from Dallas to Corsicana about Sept. 1. Rails have been laid and the delivery of the electrical equipment will soon be made. The line between Ferris and Waxahachie will not be completed until after the two main lines leading to Waco and Corsicana have been completed.

Rio Grande Valley Traction Company, El Paso, Tex.—This company has completed its 12-mile line between El Paso and Ysleta and will soon place it in operation.

Northern Texas Traction Company, Fort Worth, Tex.—This company has been asked to extend its Summit Avenue line a distance of 1 mile beyond the present terminus in Fort Worth.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—Grading has been completed, 50 miles of rails have been laid and plans are being made by this company to place the section of its line between Salt Lake City and Provo in operation by Oct. 1. This line will eventually connect Salt Lake City, Provo, American Fork, Pleasant Grove, Springfield, Spanish Fork and Payson. W. C. Orem, Salt Lake City, president. [E. R. J., July 5, '13.]

Lynchburg Traction & Light Company, Lynchburg, Va.—Work will soon be begun by this company on the improvement of its line to Fairview Heights and also on the construction of a cross-town line on Buchanan Street from Eleventh Street to Fifteenth Street in Lynchburg.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—Construction has been begun by this company on its ¾-mile line to connect with the King County industrial district near Georgetown. This track will be paid for by the county.

Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis.—During the next six weeks this company plans to award contracts to build 3 miles of new interurban roadbed and track with 4-in., 56-lb. to 60-lb. rails, either new or first-class relayers.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—Work will be begun at once by this company on its new crosstown line from Twenty-seventh Street and Burleigh Street to the south city limits in Milwaukee.

Superior (Wis.) Interurban Traction Company.—This company will be asked to consider plans to double-track and improve its line to the East End in Superior.

SHOPS AND BUILDINGS

Northern Electric Railway, Chico, Cal.—This company and the Central California Traction Company are considering plans to secure the Hanrahan Building as a possible depot to be used by these two companies, which have lines operating into Sacramento.

Los Angeles (Cal.) Railway.—A new carhouse will be built by this company at Washington and Pacific Avenues in Los Angeles to care for the increased traffic in the south and west sections. The structure will be of steel and concrete construction and will cost about \$300,000.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine.—Plans are being considered by this company to build a new passenger station in Haymarket Square on Main Street in Lewiston.

Manhattan & Queens Traction Corporation, Long Island City, N. Y.—Plans are being made by this company to build new carhouses at the corner of Thomson Street, Honeywell Street, Buckley Street and Nott Avenue, Long Island City.

South Carolina Power, Light & Railway Company, Spartanburg, S. C.—Plans are being made by this company to build a new machine shop, carpenter shop and paint shop and to enlarge its carhouse in East Spartanburg. The machine shop will be 40 ft. x 80 ft. and of sheet-iron construction. The addition to the carhouse will have a capacity for twenty-five cars. A water tank of 15,000-gal. capacity has been erected at a height of 30 ft. on the grounds. The improvements are estimated to cost \$50,000.

Southern Traction Company, Dallas, Tex.—Locations have been made by this company to build new passenger stations on its new line between Waco and Dallas. Locations will soon be made for stations for the line between Corsicana and Dallas.

POWER HOUSES AND SUBSTATIONS.

Pacific Electric Railway, Los Angeles, Cal.—This company will install in its substations four 1000-kw two-bearing motor-generator sets. The order has been placed with the General Electric Company.

Maryland Electric Railways, Annapolis, Md.—This company has placed an order with the Westinghouse Electric & Manufacturing Company for four 300-kw, 1200-volt d.c., three-phase, 25-cycle, 750-r.p.m. self-starting rotary converters and four 300-kw, 13,200-volt high-tension, three-phase transformers and two switchboards for its power plant in Annapolis.

Marquette City & Presque Isle Railway, Marquette City, Mich.—This company is increasing the capacity of its power plant by the installation of one 200-kw, 600-volt, d.c., two-phase, 60-cycle self-starting rotary converter with two 110-kva, 6600-volt, 60-cycle, oil-insulated, self-cooled transformers and switchboard. The Westinghouse Electric & Manufacturing Company will furnish the apparatus.

Interborough Rapid Transit Company, New York, N. Y.—This company has placed an order with the Westinghouse Electric & Manufacturing Company for two 300-kw, 250-volt, 900-r.p.m. compound-wound d.c. generators connected to and driven by two steam turbines through reduction gears.

New York & Queens County Railway, Long Island City, N. Y.—This company plans to enlarge its substation on Lawrence Street south of Broadway in Flushing. The addition will be one story and of brick construction. The cost is estimated to be about \$6,000.

Columbus Railway & Light Company, Columbus, Ohio.—This company will add to its substation equipment a 200-kw motor-generator set. The apparatus has been ordered from the General Electric Company.

Lehigh Valley Transit Company, Allentown, Pa.—This company has recently closed a contract to supply electricity to the Philadelphia Suburban Gas & Electric Company, a subsidiary of the American Gas Company, the territory supplied being North Wales, Pa., Lansdale, West Point and surrounding suburbs.

Citizens' Traction Company, Oil City, Pa.—This company will place in operation in its power station an 1875-kva Curtis turbine with switchboard and accessories. The machine is being built by the General Electric Company.

Tacoma Railway & Power Company, Tacoma, Wash.—Options have been obtained by this company upon property situated at the corner of Twelfth Street and Sprague Street on which it plans to build a new power house, storage sheds and offices for headquarters in the place of the existing structure on A Street in Tacoma.

Manufactures and Supplies

ROLLING STOCK

City Railway, Dayton, Ohio, is in the market for twenty cars.

Chicago (Ill.) City Railway has ordered one snow plow from the Wason Manufacturing Company.

Bryan & Central Texas Interurban Railroad, Bryan, Tex., expects to purchase two gasoline-electric motor cars.

Drake Railway Automotrice Company, Chicago, Ill., has ordered one car from the McGuire-Cummings Manufacturing Company.

New York Central & Hudson River Railroad, New York, N. Y., has recently issued specifications for twenty-five new passenger cars.

Southern Pacific Company, San Francisco, Cal., is in the market for eleven 21-ft. cars and five 28-ft. 6-in. cars and has requested carbuilders to bid on same.

Jefferson Traction Company, Punxsutawney, Pa., has ordered two single-truck closed cars mounted on Brill 21-E trucks from The J. G. Brill Company.

Monongahela Valley Traction Company, Fairmont, W. Va., has ordered two 20-ft. semi-convertible car bodies from the G. C. Kuhlman Car Company.

Brooklyn (N. Y.) Rapid Transit Company is in the market for either two or four electric locomotives which will be practically duplicates of the last order placed.

Westside Electric Street Railway, Charleroi, Pa., has ordered two 48-ft. steel center-entrance interurban cars from the Niles Car & Manufacturing Company. Electric equipment will be furnished by the Westinghouse Electric & Manufacturing Company.

Norfolk & Western Railway, Norfolk, Va., has awarded a contract to the Westinghouse Electric & Manufacturing Company for twenty-six 130-ton electric locomotives for use on the section of its line which is to be electrified between Bluefield and Vivian, W. Va.

Bureau of Foreign and Domestic Commerce, Washington, D. C., makes the following announcements in the Aug. 23 and Aug. 26, 1913, issues respectively of its *Daily Consular and Trade Reports*: File No. 11,528: "An American consul requests that catalogs and literature containing full particulars respecting the latest type of street cars, including pay-as-you-enter cars, be forwarded to him as soon as possible. The city in which he is located has taken over the tramway system, and extensive additions and improvements are being made. It is quite likely that if full information concerning the newer type of cars can be laid before the Board of Aldermen the new supply of rolling stock will be ordered from the United States." File No. 11,548: "A report from an American consul states that a street railway in his district is owned jointly by two cities. Recently eight all-steel cars were ordered, but they are being delivered slowly. On Jan. 1, 1914, the present system will be discontinued, each city operating its system singly. As the rolling stock is now inadequate, it is probable that one of the cities will be in the market for about ten or twelve large cars, of the pay-as-you-enter style, and American manufacturers should take steps to get in touch with the officials as soon as possible."

TRADE NOTES

Edson O. Sessions, Chicago, Ill., consulting engineer, has opened a new office in the Marquette Building, Chicago.

Western Electric Company, Chicago, Ill., has appointed A. R. Loughborough, formerly city sales manager of its San Francisco office, manager of its Salt Lake City sales force to succeed M. S. Orrick, who became manager at San Francisco.

Curtain Supply Company, Chicago, Ill., has received an order to equip the five new cars which are being built by the G. C. Kuhlman Car Company for the Johnstown Passenger Railway with curtains, using ring No. 48 fixtures and Rex all-metal rollers.

A. L. Whipple, New York, N. Y., has resigned as vice-president of the Standard Heat & Ventilation Company, with office in Chicago, and has returned to New York,

where he expects to re-enter the railway supply business on his own account at an early date.

Barney & Smith Car Company, Dayton, Ohio, is remodeling its wooden car erection shops for the purpose of building in any of them either all-steel or all-wood passenger cars. These adjustments will considerably increase the output capacity of the company.

Ackley Brake & Supply Company, New York, N. Y., has equipped fifteen new pay-as-you-enter cars of the Panama Railway with Ackley adjustable brakes. This company has also recently filled large orders for brakes from Brazil, Chile, Uruguay and Russia.

Cooper Heater Company, Carlisle, Pa., is shipping a carload of heaters, forty-five of which are for the New York State Railways and five for the Johnstown Traction Company, to the G. C. Kuhlman Car Company, Collinwood, Ohio, to be placed in the new cars which the Kuhlman Company is building. These heaters are of the latest design of forced-ventilation, hot-air type.

Heywood Brothers & Wakefield Company, Wakefield, Mass., has offered to its stockholders the right of subscription to \$1,000,000 new common stock at par. The subscription privilege covers both preferred and common stock. There is \$4,000,000 of preferred and \$2,000,000 of common stock now outstanding. Proceeds of the new stock will be used to wipe out a small floating debt and provide additional manufacturing and storage facilities at the company's several plants, which are needed to accommodate its rapidly increasing business. A banking syndicate, comprising Kidder, Peabody & Company and Stone & Webster, has underwritten the issue.

American Car & Foundry Export Company, St. Louis, Mo., which was recently organized in order to manage the foreign export business of the American Car & Foundry Company, as stated in the *ELECTRIC RAILWAY JOURNAL* Aug. 23, 1913, has announced the election of the following officers and directors: Frederick Eaton, chairman of the board; W. H. Woodin, president; Charles S. Gawthrop, and G. L. Rodgers, vice-presidents; S. S. Delano, treasurer, and William M. Hager, secretary. The directors are Frederick Eaton, W. H. Woodin, William M. Hager, Charles S. Gawthrop, J. M. Ames, E. G. Carey and C. D. Eaton. Mr. Rodgers will be in charge of the company's London office.

Clark Electric & Manufacturing Company, New York, N. Y., has received an order from the Utah Power & Light Company for suspension choke coils, contact grounding devices and other miscellaneous power house equipment. A considerable number of suspension-type, live-disconnecting switches have been ordered for the Carolina Power & Light Company, through the Electric Bond & Share Company, New York. Clamps for use with suspension insulators will be shipped in the near future to the United States government lines in the Panama Canal Zone. The Clark protective clamping set for use at railroad right-of-way or where electric lines cross over or under telegraph lines has been approved by the Chicago Telephone Company. Several of these sets have also been ordered for shipment to Japan.

ADVERTISING LITERATURE

Asbestos Protected Metal Company, Beaver Falls, Pa., has issued Bulletin No. 53, which describes and illustrates the application of its "Asbestosteel" type of construction, used in connection with concrete for the construction of roofs and curtain walls.

Kennicott Company, Chicago Heights, Ill., is distributing an attractive booklet entitled "The Kennicott Company," written by Elbert Hubbard, who describes in popular biographical form the progress of Cass L. Kennicott in inventing water-softening apparatus and traces the growth of the Kennicott iron and steel manufacturing plant.

The J. G. Brill Company, Philadelphia, Pa., prints in the August, 1913, issue of the *Brill Magazine* an illustrated biography of Ralph Peters, president of the Long Island Railroad. Among the feature articles are the following: "Conditions Which Govern the Type of Car Service in Spokane, Wash.," "The Brooklyn Center-Entrance Car," "The Evolution of the California Type," "Duplication of Body De-

sign in Double and Single-Truck Cars," and "A Locomotive-Construction-Line Car."

Bertron, Griscom & Company, New York, N. Y., have issued an attractive ninety-six-page book giving a concise statement of the various public utility companies controlled or directly supervised by them. The book is neatly bound in red leather and contains next to the title page a map of the United States with the cities marked in red where the controlled or supervised companies are located. This is followed by a tabulation of the capitalization of the operating companies as of Dec. 31, 1912, and their earnings for the twelve months ended March 31, 1913. The remainder of the book is taken up with a further discussion concerning each company, preceded by a black and red diagram showing the location of its lines. Under each company's name the following information is given: the date of incorporation, the extent of the business of the company, franchises, population served, capitalization, earnings, dividends, comparative data, as construction, etc., officers, directors, the date of the annual meeting and the location of the offices.

NEW PUBLICATION

Wirtschaftliche Betrachtungen über Stadt- und Vorortbahnen. By Gustav Schimpff, with an introduction by G. Kemman. Berlin: Julius Springer. 216 pages. Price, 6.60 marks.

In this book Professor Schimpff, who is in charge of the railway engineering department of the Royal School of Technology at Aachen, has presented a study of rapid transit planning for an ideal city of 4,000,000 inhabitants, the writer assuming that the city is free to grow in every direction. Professor Schimpff divides the city into districts for business, residences, manufactories, public institutions, parks and cemeteries, estimating the comparative areas required in each case. The plan of the proposed ideal city would be radial, each section consisting of a zone equi-distant from the center in every direction. Upon this basis the author estimates the division of traffic among the various modes of non-surface and surface transit, such as the density of travel between the different classes of zones, the variation of traffic density according to the time of day and the average length of ride in each case.

The discussion of line layout is devoted entirely to rapid transit non-surface lines. A radial system is suggested, but instead of having the lines converge at one place Professor Schimpff suggests that they intersect various other routes at right angles and terminate at the opposite end of the town because the character and amount of traffic would be the same on both radii. While he recommends that the stations should be placed about one-half mile apart, he believes that buses and cars would be favored if the rapid transit routes were more than 325 ft. to 650 ft. from the main business streets. A belt line to connect all the trunk line terminals entering the city is not justified owing to the small proportion which such traffic bears to the total city and suburban travel. In fact, it is suggested that the terminals of trunk lines ought to be removed to the outer zones where ample facilities for entrance to different parts of the city would be afforded by the rapid transit lines. The writer then makes a detailed study of costs of construction, rolling stock, energy requirements, station location schedules, average length of ride between zones of specified character, fares, possibility of baggage and mail handling, etc. In conclusion Professor Schimpff considers ownership and franchise conditions. He points out that if the rapid transit system is owned entirely by private capital the undertaking must pay its way, but a proper return on the investment is impossible if subway construction is demanded for the less congested districts. However, if the city becomes a partner in the enterprise in some form, the capital can be raised under more favorable conditions, and the cost of easements, etc., can be materially reduced. A recapitulation is then given of the forms of agreements now in vogue in cities where electric rapid transit systems have been installed. In the appendixes cost figures are given of every part of a non-surface railway undertaking; various systems of zone fare also are suggested, these ranging from a fair return on the investment to a condition where only the operating costs are to be met.