# Electric Railway Journal

Vol. XLII NEW YORK, SATURDAY, AUGUST 16, 1913 No. 7

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.



*Of this issue of the* ELECTRIC RAILWAY JOURNAL, 8200 *copies are printed.*



**FACTORY RUSH-HOUR TRAFFIC**

A number of efforts have been made in different cities to bring about a diversity of traffic movement in factory districts during the rush hours. In these districts it is usually the custom to open and close factories at the same hour. This creates a condition that is so trying to street railway operators that the co-operation of owners of factories has been asked in order to establish, if possible, slight differences in opening and closing hours. The effect of these, of course, would be to allow the street railway company, say, five or ten minutes' leeway after it cared for the traffic of one factory before the next factory rush occurred. Such a change is in the interest of the factory employees just as much as of the company, and it is also in the interest of the general riding public in the community. Inasmuch as factory owners generally have been unwilling, when approached by the company, to make changes in their hours to effect the improvement desired in this direction and it is a matter of general public concern, we suggest that it be taken up through the public authorities in places where the conditions are particularly trying. This could be done appropriately in cities or states where the public authorities have assumed a large measure of control over the operation of cars, even if it is not undertaken in other cities where virtual control of the operation is still retained by the company.

**SAFEGUARDING POWER STATION PASSAGEWAYS**

Among the minor features of power-station work which are often overlooked in betterment studies, the safeguarding of passageways deserves emphasis. Under normal conditions platforms and runways may be used without the least approach to an accident for months at a time, but under the stress of a machinery breakdown haste in movements from one part of the plant to another succeeds the ordinary pace, and unless passages are continuous and free from obstructions the results may be serious. In a representative case the runway in a boiler room consisted of a double line of planks laid across the tops of the successive boilers. The runway changed direction twice, and, as it was in a dark location, the danger of falling upon the tops of the boilers in case of a misstep was great. Further, safety valves on two boilers were so placed that should they blow while a man was on the runway he might be swept off or badly scalded. Finally, the runway had been moved about 3 ft. out of line of a permanent iron ladder, so that in case the lights failed or in the event of a safety valve blowing with a man on the boiler a bad accident was easily possible. A straight runway with a solid hand rail was built and the latter placed at the end of the new structure. The cost of placing toe boards around the edges of platforms and runways so that loose tools and materials cannot be knocked off upon persons working below and of keeping all passageways free from accumulated nails, wood and other refuse is so small that there is little excuse in this direction for oversight which may lead to distressing and expensive casualties.

**CONSERVING LABOR SUPPLY**

One of the Eastern trunk lines has found it necessary to take steps to conserve its source of labor supply by appointing an expert to investigate the foreign labor on its lines, more particularly the Italians. The latter, not so long ago considered among the less desirable of day laborers, are now so highly regarded that the railroad wants to keep those whom it has and draw others into its service. The first duty of the labor expert will be to make the Italian laborer feel that the road takes an interest in his welfare, considers him "one of the family" and wants to know when he has anything to complain about. This is a radical change in the usual attitude toward the day laborer and one that is worth thinking about. Up to the present the foreign laborers on maintenance and construction work have existed in the minds of managements and contractors mainly as so many numbered brass tags, but perhaps this is one reason why this class of labor has been so unsatisfactory. Modern humanitarianism and the effort to establish a good understanding between employer and employed has gone only so far down the line. It has stopped before it got to the day laborer. Now, either because humanitarianism is expanding or because labor of any kind is getting scarcer, the desire to go clear to the bottom is manifested in the striking way already noted. There may be a suggestion in the incident for other employers who upon consideration may find, as did the steam road in question, that they know little or nothing about the lives, the troubles or even the names of their foreign laborers, and that this information once obtained and used as the basis for a better understanding would be productive

of more loyal and better service. To expect loyalty and good service from an employee in whom the employer takes so little interest that even his name is unknown is to ask too much of human nature, whether it is domestic or imported.

## SPECIAL SPECIFICATIONS

In the purchase of equipment the problem of preparing suitable specifications is intimately connected with the initial cost of the selected apparatus and for this reason deserves thorough and critical study. Operating men without factory experience seldom realize how much it costs to depart even in small details from so-called standard apparatus in the manufacturing plant, and unless such departures can be supported by the best of reasons they are little less than luxuries. Nothing could be simpler to the purchaser in the average case, for instance, than the production by the manufacturer of standard transformers supplied with voltage taps multiplied according to the whims of the prospective user. Electrically it would seem to be feasible to bring out from three to a dozen taps without the slightest difficulty; yet, when the designer faces the problem, the question of suitable insulation and above all the provision of sufficient space, the use of existing case sizes, selection of bushings and the availability of tools and jigs must all be thought over in seeking to produce the equipment at a reasonable price. The same condition has notoriously existed in the past in connection with rail sections. The variety of opinions of city engineers and railway engineers as well as to the proper form of head has resulted in an unnecessary multitude of forms of rail heads.

Again, in purchasing car bodies from reliable builders too much care cannot be taken to avoid specifications which insist upon trifling modifications in dimensions which are not vitally necessary and which tend to increase the first cost of the rolling stock. The average manager and master mechanic must fall back upon the experience of the specialist in these matters and accept the recommendations of the latter sometimes when local and personal notions would perhaps dictate modifications not really essential from well-tried designs and types of construction. Initial specifications often can be modified to advantage by informal consultation with prospective bidders, and the time required to go over these matters is well spent. Naturally, each bidder desires to have the special features of his product which are the chief basis of its worth incorporated in invitations for tenders, but the commercial instincts that prompt this desire need not be given sway by the prospective purchaser. There is no getting away from the fact that before purchasing can be done along the most efficient lines existing manufacturing standards and resources must be thoroughly canvassed. Otherwise, insistence upon unimportant modifications in details may run the price up 25 or 33 per cent and extend the date of delivery to inconvenient lengths. Special equipment has its proper place, of course, and without it no progress would be made; but a good many engineers of the less experienced sort have yet to learn that where stock material and apparatus will fill the bill satisfactorily, nothing short of unusually compelling reasons should be allowed to cause such equipment to be forsaken.

## PUBLICITY IN THE ELECTRIC RAILWAY FIELD

Although we have at various times emphasized the value of publicity in regard to electric railway companies, the subject is of such importance that even one more reiteration will scarcely suffice. As noted in another column of this issue, the associate editor of the Cleveland *Plain Dealer* recently congratulated the Cleveland Engineering Society on its friendly attitude toward newspapers and assured it that "this alliance is highly gratifying on the newspaper side of the once impassable dead line." Such a union of interests between engineering and newspaper work is praiseworthy indeed, and we hope that it is indicative of an ever-increasing desire on the part of engineering organizations and public utilities to respond cordially to overtures from the newspapers.

The word "overture" is used advisedly, for only recently direct attempts have been made by two important metropolitan newspapers to secure business and technical news. The Philadelphia *Public Ledger* has established in various sections of the country men whose sole business it is to cover the financial, commercial and industrial news in their respective localities. The New York *Times* has adopted a slightly different method in making a general appeal direct to the public for "business news that interests business men everywhere." "Business news in New York," says the announcement of the business news department, "vitally concerns the business man in Seattle, Denver, New Orleans and Bangor, and vice versa; there is no sort of news so directly affecting so many Americans and no class of news the public can furnish so well." These are certainly steps more than half-way to form a connection with the great throbbing lives and centers of business activity in this country, and such a response as has been manifested in Cleveland should follow these other appeals. The plan of the American Electric Railway Association, as outlined in these columns, to compile monthly reports of financial operations and other statistics for public dissemination, and thus to counteract popular misconceptions concerning electric railways, is another case in point and shows the willingness of the electric transportation companies to meet the demands of the daily press for this class of information. It remains now only for individual companies to learn what information the newspapers desire and to supply it.

Of course, any steps marking a change of conditions, even toward improvement, will meet with some opposition. Thus, at a recent hearing before the Texas Railway Commission, a member of that body attempted to criticise the railroads of Texas for having made large outlays for newspaper advertisements giving their side on disputed points on the ground that the public in paying the railroads' expenses would be called upon to pay for its own education. Such an objection is absurd. If utilities appeal to the public it is good evidence that their cases are strong, and the public is glad to have all the facts. The fundamental idea underlying advertising and publicity, too—that of establishing a permanent prestige—demands absolute truthfulness, and the very fact that it obliges a manager to consider his case from the standpoint of the public and outline his attitude in a way which will carry instant conviction to those who read what he has to say may lead him to

see certain phases of his policy in a different light and to make some changes in it. Altogether, the plan is good for all concerned.

## THE SYSTEM OF THE CONNECTICUT COMPANY

The extended article upon the transportation features of the Connecticut Company published elsewhere in this issue possesses especial interest at this time on account of the recent criticism by the Interstate Commerce Commission upon the ownership of these lines by the New York, New Haven & Hartford Railroad Company. Whether one agrees with the wisdom from a financial standpoint of the purchase of these lines or not, he cannot but be impressed with the broadness of the conception from a transportation standpoint which initiated the acquisition of these properties. At the time when their purchase was begun upon a large scale, the New Haven Railroad, owing to a series of consolidations, had come into possession of practically all of the steam railroad mileage of the State, and its prosperity became peculiarly dependent upon that of the community which it served. The idea, once held by some, that the trolley lines in Connecticut formed or might form a nucleus for a through competitive line between New York and Boston had passed away. Their light construction, their use of the streets in the city and of the highways in the country and their consequent slow speed and inability to transport heavy loads forbade their use for any such purpose. As rivals and as competitors of the New Haven Railroad for any business which that road could profitably carry they were insignificant. But as allies and feeders to the steam railroad lines they could be made to be very helpful to it if developed systematically and as a comprehensive unit with the large financial resources possessed by the New Haven Railroad.

A glance over the reports of Mr. Mellen to the board of directors at the time of the inauguration of this policy of acquisition shows that one underlying reason for it was the industrial condition in the State. Although the average density of population in Connecticut is large, the industrial activity and the greater part of the population are in the large cities which are located on the shore and in the valleys of the three rivers which cross the State. That is to say, the development of this character in the State as a whole has been along a few definite arteries of travel. On the other hand, in many other parts of the State, and especially in the rural districts, there are some evidences of a decrease in population during the past few decades, as in many other sections of New England. The cause has been a lack of transportation facilities and a sterile soil, which together have caused a large part of the original farming population to settle in the cities or else take up agriculture in the more fertile regions in the West or Northwest.

The reclamation of these abandoned farms, either for their original purpose or as homes of those who desire to live part or all of the year in the country, and the repopulation of other sparsely settled parts of the State seemed therefore the logical function of the trolley lines from the broad standpoint of the development of the State as a whole. It was also one which, up to within the last few months at least, would have been regarded as sound political economy, because it tended to the conservation of capital in the development of the transportation facilities of the State. The railroad as a whole would be benefited because any loss through this pioneer and development work incurred by the trolley lines would be more than recouped through the increased demands for transportation which the larger population and industrial activity would bring to the steam lines. Finally, the territory seemed particularly well adapted for such a development, because of its compactness, and to possess the characteristics which have always been associated with those suitable for the establishment of a "natural" monopoly.

The correctness of this theory has been proved by the results, certainly so far as the communities served are concerned. The trolley lines have been combined into a harmonious whole, as the map showing the extensions built under the New Haven management and published in this issue shows. The physical condition has been greatly improved under a policy which considered the future more than the immediate present, and standards for cars and other parts of the equipment have been adopted. Finally, short sections of steam railroad track have been used for trolley service where such a plan seemed desirable in the interests of general efficiency. Some business may have been deflected from the steam railroad part of the system as a result of these changes, but most of the trolley traffic is composed of passengers who would not, in any event, have used the steam roads. We are glad to learn also that from an investment standpoint as well the policy has proved satisfactory. The task was a large one and from many points of view was conducted under very disadvantageous conditions. Nevertheless, the properties are already practically earning the interest on their purchase price in spite of very liberal charges for maintenance, and as further use is made of the improvements already installed this profit should grow. That the system is meeting the needs of the community is shown by the increase in gross earnings, which were 32.6 per cent greater in 1912 than in 1907, or an increase of 6½ per cent per year. This is in spite of the facts that most of the large city properties were acquired before 1907 and that the additions in trackage since that date have been largely of a suburban character.

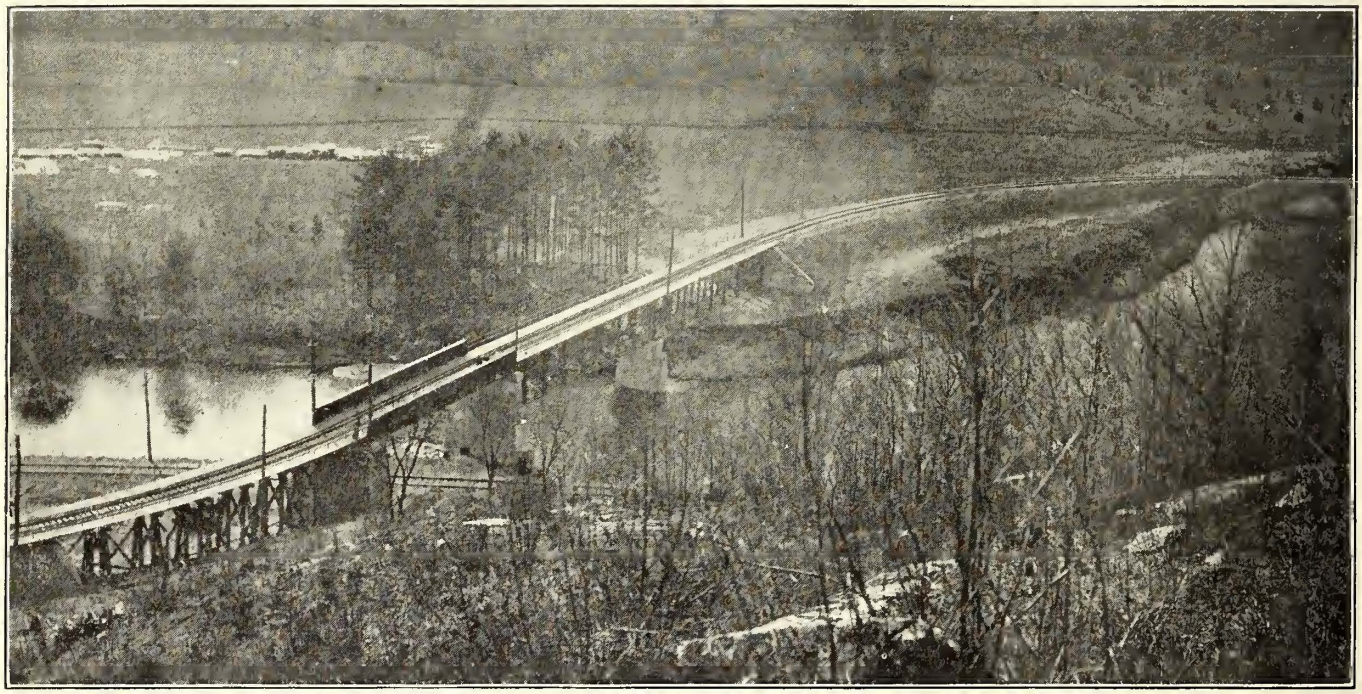
One of the most notable features of the statistics of the Connecticut Company, published in this issue, is the possibility of comparing the extent to which the frequent service provided by electric cars will develop traffic between two cities whose interurban service was previously provided by steam trains at infrequent intervals only. Such a situation exists in the case of Meriden and Middletown, towns of 33,000 and 21,000 inhabitants respectively, located some 12 miles apart. The line between these two cities was formerly operated by steam, and in the last year of steam operation 4433 passengers were carried. In 1908 the line was equipped electrically, and during the past fiscal year the total number of through passengers on the electric cars between Meriden and Middletown was 330,250. These figures are very significant of the possibilities of electric traction and the kind of work which is being done by the Connecticut Company in furnishing transportation to parts of the State and over routes which practically were without facilities of this kind before.

# Traffic Improvements of the Connecticut Company

An Account of the Consolidation of the Various Trolley Lines in Connecticut Which Resulted in the Organization of the Connecticut Company—An Analysis of the Financial and Operating Results Secured

The Connecticut Company is one of the main operating constituent organizations of the New York, New Haven & Hartford Railroad Company's system. It is a combination of local, suburban and interurban electric railway properties developed so as to supplement to the best advantage the through service afforded by the strong railroad corporation by which it is controlled. It is one of the most conspicuous examples in the country of that form of control of electric properties.

This article is not concerned with the policy of expansion adopted by the controlling corporation in other directions, except that its action in respect to the electric railway lines in Connecticut may be taken as indicative of its general broad purpose. Viewed from the standpoint of the present day, the policy of control of other avenues of transportation appears to have been, in part at least, a matter of development. When the company first began to develop this policy, a few properties were bought in individual instances where acquisition seemed to be justified. The individual properties needed connections with other parts of the system, and this led to further purchases, with the final result that the present large property was formed. When the greater policy of expansion was adopted, however, the acquisition of properties proceeded steadily until the outlines of the present comprehensive system had been completed.



Connecticut Company—General View of Steel Bridge Over Naugatuck Railroad and Naugatuck River Near Thomaston

The first electric railway acquired by the New York, New Haven & Hartford Railroad was the Stamford Street Railroad, which was bought in June, 1895. About the same time the Nantasket Beach Railroad, with 7 miles of track, was electrified. In October of that year the company bought control of the Meriden Electric Railroad Company. These were small properties and of very little importance compared with the operations of the system as a whole. No other line was bought until September, 1902, when the control of the Worcester & Connecticut Eastern Railway Company was acquired.

### POLICY OF ELECTRIC RAILWAY CONTROL

As a matter of fact, it was not until the election of Charles S. Mellen as president of the New York, New Haven & Hartford road that a sharply defined policy on the subject of electric railway control was developed by this company. Up to that time there had been investments in the few localized properties mentioned, but no such widespread acquisition of properties as took place afterward. Mr. Mellen was elected president in the fall of 1903, and in the spring of the following year the company acquired the capital stock of the Fair Haven & Westville Railroad Company, which controlled the city street railway system in and about New Haven, Conn. Steps looking to the corporate unification of the few street railway properties controlled by the corporation were taken shortly afterward, and in his annual report for the fiscal year ended June 30, 1904, Mr. Mellen stated that all of the interests acquired by the company in street railways had been transferred to the Consolidated Railway Company, whose capital stock was owned by the New York, New Haven & Hartford Railroad Company. He added:

"So far as the operation of the properties since their acquisition discloses anything, the investment appears to be a wise one from a financial standpoint and it protects and supplements the system of roads operated by your company in a way that must be of great value in the future."

The incorporation of the Consolidated Railway Company was evidently arranged in anticipation of continued expansion.

The Fair Haven & Westville Railroad stock, as stated, was acquired in April, 1904. From July to September,

1904, the company bought the group of properties in and about New London and Norwich, consisting of the Norwich Street Railway, the Montville Street Railway and the New London Street Railway. Toward the end of the same year the control of the Middletown Street Railway was bought. These properties were acquired directly by the newly formed Consolidated Railway Company. In January, 1905, the control of the Greenwich Tramway Company was acquired, and about the same time the control of the New York & Stamford road was purchased. Between April and July, 1905, the company purchased the control of the Hartford Street Railway, the Suffield Street Railway and the Branford Light & Water Company.

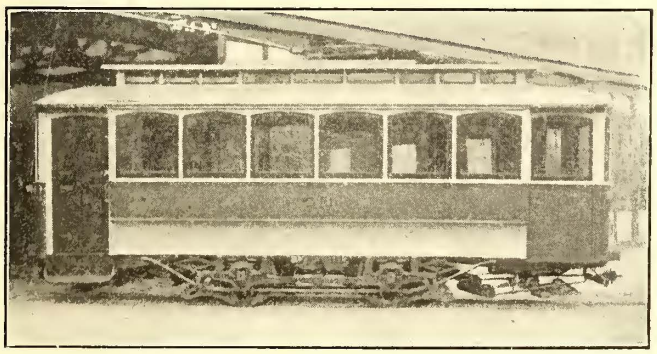
The increasing scope of the operations of the Consolidated Railway Company is shown by the fact that in the year ended June 30, 1905, its gross earnings were $4,567,979. Mr. Mellen said in his annual report for that year:

"Considering that the year was the one wherein the system of roads was acquired and merged, and that the advantages of concentrated control and the economies resulting were not available, there is every reason for satisfaction at the showing and confidence of improvement in the future."

In October, 1905, the control of the Willimantic Traction Company was bought. In January, 1906, the Hartford, Manchester & Rockville Street Railway and the Stafford Springs Street Railway were acquired. In June of the same year the Torrington & Winchester Street Railway Company was secured. The purchase of the stock of the Meriden, Southern & Compounce Tramway Company took place in December, 1906, while the control of the Waterbury & Pomperague Valley Street Railway, which was then under construction, was acquired in April, 1907.

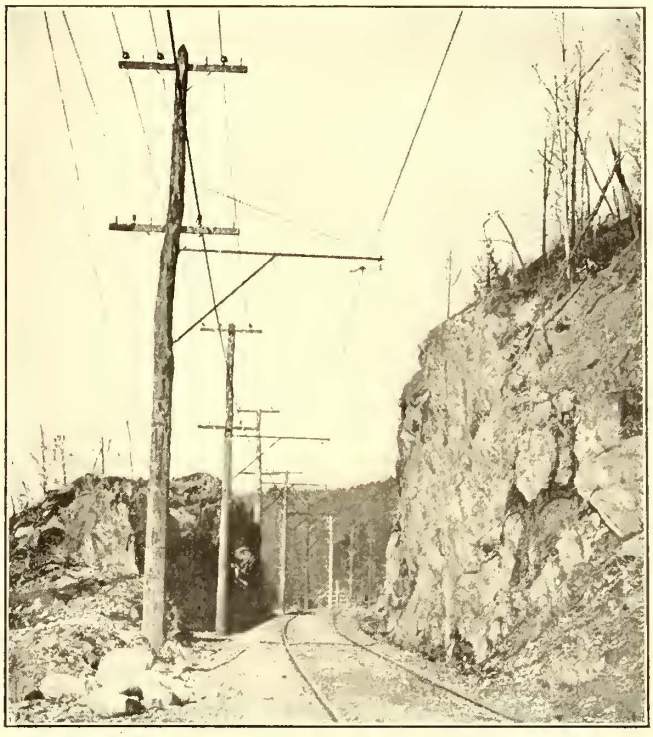
During the same period the company was acquiring control of electric railways in other parts of New England reached by its lines. The principal system acquired about this time was that of the Connecticut Railway & Lighting Company, the property of which was leased by the Consolidated Railway Company on Dec. 19, 1906, for a period of 999 years from Aug. 1, 1906. At the time of acquisition this property consisted of 193 miles of urban and suburban electric railway lines, together with various electric lighting and gas plants located at different points in the State of Connecticut. In speaking of the acquisition of the properties of this company and several other properties of the same class, Mr. Mellen said in the annual report for the year ended June 30, 1907:

"It is believed these properties in themselves will eventually become a source of profit, though a deficit in the returns from their operation was estimated to result for a short time immediately following their acquisition. Their control was important to the protection and growth of other properties in which your company was largely interested, and the increased value of these properties should more than offset any direct loss occurring."



**Connecticut Company—Type of Old Car Retired from Service**

It may be assumed that the general purpose in the beginning was the acquisition of lines that were either competitors of the steam road or had potential possibilities of competition in the future. In this case, however, as in the other notable instances of the acquisition of electric railway mileage by stronger steam railroad corporations which felt that the newer lines were encroaching upon their territory, the point of view changed when the purchase was perfected. Where it had been believed before the purchase took place that the logical place of the electric lines in the transportation activities of the localities would be to supplement the activities of the steam railroad lines, it was found that the best ends of the unified property and of the public as a whole were frequently served by complete subordination of the steam railway lines in certain localities to the electric railway lines. It was found in other localities that transportation facilities were better if the electric railway lines were subordinated to steam railway facilities. In still other places it was found that steam railroad mileage could be made to serve the best ends if it was electrified and used by the electric lines for the same character of service that they were giving in other places. In other words, experience showed that an actual merger permitted a form of development whose possibilities had not been fully appreciated in the beginning, and this was carried out without the duplication of facilities that would have existed if the properties had been developed along like lines under separate instead of combined ownership.



**Connecticut Company—Rock Cut Near Beacon Falls**

POLICY ACTUATING PURCHASE OF PROPERTIES

Writing in regard to the policy of the company as it existed on Jan. 4, 1908, Mr. Mellen said:

"With regard to the trolley lines that have been acquired since I came to this property, that is, since Nov. 1, 1903, let me say: They were acquired under a general plan which was adopted by our board of directors, that the trolleys were desirable as feeders to the steam lines, that they collected traffic through their frequent service and brought the same to points from which the steam service could be used, and thus developed adjoining territory and made the steam railroad of itself more prosperous. Likewise they distribute the traffic brought to various points of connection by the steam railroad lines.

"They were being developed in a desultory sort of way

and not upon lines calculated to promote the best results, and, after long consideration, it was thought desirable they should be developed more vigorously and with a view to supplementing existing steam transportation lines.

"It is further my own opinion, and in that I may say I am supported by my associates in the board of directors, that the ultimate system of suburban development is by the trolley, and the interchange between cities in close proximity will be best promoted by the service upon the street railway lines in the various cities, thence by high-speed transportation through use of the steam railroad tracks between cities, and we have been hoping, and still believe, there will ultimately be such a use of the steam railroad tracks, whereon electric lines may be run on frequent headway—that is, at five, ten, fifteen or twenty-minute intervals, as the amount of traffic will justify—and thus there be established that ideal intercommunication between congested localities which is most desirable for their development.

"Particularly, I would call attention to the situation in the Berkshires; that is, in western Massachusetts. There is a locality greatly endowed by nature that has lain fallow and dormant for a century. A few spots are highly developed, but the outlying districts, through lack of transportation, are probably as little developed to-day as was the case fully a hundred years ago; indeed, I am inclined to think that in many localities, judging by the remains of industries that were formerly prosperous but are now abandoned, the situation may have been more highly developed industrially a hundred years ago than at the present time.

"It was the intention of our company in acquiring the Berkshire Street Railway, had we not been interfered with by the opposition of the Commonwealth of Massachusetts, to extend branch lines into the various outlying country districts, where the natural advantages would attract people in the selection of summer homes, and thus have greatly assisted in the development of that territory, which probably is as accessible as any other district for this purpose and has greater natural advantages than any other territory accessible to the great metropolitan district of New York.

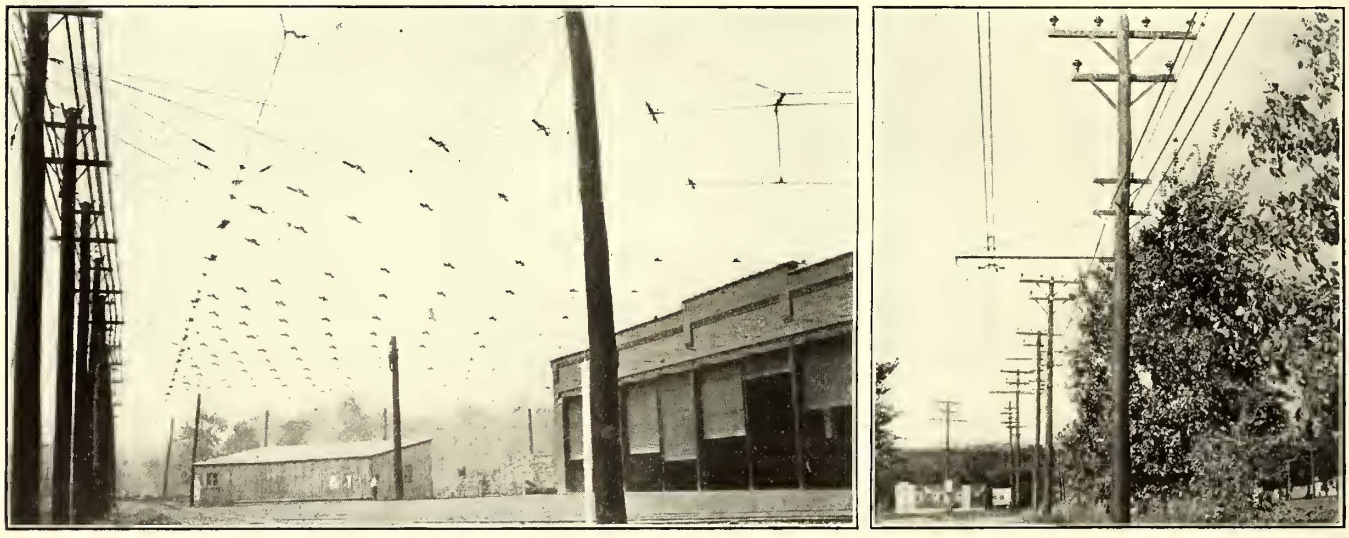
"In the policy to which I have alluded we were not working without thought of gain, although we were well aware that the electric lines of themselves could never probably be profitable investments, but, owning and operating as we do a line by steam from the same district to New York City, we believed the development of the territory in question would greatly increase the value of the business done upon the steam line, and thus indirectly would recover more than the direct loss through the non-paying electric lines.

"It is absolutely necessary if the Berkshire country is to be developed, as would seem to be most desirable in the interest of every one, that it be by some company having the money and disposition to lose the direct return for the benefit of the indirect one, and I believe no other company is so situated that it can afford to do what our company would like to.

"I think an examination will result in the conclusion being formed that no part of the trolley lines of New England has been more highly developed or better kept as an efficient agency of transportation than have those that have been acquired by the New York, New Haven & Hartford Railroad Company. Not only has the physical condition been greatly improved, but the equipment and the service generally have been improved as well, and this has been done in most instances to the detriment of the immediate net return; in other words, the properties have been handled with a view to the ultimate return, rather than a present one, and they have been built up, generally speaking, in all respects as a result of their acquisition by our company, and for that reason have not been showing in net results the return they will in a short time.

"Indeed, had it not been for the necessity the company was under, after having acquired many of the properties, of practically rebuilding them, and including largely the expense of such rebuilding in the cost of operation, the properties of themselves would have returned to the treasury of our company in excess of the interest upon their cost. This is particularly true of one large property acquired in Connecticut, and it will be several years before the expenditures necessary for the rehabilitation of the same will be at an end and the cost of that rehabilitation will be included in the operation and maintenance expense of the properties so long as the net income of the New York, New Haven & Hartford Railroad will permit.

"Much of the expense that has heretofore gone into the maintenance of the trolley properties could have justly been capitalized, and, as a result, a much more favorable showing been made in the net earnings of the New York, New Haven & Hartford Railroad Company."



**Connecticut Company—Port Chester Carhouse and Typical Trolley Line Construction**

### DEVELOPMENT OF SERVICE

As indicated in the foregoing, many of the properties acquired were in poor physical condition and required radical reconstruction and development. This was under way for a period of several years and its completion placed the properties in position to take proper care of existing traffic and to aid in greater developments in the future. In several articles the Electric Railway Journal has described the physical improvements made in various parts of the

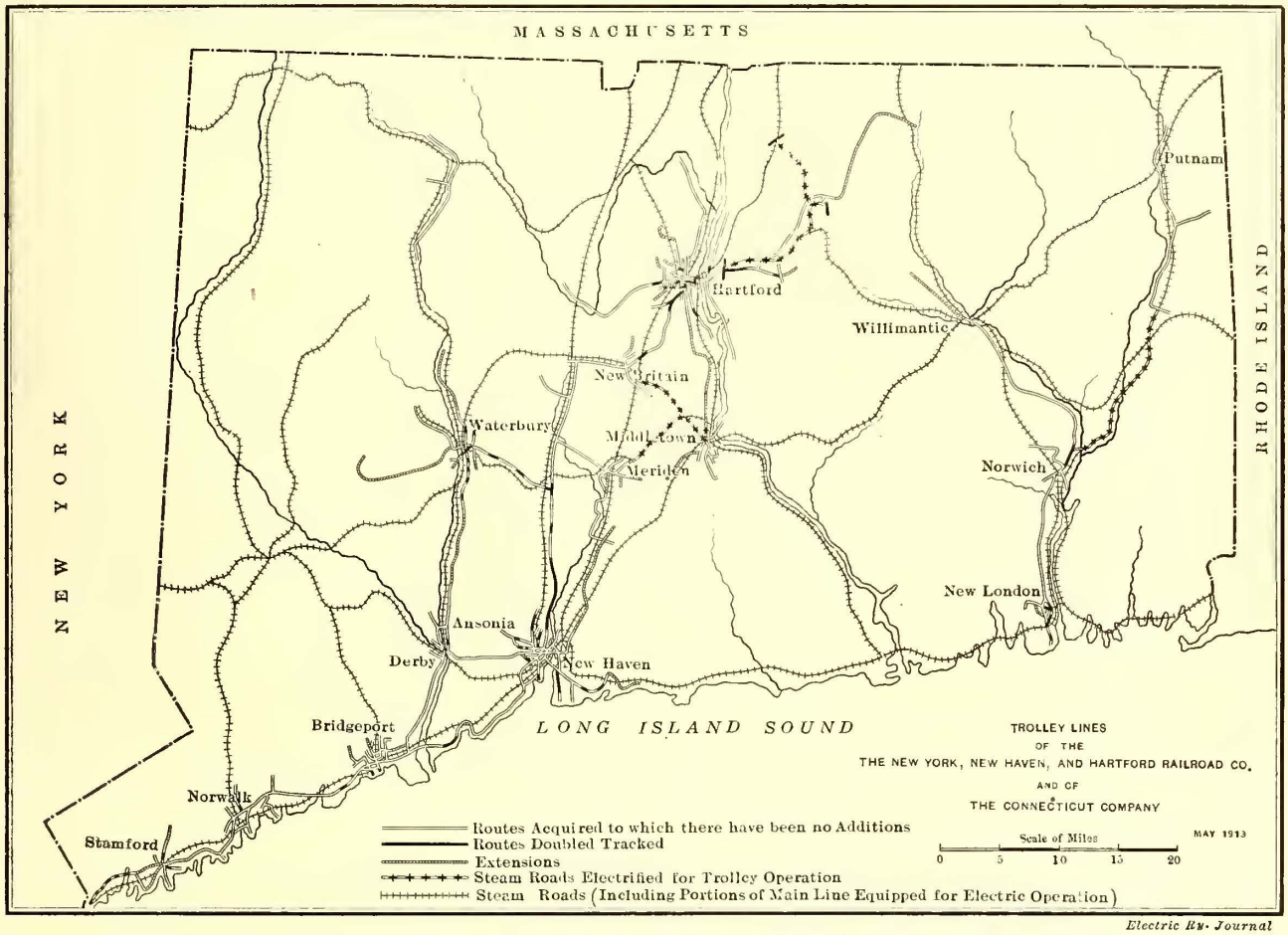
property since the acquisition and consolidation into an operating whole took place, and some of these improvements are shown in accompanying photographs.

In most instances such development of the individual properties as had taken place was local in character and was not so directed as to fit the lines in the best way to transport passengers through from one community to another, and to promote unified long-distance operation so far as that was practicable in view of the traffic and the territory. The work of the new owners of the properties, therefore, comprised not only the physical reconstruction which it was evident was necessary but also the study of route and traffic needs in order that development might progress along the lines best calculated to serve the public in the future. The accompanying map illustrates the scope of the lines of the Connecticut Company and indicates in some measure what has been accomplished in the way of development of improved traffic facilities. Prior to the acquisition of properties generally by the parent company, very few of the independent lines located in the central part of Connecticut had any physical connections. Where such a connection existed, as for instance in the case of the New Haven and the Waterbury lines, double-track facilities were lacking, and as a result inferior service was given. Double track has been added at numerous points on the system in order to facilitate the movement of traffic. Among the notable instances of this character are those on one of the lines between New Haven and Waterbury, at Greenwich, Bridgeport, New London and Norwich, the lines in the vicinity of Hartford and New Britain, and the lines in the vicinity of Waterbury. A number of extensions built to connect existing lines have permitted great improvements in the electric railway service between communities that were not connected before.

One of the most interesting developments of the situation from an economic standpoint is the electrification of steam railroad mileage for operation by trolley. A number of lines have been improved in this way.

One of the old lines of the New York, New Haven & Hartford Railroad, which was formerly operated by steam but has since been electrified and is now operated by trolley, is the one between Meriden and Middletown, which was electrified during 1908. This affords a remarkable illustration of successful adaptation of old steam mileage to modern electric railway operation. In the last year of operation of this line by steam two trains were run daily in each direction on week days without any service on Sunday, and the total number of passengers carried during the twelve months was 4433. In the last fiscal year the Connecticut Company operated twenty-three trips in each direction on week days and twenty-one trips in each direction on Sundays, carrying a total of 330,250 passengers.

Connecticut is a state of small area and the distances between its cities and other communities are relatively short.




*Electric Ry. Journal*

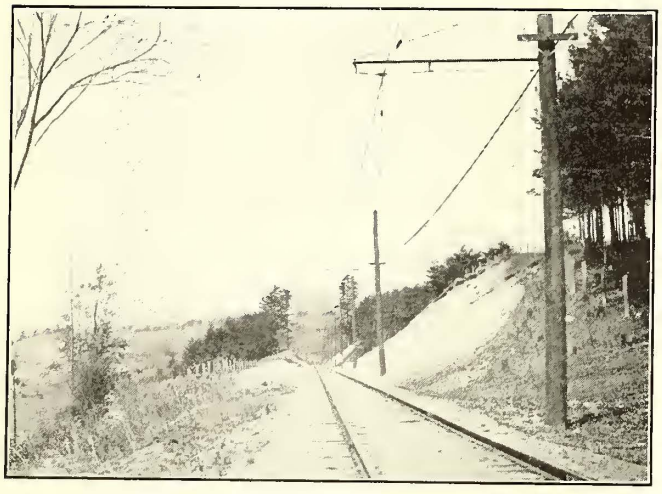
**Connecticut Company—Map Showing Character and Extent of the Lines Operated by the Company**

There are no high-speed interurban lines operated on the methods followed by those properties in the Central West, and up to this time the traffic prospects have not appeared to warrant developments of this nature, although some of the lines are termed interurban and are more nearly of that type of property than suburban. These might properly be termed "inter-city" lines. Much of the track outside of the cities and incorporated communities is located on public highways.

Much the heaviest part of the passenger business of the company is furnished by the city lines. In a typical month, October, 1912, the city and town lines carried 11,001,251 passengers, as compared with 4,583,138 passengers on the interurban lines. The city lines of heaviest traffic, in their order, are New Haven, Hartford and Bridgeport. The heaviest interurban traffic in the typical month selected was on the line from New Haven to Waterbury via Derby, which passes through a region of beautiful scenery. During the

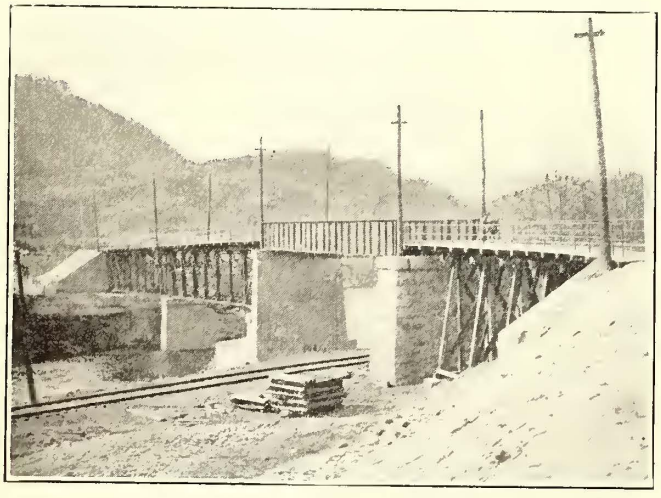
month named the traffic in the three cities of New Haven, Hartford and Bridgeport amounted to 70 per cent of the passengers carried in all the cities and towns served by the company and to 49 per cent of the total traffic of the company on all lines. The widespread territorial distribution of traffic is shown by the statement in Table I.

Some of the traffic which is given separately for towns in the list of cities and towns is really tributary traffic to or



**Connecticut Company—Typical Track and Overhead Line Construction**

from one of the larger cities. For instance, Branford is a small community located 9 miles from New Haven, and it is probable that nearly the entire number of passengers reported for this village were those who were bound either to or from New Haven. The same statement applies to Wallingford. It is rather difficult to separate the traffic at all points. Some of the passengers reported at New London and Norwich may be through passengers from one of those cities to the other, although a separate report is shown for the line between New London and Willimantic, which



**Connecticut Company—Bridge Over Naugatuck Railway and Naugatuck River**

passes through Norwich. Passengers in Portland and Middletown are reported separately, although the transportation reported for Portland arises entirely from the service between Portland and Middletown, as the two communities are practically one, Portland being the portion of Middletown which is situated east of the Connecticut River. Separate figures are given for Windsor and Rainbow and Manchester, although in all these cases the traffic is composed very largely of through riding to Hartford, as these villages are entirely tributary to that city. The riding reported in Watertown is practically altogether through riding to Waterbury. Nearly all of the passengers reported for Torrington and Winsted were through passengers.

There was marked diversity in the density of traffic on the interurban lines. It will be noted from the list of interurban lines that two lines are operated between New Haven and Waterbury, with a material difference in the density of traffic. The first line, that which is operated by way of Derby, runs through the densely populated territory of the Naugatuck Valley and carries very few through passengers. The running time between New Haven and Waterbury on this line is two hours and fifteen minutes, whereas the second line shown in the list, that which runs

Table I—Distribution of Traffic Passengers Carried During a Typical Month (October, 1912)

| *On Interurban or Inter-City Lines:* | Number of Fare Zones | Number of Passengers |
|---|---|---|
| New Havent to Waterbury via Derby | 8 | 690,675 |
| New Haven to Waterbury via Cheshire | 7 | 422,199 |
| New Haven to Bridgeport via Milford | 5 | 343,581 |
| Meriden to New Britain via Lazy Lane | 5 | 319,149 |
| Milldale to Cheshire | 1 | 32,843 |
| New London to Willimantic | 8 | 474,552 |
| Central Village and West Thompson | 6 | 136,082 |
| Tafts and Central Village | 6 | 113,764 |
| Willimantic and South Coventry | 2 | 34,013 |
| Danielson and East Killingly | 1 | 18,921 |
| Central Village and Moosup | 1 | 20,743 |
| Middletown and Middlefield | 2 | 34,035 |
| Middletown and Meriden | 3 | 84,242 |
| Middletown and Hartford | 5 | 331,409 |
| Hartford and Glastonbury | 3 | 172,615 |
| Hartford and Rockville | 4 | 143,706 |
| Hartford and Stafford | 10 | 71,260 |
| Hartford and New Britain | 2 | 243,433 |
| Hartford and Unionville | 4 | 155,172 |
| Hartford and Rockville (interurban) | 5 | 125,912 |
| Stamford to Norwalk (Newtown Avenue) | 3 | 115,924 |
| Bridgeport to Norwalk | 5 | 191,403 |
| Bridgeport to Derby via Shelton | 4 | 125,037 |
| Waterbury to Woodbury | 5 | 98,329 |
| Waterbury to Thomaston | 3 | 84,139 |
| Total | | 4,583,138 |

| *In Cities and Towns:* | Number of Passengers |
|---|---|
| New Haven | 3,523,852 |
| Branford | 227,982 |
| Derby | 117,124 |
| Ansonia | 117,124 |
| Meriden | 263,675 |
| Wallingford | 103,960 |
| New London | 173,031 |
| Norwich | 117,555 |
| Middletown | 77,322 |
| Portland | 38,173 |
| Hartford | 2.437.226 |
| Windsor and Rainbow | 163,683 |
| Manchester | 322,888 |
| Stamford | 290.861 |
| Norwalk and South Norwalk | 204,403 |
| Bridgeport | 1,738,980 |
| Westport | 36,314 |
| Waterbury | 681,991 |
| Watertown | 144,106 |
| New Britain | 139,226 |
| Torrington | 54,517 |
| Winsted | 27,258 |
| Total | 11,001,251 |

between the same points by way of Cheshire, makes the through trip in one hour and thirty minutes. As the small village of Cheshire is the only community between the two terminals on the latter line and the running time between New Haven and Waterbury is so much shorter than on the Derby route, nearly all the riding is through riding. The traffic on the line between New Haven and Bridgeport, by way of Milford, is not through business, as this line serves the local communities located along the shore between the two terminal cities. The line between Meriden and New Britain includes very little through business. This line passes through a territory of close population and many small villages, and its business is made up almost entirely of traffic between the villages rather than through riding from terminal to terminal. A number of small communities are served by the lines between Central Village and West Thompson, so that in this case also a very small portion of the passengers were through passengers. Two lines are shown between Hartford and Rockville, one of which is termed an interurban line. This line is made up of a combination of electrified steam road and street railway

service in the terminal cities. The interurban line carries almost entirely through passengers, as it makes better time than the other line, which carries largely local passengers from one small community to another.

The line between Hartford and Rockville, which is called an interurban line, is a fair specimen of the type of interurban property which exists in Connecticut. Better speed is made on this line than on the great majority of the other lines, which are operated more nearly as suburban lines than as interurban lines, as those properties are known in the Central West. The line between New Haven and Waterbury, by way of Cheshire, is another example of the type of line on which the company makes better speed than on the more highly localized suburban lines. Other lines of a similar type are those between Hartford and New Britain, between Hartford and Middletown, between Middletown and Meriden, and between Hartford and Stafford Springs.

Table II—Cars Taken Out of Service and Charged to Operating Expenses Since Acquisition of Properties

| | | | |
|---|---|---|---|
| Closed cars | *151 | Power and line cars | 4 |
| Closed cars | †19 | Wrecking cars | 5 |
| Open cars | *102 | Work cars | 6 |
| Combination cars | †2 | Flat cars | 12 |
| Express cars | 2 | Dump cars | 2 |
| Baggage cars | 1 | Sprinkler cars | 1 |
| Snow plows | 21 | | |
| Sand cars | 8 | Total | 338 |
| Salt cars | 2 | | |

*Single truck. †Double truck.

In addition to the improvements effected in routes of traffic, the company has made other changes looking to the betterment of service and the improvement of the financial position of the property. Since the New Haven road acquired control of the street railway lines, 338 cars have been retired from service. The value of these cars has been deducted from the value of the property through charges to operating expense accounts. The total net charge on this account, after deduction of the amount realized in scrap value, has been $475,000. The company followed the policy of charging against current operating revenues a sum sufficient to retire two cars per month, and this was continued until all cars of the older types acquired in the purchase of the properties were retired. A list of the cars which were treated in this way is shown in Table II.

One of the important respects in which service has been improved is through the adoption of new schedules on the trolley lines, in order that the convenience of patrons of the through line steam road trains might be met. Such changes have been made throughout the system of the Connecticut Company wherever it seemed to be advantageous to introduce new schedules and also on the New York lines reaching the stations used by commuters. In the latter case, where schedules on the through line to Grand Central Terminal, New York City, are changed periodically, the street railway schedules are changed with the same frequency in order to afford as close connections as possible. So far as possible schedules have been arranged in these cases in order to allow an interval of three minutes between the arrival of the through road trains and the departure of the trolley cars. A number of typical examples in which changes of this nature have been made effective on the lines of the Connecticut Company are shown in the following:

AT NEW LONDON

Since Dec. 21, 1912, an extra car has been operated from Putnam to Danielson in order to accommodate passengers arriving on the New Haven road train due at Putnam at 12:42 p.m. Since the same date a similar service has been operated to accommodate passengers arriving on the New Haven road train due at Putnam at 6:42 p.m., as cars on the regular schedule did not connect without a delay for either of these trains.

Beginning Dec. 2, 1912, the car due to leave Norwich at 5:17 a.m. was put ahead so as to leave Norwich at 5 a.m. in order to make connections with the New Haven road train at New London at 6:10 a.m. This train had previously left New London at 6:25 a.m. and takes mail and passengers from the Norwich-New London cars.

Since Feb. 23, 1913, the car due to leave Willimantic at 10:25 p.m. for Norwich has been held five minutes, if necessary, on Sunday nights for the steam train due at Willimantic at 10:15 p.m. if the latter was late.

AT STAMFORD

On all lines except that to Shippan Point the schedule is of sufficient frequency to make reasonable connections with trains. The Shippan Point line is operated on a twenty-minute headway during a portion of the day and a forty-minute headway during the remainder, and the schedule has been rearranged to make connections with the trains.

AT BRIDGEPORT

One car that operates between the village of Westport and the Saugatuck railroad station, which is the railroad station serving Westport and vicinity, is operated entirely for the purpose of serving patrons going to and from the railroad station, and makes connections with all trains. At Bridgeport there are two trains, one due at 12:30 a.m. and one at 12:45 a.m., east-bound and west-bound respectively. Up to about three years ago only two cars were connected with these trains, but since that time cars have been run later to make connections with these trains, so that now practically all city lines are served.

AT NEW BRITAIN

Beginning Jan. 16, 1911, crews were instructed to wait five minutes past the half hour at Plainville to accommodate passengers coming from the east on "dinkey" trains and destined for points south.

Effective Feb. 25, 1911, the service out of West Main Street as far as Garden Street, New Britain, was extended fifteen minutes for the accommodation of people who might arrive from New York on the train due at 11:15 p.m.

Effective Oct. 30, 1912, the car scheduled to leave Berlin Street at 11:35 p.m., due at the Berlin station at 11:45 p.m., is held eight minutes on Sundays if the New York train is late.

Table III—Results of Operation of the Connecticut Company

| Year Ended June 30: | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 |
|---|---|---|---|---|---|---|
| Gross receipts | $6,054,282.46 | $6,548,492.01 | $6,841,425.16 | $7,235,728.78 | $7,615,065.44 | $8,030,620.94 |
| Operating expenses | 4,094,321.65 | 4,213,928.77 | 3,968,258.64 | 4,461,589.69 | 5,287,225.97 | 5,112,299.90 |
| Net revenue from operation | 1,959,960.81 | 2,334,563.24 | 2,873,166.52 | 2,774,139.09 | 2,327,839.47 | 2,918,321.04 |
| Capital expenditures | 3,574,044.19 | 3,287,409.86 | 1,516,757.86 | 1,180,143.72 | 3,479,137.43 | 2,034,239.28 |
| Maintenance way and structures | 731,713.31 | 709,124.39 | 572,107.44 | 834,047.90 | 998,871.63 | 972,974.21 |
| Maintenance way and structures per car mile—cents | 2.95 | 2.72 | 2.18 | 3.06 | 3.52 | 3.39 |
| Maintenance way and structures, per cent gross receipts | 12.08 | 10.83 | 8.36 | 11.53 | 13.20 | 12.13 |
| Maintenance equipment | $489,440.37 | $524,316.58 | $450,555.63 | $518,725.12 | $877,589.75 | $630,432.99 |
| Maintenance equipment per car mile—cents | 1.97 | 2.01 | 1.72 | 1.90 | 3.09 | 2.20 |
| Maintenance equipment, per cent gross receipts | 8.08 | 8..01 | 6.60 | 7.17 | 11.60 | 7.85 |
| Total maintenance per car mile—cents | 4.92 | 4 73 | 3.90 | 4.96 | 6.61 | 5.59 |
| Total maintenance, per cent gross receipts | 20.16 | 18.84 | 14.96 | 18.70 | 24.80 | 19.98 |

Effective Dec. 16, 1912, the car north-bound due to leave the Berlin station at 6:10 a.m. is held three minutes to make connections with the New Haven road electric train from Middletown.

Since Feb. 15, 1913, the car scheduled to leave Berlin Street at 7 a.m. and arrive at the Berlin station at 7:10 arrives at the Berlin station at 7:08 to make connections with the train bound to New York leaving Berlin at 7:11.

Table IV—Unit Results

| | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 |
|---|---|---|---|---|---|---|
| Gross earnings per mile of track | $9,716 | $9,028 | $9,011 | $9,703 | $10,015 | $10,467 |
| Operating expenses per mile of track | 6,570 | 5,809 | 5,240 | 5,983 | 6,934 | 6,663 |
| Passengers per car mile | 4.78 | 4.92 | 5.07 | 5.19 | 5.19 | 5.36 |

## RESULTS OF OPERATION

Table III shows various results of the operations of the company from 1907 to the last fiscal year ended June 30, 1912. It will be noted that gross earnings increased from $6,054,282 in 1907 to $8,030,621 in 1912. This is equal to 32.6 per cent. The operating expenses rose from $4,094,322 in 1907 to $5,112,300 in 1912, or an increase of 24.9 per cent. Net operating revenue was $1,959,961 in 1907 and $2,918,321 in 1912, or a gain of 48.9 per cent. The operating ratio excluding taxes was 67.6 per cent in 1907 and 63.7 per cent in 1912. During the first year reported, that ended June 30, 1907, the company made capital expenditures to the amount of $3,574,044. In the following year the total was almost as large. In the 1909 and 1910 fiscal years much less was spent, but in the year ended June 30, 1911, the total spent was almost $3,500,000. For the entire period of six years for which the figures are given the aggregate capital expenditures have reached a total of over $15,000,000.

Expenditures for maintenance charged to operating expenses have also been liberal during this period, and in fact larger than is the practice with most electric railways, so that the physical condition of the entire system has been improved materially. During the period of six years the aggregate expenditures for maintenance of equipment and of way and structures have increased from 14.96 per cent to 24.8 per cent of the gross receipts. The average per year was 19.68 per cent. The average yearly expenditure on maintenance of way and structures during this period was 11.35 per cent of the gross receipts. The average yearly expenditure on maintenance of equipment during this period was 8.22 per cent. Table III also shows the maintenance expenditures per car-mile. These extended from 3.9 cents in the 1909 fiscal year to 6.61 cents in the 1911 fiscal year. The average per year for the entire period of six years was 5.12 cents. The average annual expenditure per car-mile for maintenance of way and structures during this period was 2.97 cents. The average annual expenditure per car-mile for the maintenance of equipment during this period was 2.15 cents.

Table V—Changes by Years

| | 1907 | Percentage Increase Over 1907 | | | | |
|---|---|---|---|---|---|---|
| | | 1908 | 1909 | 1910 | 1911 | 1912 |
| Gross receipts | $6,054,282.46 | 8.2 | 13.1 | 19.6 | 25.2 | 32.6 |
| Operating expenses | $4,094,321.65 | 2.8 | *2.2 | 9.0 | 28.0 | 24.9 |
| Maintenance of way | $731,713.31 | *3.1 | *22.1 | 14.1 | 36.2 | 33.0 |
| Maintenance equip't | $489,440.37 | 7.8 | *7.9 | 6.1 | 80.2 | 28.8 |
| Operation of cars | $1,604,800.61 | 2.5 | 1.2 | 8.2 | 14.9 | 17.0 |
| Power | $685,801.83 | 14.3 | 9.8 | 14.2 | 48.1 | 36.0 |
| Car miles | 24,780,159 | 5.8 | 2.9 | 9.9 | 12.4 | 17.7 |
| Kilowatt-hours | 68,559,635 | 11.1 | 20.0 | 24.4 | 38.0 | 48.3 |
| | 1908 | Percentage Increase Over 1908 | | | | |
| Net income | $2,702,101.93 | | 33.8 | *7.2 | *58.6 | *43.8 |

*Decrease.

The opening of new lines affected the showing of average gross earnings per mile of track. Table IV shows these results from 1907 to 1912, together with the operating expenses per mile of track and the passengers carried per car-mile. It will be observed that the opening of new lines caused a decrease in gross earnings per mile of track in 1908 and 1909, but that in 1911 and 1912 there was a fair betterment as compared with the earlier years. The earnings per mile of track in 1912 showed an increase of 7.7 per cent over 1907. There was a steady improvement in the number of passengers carried per car-mile, although the total is still low.

Table V, published herewith, shows the year by year changes in percentages of a number of the principal operating results during the period of six years ending with 1912.

Table VI shows the detail results for the fiscal year ended June 30, 1912. While, of course, the largest portion of the revenue was received from passenger business, the returns from other sources equaled 5.6 per cent of the entire gross returns. The revenue from freight amounted to 2.8 per cent of the gross revenue from all sources. During the year the operating ratio was 63.7 per cent. Of this proportion 19.9 per cent was devoted to maintenance of way and structures and equipment. Operation of power plants took 11.6 per cent of the gross; operation of cars cost 23.4 per cent. General expenses reached 7 per cent, while miscellaneous expenses amounted to 1.8 per cent. Taxes aggregated 5.6 per cent of the total operating revenue. The net income after the payment of interest and rental was equal to 3.8 per cent on the outstanding capital stock, all of which is owned by the New York, New Haven & Hartford Railroad Company. It will be noted that this is a little under the 4 per cent which it is calculated is required in order that the property shall properly pay for the carrying cost of the investment. If the property develops to a point where it earns more than this return it will yield a profit on the cost as compensation for the risk above the cost of carrying the investment.

Table VI—Operations in Year Ended June 30, 1912

| | | |
|---|---|---|
| Operating revenue: | | |
| Freight revenue | $224,018.74 | |
| Passenger revenue | 7,582,024.54 | |
| All other revenue from transportation | 122,907.26 | |
| Revenue from operations other than transportation | 101,670.40 | |
| Total operating revenue | | $8,030,620.94 |
| Operating expenses: | | |
| Maintenance of way and structures | $972,974.21 | |
| Maintenance of equipment | 630,432.99 | |
| Operation of power plants | 932,975.41 | |
| Operation of cars | 1,877,614.42 | |
| General expenses | 562,485.00 | |
| Miscellaneous expenses | 135,817.87 | |
| *Total operating expenses | | 5,112,299.90 |
| Net operating revenue | | $2,918,321.04 |
| *Taxes | | 449,247.41 |
| | | $2,469,073.63 |
| Income from other sources | | 62,541.28 |
| Total income | | $2,531,614.91 |
| Deductions from income: | | |
| Interest, rentals, etc | | 1,012,539.29 |
| Net income | | $1,519,075.62 |

*The operating expenses and taxes were 69.25 per cent of the total operating revenue.

## RESULTS ACCOMPLISHED

Some of the results accomplished are indicated in excerpts from a letter written by L. S. Storrs, vice-president of the New York, New Haven & Hartford Railroad, in charge of subsidiary lines. Mr. Storrs says:

"The trolley holdings of the New Haven road can be divided into two classes, developing lines and those on which the development has been practically completed, with the exception of such minor extensions of trackage as may be required to take care of growing communities.

"The developing lines are those of the New York & Stamford Railway, which are rapidly being double-tracked all the way from Stamford to New Rochelle in order better to serve this growing suburban territory and thus afford better facilities to the suburban residents and render New Haven territory more popular to this rapidly increasing class of New Yorkers. It is hardly to be expected that this property will earn any dividends on its stock for the next three

years owing to the extremely heavy charges against operations necessitated by the reconstruction of existing trackage incident to the double-tracking. Upon the completion of this work, with the rapidly increasing settlement throughout the territory served, the returns to the stockholder (the New York, New Haven & Hartford Railroad Company) will be vastly greater than any trolley line of like mileage outside of the cities of New York, Boston and Chicago.

"The situation in connection with the Westchester Street Railroad is very similar, the lines being through another part of the New York suburban zone, and one in which the development will doubtless be very rapid owing to the increase in transportation facilities provided by the completion of the New York, Westchester & Boston Railway, which the Westchester Street Railroad serves as a distributing agency at its White Plains terminal.

"The other developing property is the Berkshire Street Railway, on which the earnings will hardly serve to do more than maintain the property and provide for the fixed charges. This property serves a territory immediately adjacent to the various steam roads in the western part of Massachusetts, and extensions are now being constructed to provide transportation to a very large area that has been entirely shut off since the earliest days of railroad development in the Commonwealth, but which prior to that time was one of the most prosperous portions of the country—an area through which it would be impossible to construct steam lines, but one that can be well served by the trolleys. The settlement and advance of such a large area is relied upon to bring to the New Haven's lines proper a traffic that will compensate it for the loss on the investment necessary to develop same. This was thoroughly understood at the time of the enactment of legislation permitting the New Haven to acquire the property, and no criticism was made of the New Haven at that time.

"The other properties, those in Connecticut and Rhode Island, are developed lines and are in a position to return to the New Haven a reasonable interest upon the investment.

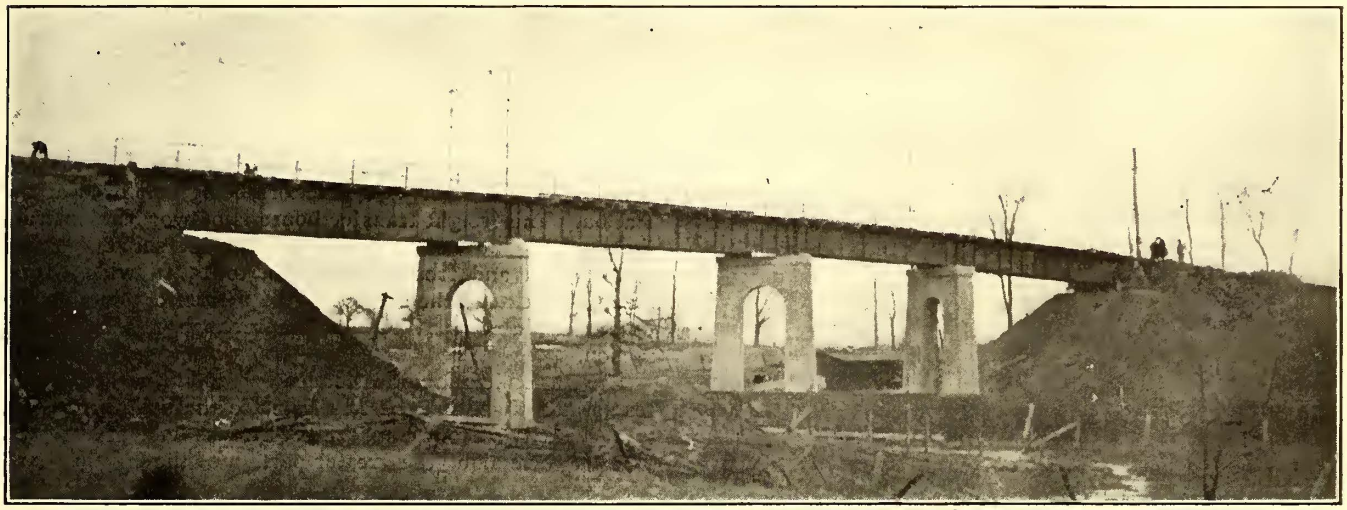
"The properties now composing the Connecticut Company were purchased by the New Haven just at the time they were coming into the period of complete renewal, and, rather than spread this renewal over a great number of years, it was decided to make the most liberal appropriations for the work in order that the property might be in a superior physical condition and thus able to provide adequate service to the rapidly growing territory.

"Had the policy of gradual rehabilitation been adopted as it was on other large properties in New England, the returns to the New Haven would have been very much greater, for since the acquisition of these properties by the New Haven there has been spent for maintenance of the properties and charged against current operations an annual average of 19.58 per cent of the gross receipts, and during the same period the amount so charged by the trolley companies in Massachusetts has been but 14.83 per cent, a figure which, if followed in Connecticut, would have resulted in a further divisible income in the five years 1907 to 1911 of $1,630,000, or an annual average of about 1 per cent on the capital stock.

"In addition to the above policy the property has been liberally enlarged in many ways, such as:

"Double-tracking of lines in order to provide facilities for improved service, 8 per cent additional mileage having been added in such construction. During this period 18 per cent additional mileage was constructed to reach territory theretofore without trolley facilities, this at a time when one-fourth of the entire mileage was rebuilt.

"At the time the lines in the large cities were acquired the cars owned had a seating capacity of 29,600. There have been purchased cars with seating capacity of 36,300. The service performed shows an increase of 20 per cent in car mileage. The increase during the same period in Massachusetts was 5 per cent. as shown by the records in the Railroad Commissioners' office. A large amount has, of necessity, been spent for additional power and carhouses and shops.



**Connecticut Company—Viaduct Over Central New England Railroad Tracks at Bloomfield, Conn.**

"The period of reconstruction has passed and the charges for such account can now be reduced to a normal amount, in addition to which full effect can be obtained from the normal increase in gross business, thus bringing the property to a point where a reasonable return may be maintained on the investment, the return last year having been increased from 2½ per cent to 3¾ per cent with further increase probable for this year, notwithstanding a very much increased charge for labor, the advances of this year having been settled upon for two years. As these properties were purchased with funds provided by issuance of debentures bearing a low rate, a return of 4 per cent on the capital will render the properties self-sustaining as far as the New Haven is concerned; 4 per cent on the Connecticut property requiring but $1,600,000 and on the Rhode Island property less than $1,000,000, one of the properties having already reached this rate of return, and the others being in a position to reach that return without question in one more year.

"Specific reference has not been made to the Rhode Island situation further than the broad statement that within a year the property should be approximately on the basis of returning 4 per cent to the New Haven on its investment."

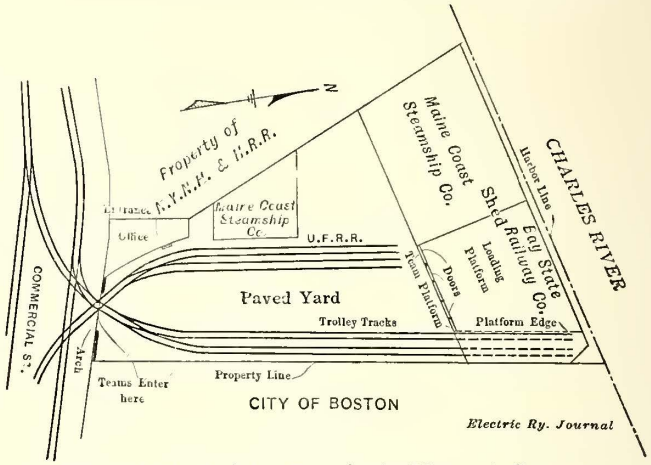
The gross earnings of the Connecticut Company of $8,030,621 in the fiscal year 1912 are based on 767.25 miles of track. These results compare with estimated Connecticut intrastate earnings of the New York, New Haven & Hartford Railroad of $12,135,000, based on 865 miles of track. The results per mile of track averaged $10,467 for the electric line as compared with $14,029 for the steam road. During 1913 the lines of the New London division, covering a mileage of 105 miles, were leased for a long period to the Shore Line Electric Railway interests.

In summing up, it may be stated that the properties now comprised in the Connecticut Company system have undergone thorough physical rehabilitation. They have been developed along substantial lines and operation has been unified and put on a basis where the lines not only supplement each other but supplement and are supplemented by the through steam lines of the controlling company. They have been put on a basis where their credit is good, and their ability to finance needed improvements to meet the demands of traffic is unquestioned. They are operated as a cohesive whole, rather than as a collection of widely separated properties without sufficient common interest to justify the proper development of through routes or the creation of other physical conditions which promote traffic growth.

## NEW ELECTRIC FREIGHT STATION AT BOSTON

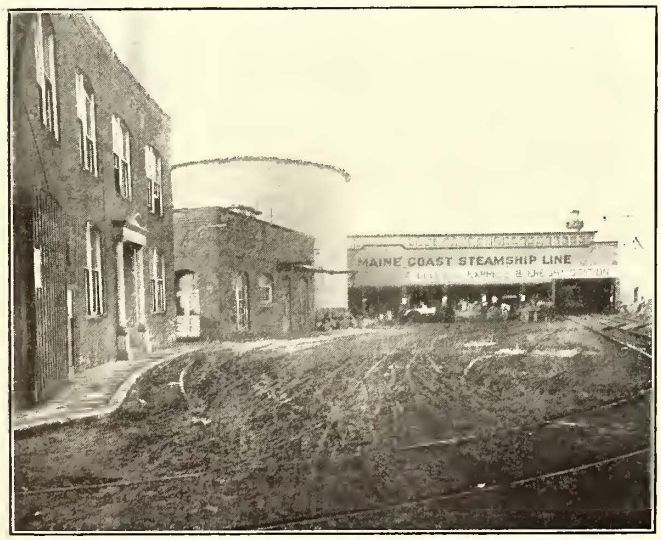
The Bay State Street Railway Company has recently opened a station on the Boston waterfront for the exclusive handling of electric freight service in connection with the facilities for merchandise transportation operated by the company on the lines south and west of the city. In the Dec. 21, 1912, issue of this paper an article was printed describing the beginnings of electric express service at Boston, and the opening of the freight station in co-operation with the Harrison Avenue express terminal described in the above issue represents another forward step toward the development of a large and important service throughout eastern New England. Both installations are somewhat temporary in character in view of the necessity of economizing on the initial outlay prior to the growth of a large service.

The waterfront station is located on Copps Hill Wharf, about midway between the South Boston freight yards of the New York, New Haven & Hartford Railroad and the Charlestown freight yards of the Boston & Maine Railroad, which insures the shortest average haul for teamsters and trucks delivering or receiving goods to or from the steam railroads. The tracks of the Union Freight Railroad Company, a steam transfer organization handling freight cars in the Boston wholesale and railroad terminal district, enter the new terminal and enable reshipments between the steam and electric lines to be made with comparative ease. The station consists of a transfer shed one story in height, 80 ft. wide and 200 ft. long, with teaming platform, car platform and two electric railway tracks paralleling the latter, about 45,000 sq. ft. of real estate including a partially paved yard, and an office building. The latter contains quarters for the general agent, clerks, cashier, solicitors and auditor, five solicitors being employed at the station. The freight transfer house is of wooden construction throughout and is provided with six shipping doors 9.5 ft. high and from 10 ft. 9 in. to 15 ft. wide. It is planned to extend the service in the future to points on the coast of Maine with regular interchange at the Boston station.

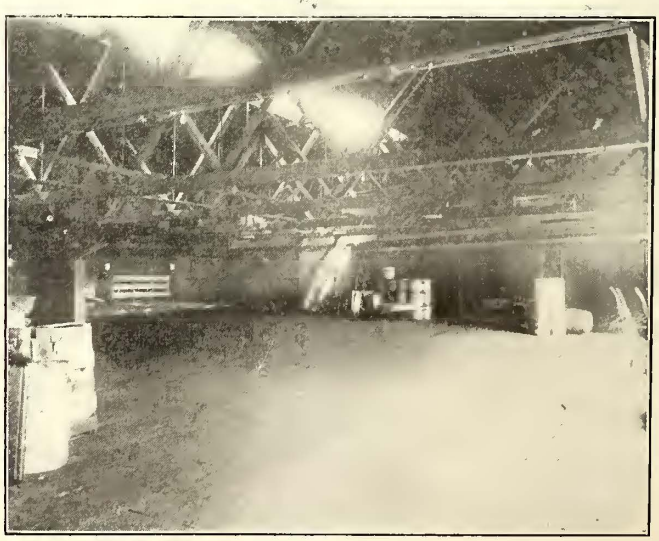



Copps Hill Freight Terminal—Plan of Grounds

The station has facilities for loading and unloading eleven teams at a time, and the tracks inside the building have a total capacity of four cars, the yard tracks holding five cars. The platform along the greater portion of the teaming yard is 3 ft. 6 in. high, while on the track side it is 4 ft. above the pier, there being a slight ramp downward away from the cars toward the teaming space. The freight station proper is illuminated by a monitor 8 ft. wide and 7 ft. high and by about thirty-two 16-cp lamps supplied from the Edison service and carried on the under sides of the roof trusses. A set of Fairbanks scales with a capacity of 11 tons is located in the freight station. Hose connections and




Copps Hill Freight Terminal—Exterior



Copps Hill Freight Terminal—Interior

fire pails are provided, and the lamps are installed at an average height of 11 ft. above the floor. A drop light is installed over the scales, and the available depth of water at the wharf is 18 ft. at low tide. From ten to fifteen truckers, loaders and helpers are required in the daily service of the station, the number of these depending upon the volume of traffic handled. Perishable freight is kept either in the foreman's office or in a car during cold weather. The cars used are similar to those described in connection with the Harrison Avenue station in the previous article. Through service is given several times daily between the Copps Hill Wharf station, Brockton and points south and over the Boston & Worcester Street Railway to Worcester. The Boston Elevated Railway Company furnishes a pilot motorman for all electric express and freight cars run upon its lines, the waterfront station being upon its system, as is the Harrison Avenue terminal. An extra car is kept constantly at the Copps Hill station for emergency service.

The general express and freight agent of the company has issued to the shippers located on the system a circular letter upon which is printed the map of the Bay State lines and connections. The letter reads as follows:

"Our new freight terminal located in the shipping center of Boston at Copps Hill Wharf, 529 Commercial Street, is now open. Cars leave this terminal daily at 8 a. m., 11 a. m. and 5 p. m., and give a fast, frequent and safe service between Boston and the above points on our lines. Our solicitors will gladly call and explain the service, if you will so notify by telephone Richmond 2477."

Plans are now being prepared by the management of the Bay State company for establishing a trolley freight and express service on the lines north of Boston, and franchises have been granted by fifty-three municipalities in the territory of the old Boston & Northern Street Railway for this class of service. On the south side of the city, in the former Old Colony company's territory, twenty-nine municipalities are receiving electric express service. The company has twenty cars either ordered or engaged in the express business. The Boston & Worcester Street Railway is handling a co-operative service on a fast schedule and there will probably be a striking increase in this branch of electric transportation in eastern Massachusetts during the present year.

## NEW PLANS IN THE CLAIMS DEPARTMENT, BUFFALO

The claims department of the International Railway Company, of Buffalo, N. Y., has had good success recently in collecting information regarding accidents. In the first place the claims agent has instituted a competition in the various carhouses, giving the percentage of the largest number of names of witnesses to accidents secured by the men assigned to each carhouse. By this means at least twice as many names are now received as formerly. Lists of the percentages of witnesses secured by crews in the different carhouses are posted in a bulletin once each month. A second feature is the sending of a letter to every witness on a great many of the reports as soon as they are turned in to the claims department. To most of these letters answers are received from witnesses, and much expense is saved by the reduction in the number of calls which otherwise would have to be made by the investigators. These returns are made by the witnesses on a printed form, and very interesting information is furnished. The letters keep the claim agent informed as to the actual facts and serve as a basis of further examination of claimants. The letters signed by actual witnesses have much weight with claimants, who very often are prompted by unscrupulous lawyers to make claims which they really consider unseasonable. When they know that the information possessed by the claims department comes from unbiased witnesses they are apt to take a reasonable view of the situation. The letters read as follows:

"We are informed that you were a witness to an accident supposed to have happened about ..... We are making every effort to prevent the occurrence of accidents upon our lines, and in order to fix the responsibility, it is necessary that we be in possession of all the facts in each case. To this end we ask your co-operation by answering as fully as possible the questions on the other side of this sheet, assuring you that your courtesy in the matter will be greatly appreciated. A return stamped envelope is inclosed."

The printed form on the back includes questions as to other witnesses of the accident, exact time and place of the accident, position of the witness and speed of car. A request for a description of the accident as seen by the witness and his opinion as to the cause is made in addition.

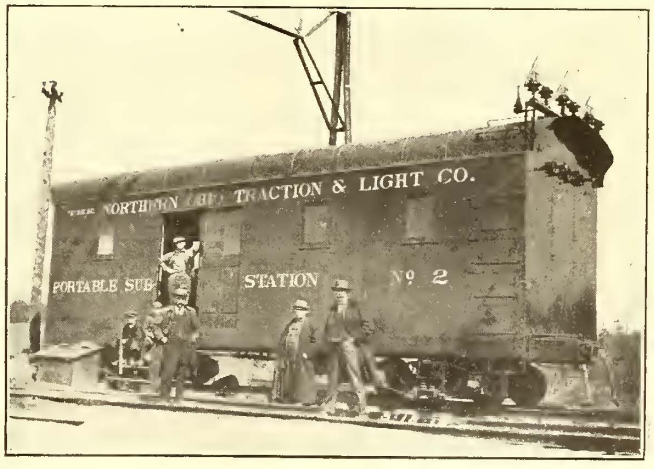
There has been a large decrease of a certain class of accidents, which is to be credited to the near-side car. These cars, in fact, have eliminated entirely boarding and alighting accidents. On the Grant line, for a period of thirteen months prior to Feb. 1, 1911, there were seventy-three such accidents. During the thirteen months following that date there was one accident. The accidents have also been reduced by the exercise of increased care throughout the system.

## PORTABLE SUBSTATION FOR THE NORTHERN OHIO TRACTION & LIGHT COMPANY

BY V. W. SHEAR, ELECTRICAL ENGINEER

An all-steel portable substation recently placed in service by the Northern Ohio Traction & Light Company, operating out of Akron, Ohio, is chiefly interesting because of the large capacity per square foot of car floor space and because it is an excellent example of the adaptability of modern standard electrical apparatus to conditions for which it was not primarily designed.

The all-steel car itself, built by the McGuire-Cummings Company, is 36 ft. in length over all, 34 ft. over corner posts, 8 ft. 6 in. over side posts and 13 ft. 1½ in. from top of running board to rail, giving a maximum inside height of 10 ft. 6¼ in. Limitations from track clearances and low bridges, on the one hand, and the transformer height of 9 ft. 8½ in., on the other hand, compelled the use of a narrow



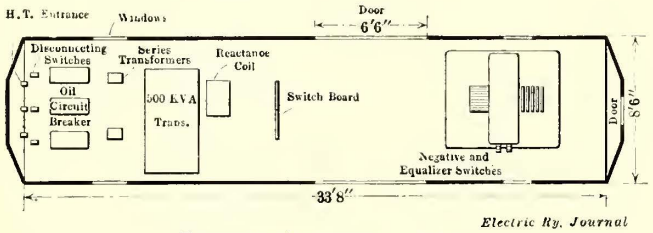

**Portable Substation—Northern Ohio Traction & Light Company**

car and small wheels. For hauling the car from the manufacturer's plant to its destination over steam roads 33-in. wheels were used and also M. C. B. couplers, as required by railroad regulations. These parts were later replaced by 24-in. wheels and the Northern Ohio Company's standard draft gear. The trucks are of the diamond M. C. B. arch type, having 60,000-lb. capacity. Inasmuch as a 500-kw rotary converter is installed in this car, it will be seen

that a capacity of 1.73 kw per square foot of loading space is obtained. The average figure for portable substations of which descriptions have been published appears to be about 1.3 kw per square foot, and for some the figure is as low as 0.85 kw per square foot.

The entire equipment, with the exception of the lightning arresters and slate for switchboard panels, was one of two converters which had been purchased by the company and delivered for a stationary substation but had not been installed on account of proposed changes in line locations. Very little work was required to select and arrange the necessary apparatus for satisfactory operation under quite different circumstances as to spacing and layout from those contemplated when the apparatus was purchased. It would indeed have been difficult to select apparatus, especially for a portable substation, at a material reduction from the actual total cost aside from a possible saving by use of an outdoor type of transformer.

It will be noted from the layout of apparatus within the car that the transformer and rotary are on opposite sides of the car. This was necessary to make sufficient passageway to enable the operator to get around them. The transformer weighs approximately 14,700 lb., while the rotary weighs 18,000 lb. Therefore, by offsetting them toward opposite sides of the car, the required space was readily obtained and the unbalanced weight became negligible. The positive and equalizer switches on the rotary frame are on the same side as the passageway, so that no danger from contact is incurred.




**Portable Substation—Plan**

The commutator end of the rotary is placed toward the switchboard as the commutator needs more attention than any other part of the machine. At the same time ample space is provided between rotary and switchboard so that there will be no danger from flash-overs.

The high-tension line characteristics are 22,000 volts between phases, three phases, sixty cycles, and a grounded neutral. Lightning protection is obtained by means of a Burke type combined lightning arrester and choke coil mounted on the roof at the end of the car. The mounting is so made that the arrester can be quickly dismantled and placed inside the car if low bridges are to be passed. The high-tension lines are further protected by a 5/16-in. double-galvanized steel cable strung over the transmission lines and grounded about every 500 ft.

The recent development of a powerful type of high-voltage circuit-breaker, safe to install without inclosing compartments of brick or concrete, rendered easy the installation of this very important part of the control equipment. It is a Westinghouse Type "E" breaker with remote mechanical control, series tripped from the current transformers and rated at 35,000 volts and 300 amp. This circuit-breaker will be equipped with a no-voltage-release coil as an additional safeguard in case the high tension should go off and go on again before the d.c. circuit-breaker was tripped and the reverse-current relay should fail to act.

The transformer is designed for a three-phase, 22,000-volt high-tension line with suitable starting taps for the rotary. All leads enter the side of the transformer, and the usual wheels were removed to reduce the height as much as possible. A trap door is provided in the car roof, and the transformer is easily put in place or removed by use of the crane in the power house.

A separate reactance is provided and controlled by a double-throw three-pole switch so that it can be cut in or out of the circuit as desired, in order to obtain the required compounding in the rotary. The regulation required will depend upon the location of the substation. The transformer contains sufficient inherent reactance for most conditions.

The rotary converter is rated at 500 kw at 600 volts d.c. and is designed for six phases, sixty cycles, a.c. It operates at 900 r.p.m., is self-starting and is equipped with mechanical oscillator and speed-limiting device. The probable locations include some considerable grades; therefore a leveling device consisting of a heavy plate with jack-screw and holding-down bolt is placed under each corner of the rotary, permitting a vertical adjustment of several inches on each side of the machine.

The small switchboard needs little comment. For sake of space economy it is furnished with the fewest instruments and simplest arrangement of connections possible with safe operation and consists of one a.c. and one d.c. panel. The value of the reverse-current relay has been demonstrated in this station. The positive d.c. leads pass out through the rotary end of car, while negative and equalizer leads rise directly through floor to switches on the rotary frame.

Two lighting circuits are provided, one on the d.c. side for use when the a.c. power is cut off as in early hours of the morning, and the other on the a.c. rotary circuit. Heating is furnished by a small stove or electric car heaters. On account of noise the telephone is installed on a support outside of the station with a large gong inside.

The cut shows the station located on a temporary siding, materially aiding the main line cars to maintain schedules while permanent substations are being completed. This substation will be available over approximately 80 miles of interurban lines as well as in several towns and cities, including Akron.

Some practical points may be noted which, if they are observed when a steel portable substation is being planned, will prove of value. If exact measurements of all holes and openings through the steel walls and floors are given to the car builder, the cutting, which is hard to do with hand tools, will be done without additional expense, and this will save costly and exasperating delays and changes. Openings through steel for cables, operating rods, etc., should be amply large to allow for the use of larger cable than is contemplated if necessary to save time, etc. It is not easy securely and safely to mount heavy porcelain bushings in a thin steel wall unless the most suitable type of bushing and support have been selected. Specifications cannot be too carefully drawn covering any items concerning which there may be ambiguity, such as whether the purchaser or manufacturer will furnish the conduit under the car, pay the freight, furnish the supporting framework for various pieces of apparatus, etc. Foresight in these matters is useful not so much on account of the money involved as to prevent delays due to oversight in the preparation of the necessary parts.

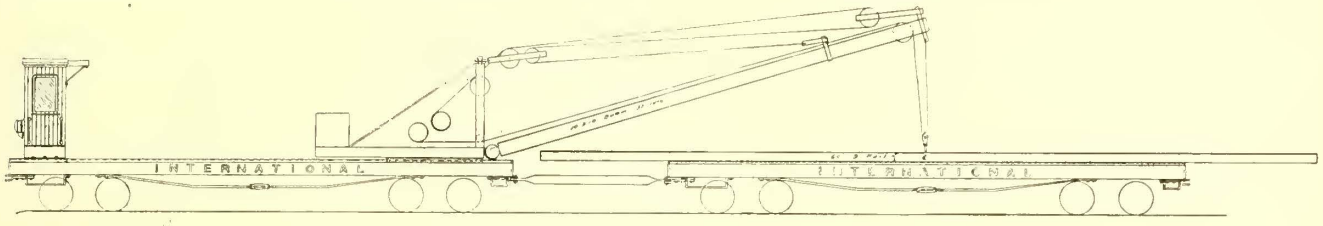
---

The new Loetschberg tunnel route through the Alps, which was officially opened on June 20, has already begun to carry regular traffic. Three express trains are run from Nancy, in France, through Berne to Milan in eleven hours. New direct service, saving three hours, will also be established between London and Genoa by way of the following route: Through northern France vie Rheims, Nancy, Epinal and Delle; through Switzerland via Biel, Berne, Thun, Spiez, Loetschberg tunnnel to Brique, Simplon tunnel to Isella, Italy; then via Milan to Genoa. The Loetschberg tunnel is 9 miles long, the third longest in Europe. The electric locomotives used on the new route between Spiez and Domodossola, Italy, are operated at 15,000 volts single phase.

# Track Rehabilitation on the International Street Railway

**Extensive Rehabilitation of the Street Railway Track Has Been Under Way in the City of Buffalo, the Work Being Carried Out Under the Direction of the Department of Maintenance of Way and Line, Which Has Developed Special Plans for Handling Large Quantities of Supplies**

During the present year large expenditures are being made in Buffalo for track reconstruction under the direction of the department of maintenance of way and line. The track mileage totals 376, of which 124 miles are double track, the rest being in single track and in carhouses, sidings and cross-overs. Of this mileage at least one-ninth will be replaced during the current year.



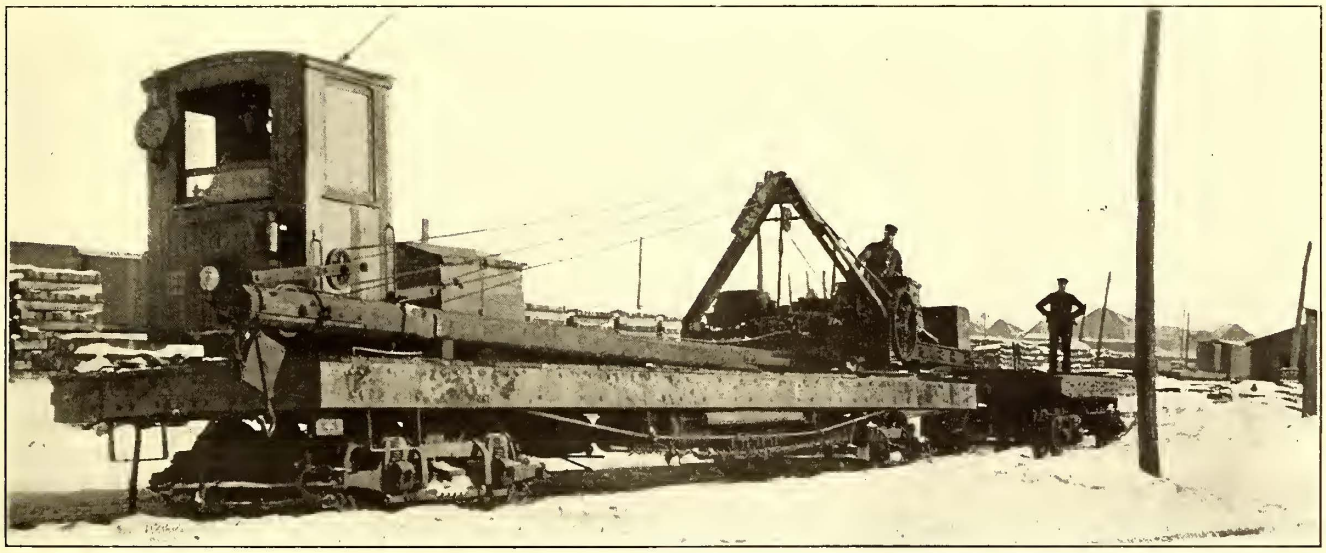

**Buffalo Track—Derrick Car and Trailer for Handling 60-ft. Rails**

The new track is constructed along the lines which have proved to be the best for local conditions and consists of 124-lb., 9-in. girder rails laid on 6-in. x 8-in. x 7-ft. long-leaf yellow pine untreated ties, spaced 2 ft. between centers. The ties are supported on a foundation of concrete 8 in. thick, consisting of one part cement, three parts sand and five parts coarse broken stone. Between the ties and sub-base is 2 in. of 1¼-in. crushed stone for tamping. A concrete paving base is laid on top of the crushed stone around the ties, and outside of the track this is brought up to a height to suit the style of paving, the asphalt commonly used requiring a space of 3⅜ in. below the top of the rail. Continuous rail joints are being used, and the rails are held down with Fetter drive screw spikes. The rods are spaced every 6 ft. Below the sub-base is an 8-in. x 8-in. trench containing a 4-in. tile laid in a hemlock trough and surrounded by 1¼-in. crushed stone. Over this in the concrete a drainage hole is molded every 10 ft.

For this new construction the estimates called for the following supplies to complete about 50 miles of single track: 7500 tons of rail, 130,580 ties with corresponding numbers of tie plates, 123,079 bbl. of cement, 19,265 cu. yd. of sand, 57,477 cu. yd. of gravel, 17,161 cu. yd. of 1¼-in. crushed stone, 1020 kegs of spikes, 61,529 tie rods, 453,300 drive screws, 6797 joints, 140,555 4-in. farm tiles, 145,555 ft. of 1-in. hemlock plank.

The company has devised a number of efficient plans for handling large quantities of supplies. Among these is the use of derrick cars of original design for handling rails, sand, etc. Two of these derrick cars, one double-truck and one single-truck, are now in use and a second double-truck car is under construction. The details of these cars are shown in the illustrations accompanying this article.

The car has a strong underframe floored with heavy planking and mounted upon standard trucks. At one end it carries a circular derrick track 7 ft. 7½ in. in diameter of 80-lb. T-rail. The circular track is centered directly over one truck and it rests upon the side sill I-beams. An operating cab is placed on the flat car at the end opposite from the derrick track. At each end of the car is a simple drawhead.



**Buffalo Track—View Showing Derrick Car with Boom Swung Into Position for Running**

On the circular track is mounted a derrick with an 8-ft. mast and a 32-ft. boom. The derrick consists of a steel underframe mounted upon four wheels which roll upon the circular track, a heavy cast-iron center bearing keeping the derrick centered on the track. The weight of the

boom and load is counterbalanced by a weight made up of concrete and scrap iron mounted on the end of the platform.

The derrick is rotated by means of a large spur gear mounted on the flat car, and this meshes with a motor-driven pinion on the under side of the derrick platform. A 15-hp motor, which is operated by a controller on the derrick platform, drives a standard two-drum hoist.

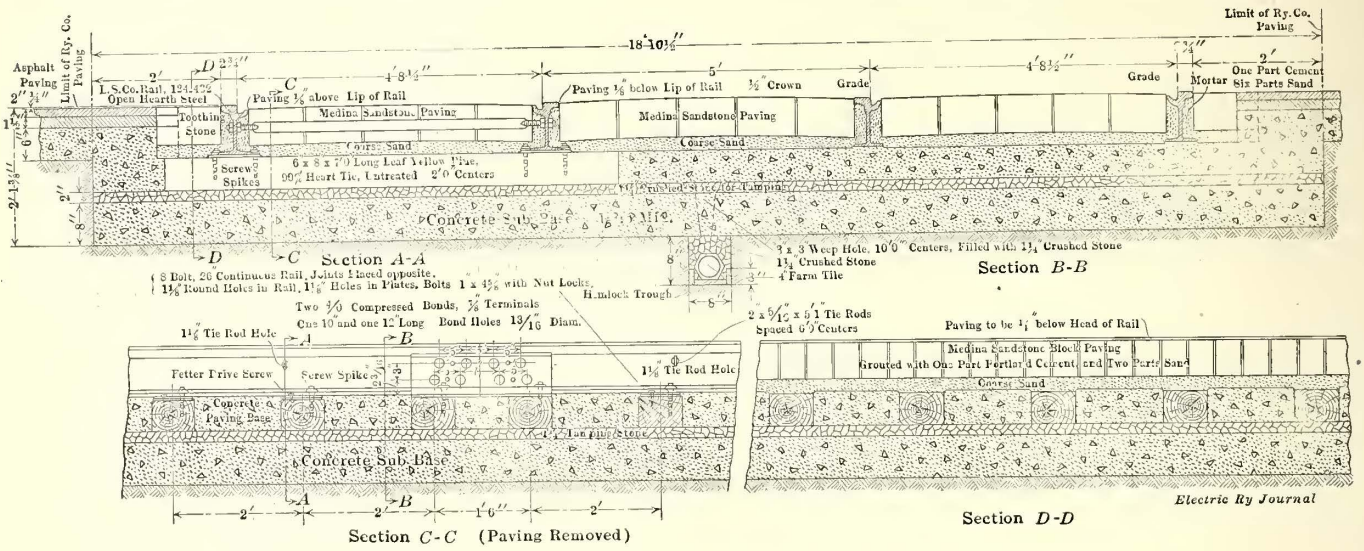
In use the derrick car is coupled to a trailer by means of coupling bars long enough to enable the trailer to accommodate 60-ft. rails. The derrick will lift a load of 6000 lb. and will swing it practically through a complete circle.

In using the derrick car for unloading rails from gondolas it is operated on a track parallel with the steam railroad track at one side of the storage yard. The rails are picked up from the gondolas and piled in the yard at a cost not exceeding 10 cents per ton. Before the installation of the derrick cars rails were unloaded by hand at a cost of more than $1.50 per ton. It has been found by the company that in practice four men are sufficient to operate a derrick car.

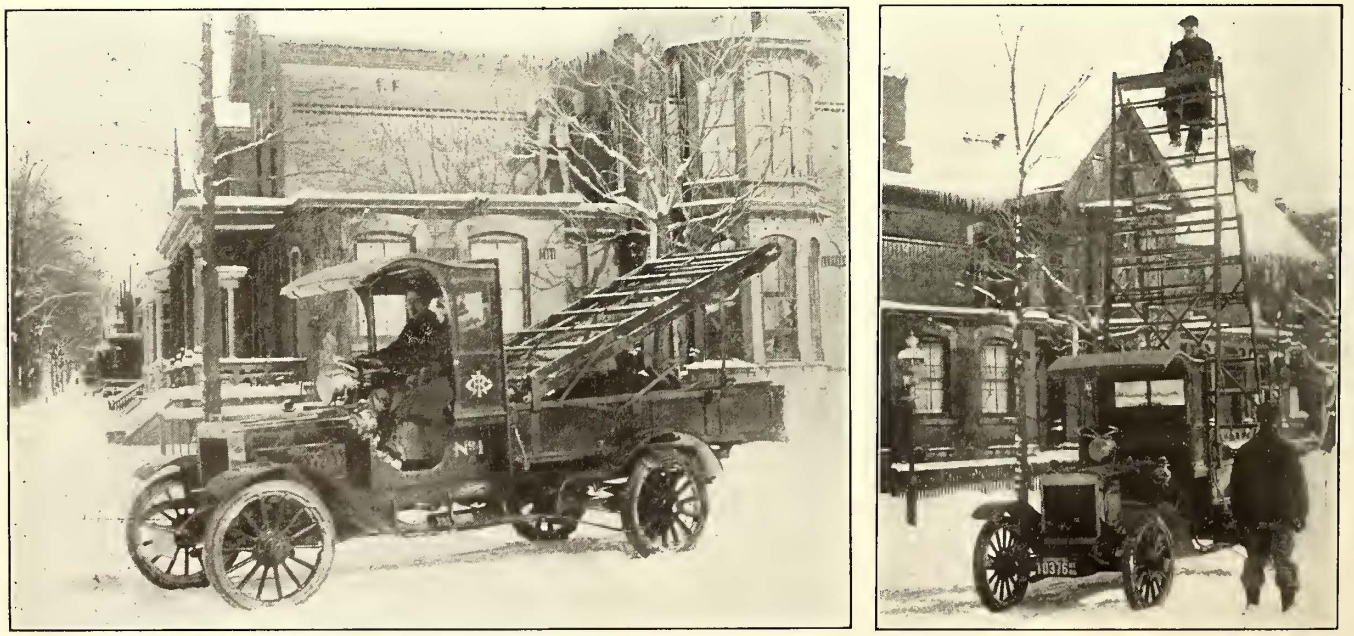
The department uses several auto trucks for line and track repairs. The ladder truck, illustrated herewith, is somewhat different from those usually used in that it combines the folding ladder with a wagon body fully equipped with all necessary apparatus for replacing cars, repairing line, etc.

In keeping up the track and line no special methods of inspection are employed. Upon completion of new work this is assumed to be good for five years without special attention. However, the general foreman of repairs keeps watch over the track with the assistance of the division superintendent. The transportation department has regular inspectors who report track conditions to the way department, and their reports receive prompt consideration. The regular switch men and curve greasers are also expected to report defects.

The type of construction to be installed in Buffalo has been tried out under severe conditions during the past three years and has proved entirely satisfactory. When this construction is completed it will put the Buffalo track in excellent condition for the nearly 300 new near-side cars which have been recently put into commission and are considerably larger and heavier than the cars which they replace.




**Buffalo Track—Standard Construction for New Work**



**Buffalo Track—Emergency Line and Track Wagon**

# Service Equipment and Operation in Chicago

An Abstract of a Report Made by the Board of Supervising Engineers—New Cars, Schedule Provisions, Through Routes, Traffic Analysis, Running Speed, Elimination of Stops and Removal of Snow Are Considered

In reply to an order passed by the City Council of Chicago requesting a report from the Board of Supervising Engineers, Chicago Traction, as to what has been done by the board toward carrying out the purport of a Council order passed March 11, 1912, respecting improvements in service, operation and equipment of the surface companies, the board made a detailed report on July 3. The report is signed by Bion J. Arnold as chairman, and says in part:

"The physical properties of the companies are being continually modernized and perfected, the systems extended and the methods of operation improved, and Chicago to-day enjoys a higher physical standard of its traction properties than other large cities in the country. In spite of this fact, the existing service and routing into the principal business district are admittedly deficient and rapidly becoming more so. This board is fully cognizant of these conditions and will assist so far as it can in applying reasonable remedies.

"Notwithstanding this great improvement in the physical properties of the surface companies (made in compliance with the 1907 and subsequent ordinances), and the improvement in service necessarily resulting therefrom, interpretation of the figures presented shows that the city of Chicago now faces a problem in local transportation as serious as ever before in its history. With the surface railway traffic increasing at a rapid and growing rate, largely as a result of the recent rehabilitation, there are no adequate means available now for alleviating the increasing congestion and inadequate street capacity except through: (1) Complete unification of transportation lines, segregated as far as practicable into short-haul and long-haul traffic between surface and rapid transit systems respectively; (2) additional bridges and tunnels, and finally (3) the construction of downtown subways, terminal and storage facilities. The immediate relief to be found by comprehensive through routing has already become quite apparent through discussion of these matters before the local transportation committee.

"Incidentally, with reference to this question of storage, attention is directed to the fact that the demand for rapid transit terminal facilities finds its most rational outlet under Grant Park, west of the Illinois Central Railroad right-of-way, and that this space should be reserved for such purposes.

"While under the 1907 ordinances, this board has ample powers regarding engineering and construction matters, as well as the supervision of accounts, the ordinances not only do not give to this board the power of initiating service regulations, but, further, the board must await a request from the City Council regarding any specific operating condition before the board is authorized to make recommendations thereon, and even then it has no power of enforcement, nor has it, under the ordinances, any means of ascertaining whether its recommendations have been carried out to the satisfaction of the City Council.

"To remedy this condition and to facilitate prompt action, a permanent traffic force should be organized for the purpose of maintaining systematic records of changing conditions of travel throughout the city.

"In order to facilitate as far as possible co-ordination of the work of the transportation committee and this board, pending the establishment of an effective traffic force such as the Council may see fit to authorize, this board will undertake to make investigations and within thirty days from the date of its recommendations to notify the local transportation committee whether such recommendations have been carried out, so that the committee may be fully and promptly informed.

"Much of the beneficial work eventually possible must necessarily be deferred until at least unified operation of the properties is put into effect, if not unified ownership. Until then the most efficient system of through-routing and the universal adoption of adequate standards of service already established by this board will be handicapped and difficult of execution without effective co-operation of other city departments in continuing the work of clearing the transit thoroughfares of existing obstructions and providing additional street facilities as rapidly as justified by the development of traffic. The work of the traffic police and especially the mounted police has proved of great value in relieving traffic congestion along the heavier lines, and this work should be extended into other parts of the city."

### IMPROVEMENTS IN SERVICE

The detailed report sent by the board mentions several improvements in service and adds concerning them:

"With all of these improvements, it is apparent, from a review of all the records, that for some reason the recommendations of this board have not been productive of direct and adequate results in some cases. In April, 1913, the schedules of seventeen lines were thirteen cars short of the recommendations of 1912 in spite of the rapid growth of traffic in the interim; and although at the present writing the schedules have been further increased, this apparent margin is quite insufficient to meet the growing traffic.

Table I—Comparative Operating and Traffic Record

| | Fiscal Year | Chicago Railways | Chicago City Ry. | Both Companies |
|---|---|---|---|---|
| Per cent increase | 1910 to 1911 | *18.4 (8.2) | 6.0 | 13.2 |
| Total passenger traffic, yearly | 1911 to 1912 | 5.8 (6.5) | 6.0 | 5.9 |
| Per cent increase in car mileage | 1910 to 1911 | 11.7 | 3.4 | 8.3 |
| | 1911 to 1912 | 3.5 | 5.2 | 4.2 |
| Total passengers per car mile | 1910 | 9.56 | 9.267 | 9.40 |
| | 1911 | 9.94 | 9.572 | 9.85 |
| | 1912 | 10.28 | 9.58 | 10.01 |
| Total passengers per car hour | 1910 | 77.85 | 87.91 | 79.4 |
| | 1911 | 88.45 | 84.97 | 87.1 |
| | 1912 | 92.40 | 86.30 | 89.9 |
| Average operating speed m.p.h. | 1910 | 8.19 | 8.84 | 8.50 |
| | 1911 | 8.79 | 8.93 | 8.74 |
| | 1912 | 8.98 | 9.00 | 8.99 |

*Chicago-Consolidated Traction Company traffic absorbed Dec. 28, 1910, resulted in 10 per cent increase in Chicago Railways traffic.
Total passengers includes transfers; car miles refers to revenue only.

### TRAFFIC AND SERVICE RECORDS

"Since 1910, the total passenger traffic of the principal Chicago companies has actually increased 6 to 8 per cent per year. An additional 10 per cent increase in the Chicago Railways traffic resulted from the absorption of the Consolidated Traction lines. At the same time, the relative car-loading factor has likewise steadily increased as shown in Table I by the ratios of passengers per car mile and per car hour, i.e., increase in passengers carried has been faster than the car miles operated.

"But the most conclusive evidence is offered by the results of traffic counts of passengers leaving the downtown district during the evening rush hour, shown in Table II. The 1907 and 1911 counts concern the 'loop' district traffic only, those of 1912 the mile zone only; hence these are not directly comparable.

"These observations indicate that the rush-hour 'loop' travel outbound has increased from 61,000 to 67,000 passengers (1907 to 1911) and for the mile zone has reached

as high as 83,000 passengers per hour (1912) for only 31 out of 47 lines. The average load per car was sixty-two passengers (1911) for the 'loop,' and for the mile zone eighty-seven passengers (1912), this average load rising as high as ninety-eight passengers per car during the heaviest ten-minute period (5:40 to 5:50 p. m.). Or, considered on a basis of relative loading as compared with seating capacity, the loading in the 'loop' district increased from 1.4 to 1.6 passengers per seat (1907 to 1911), while for the mile zone the average (1912) reached 2.12 passengers per seat.

Table II—Comparative Record of Evening Rush-Hour Travel

| | Chicago Rys. Co. | | | Chicago City Ry. Co. | | | Both Companies | | |
|---|---|---|---|---|---|---|---|---|---|
| | Loop District | | 1 Mile (a) Outside | Loop District | | 1 Mile (a) Outside | Loop District | | 1 Mile (a) Outside |
| | July and Aug., 1907 | July and Aug., 1911 | April, May, Sept., 1912 | 1907 | 1911 | 1912 | 1907 | 1911 | 1912 |
| Routes counted | all | all | 31/47 only | all | all | all | all | all | 52/68 only |
| Units per hour counted | 490 (b) | 695 | 593 | 341 (b) | 384 | 368 | 831 (b) | 1,079 | 961 |
| Cars per hour counted | 676 | 695 | 593 | 364 | 384 | 368 | 1,006 | 1,079 | 961 (d) |
| Seats per hour | 26,062 | 26,463 | 23,472 | 16,907 | 15,504 | 15,844 | 42,969 | 41,967 | 39,316 |
| Passengers per hour | 36,490 | 42,949 | 53,790 | 24,823 | 23,811 | 29,430 | 60,855 | 66,760 | 83,220 |
| Passengers per car | 54.0 | 61.8 | 90.8 | 68.2 | 62.0 | 80.0 | 60.55 | 61.9 | 86.6 |
| Average seating capacity | 38.5 | 38.2 | 39.6 | 46.2 (c) | 40.4 | 43.0 | 42.7 (c) | 38.9 | 40.8 |
| Passengers per seat | 1.401 | 1.62 | 2.29 | 1.467 | 1.54 | 1.86 | 1.417 | 1.59 | 2.12 |
| Per cent seated load | 70.4 | 61.7 | 43.6 | 68.1 | 65.1 | 53.8 | 70.6 | 62.8 | 47.2 |

Note—(a) Outer district bounded by Chicago-Halsted-Twelfth Streets; inner loop district by Kinzie-Clinton-Harrison Streets.
(b) Some trailers still in operation in 1907.
(c) High seating capacity due to fifty-seat summer open cars.
(d) Sixteen routes of Chicago Railways Company not counted totaled 155 cars per hour, 5884 seats, as per schedule.

"These results clearly indicate that there is no net improvement in service standard, as measured by the ratio of seats to passengers carried, due to the fact that the increase of traffic has exceeded the capacity of the greatly improved facilities which have been provided under the 1907 ordinance. Hence the present situation manifestly calls for immediate and comprehensive treatment along the broadest possible lines.

"A tentative standard of service has been established in which the various board representatives have practically concurred for the purposes of a unified property. This standard provides for as many seats as passengers during any fifteen-minute period of the non-rush hours, and an average of not over seventy passengers per standard double truck car during any thirty-minute period of the rush hours. Under present conditions of independent operation and existing street congestion, this standard cannot yet be universally applied, especially in the 'loop' district, owing to the physical limitations of existing track capacity. In such cases, it is the practice of this board, in its recommendations, to limit the individual car loads to the 'comfortable maximum' of 80 passengers per car.

### CAR EQUIPMENT AND NEW CARS

"At the present writing, the entire consignment of 215 new standard cars for the Chicago Railways Company and 125 near-side cars for the Chicago City Railway are in regular service. The Chicago City Railway will purchase fifty or more new cars during the present year, and contracts for 200 new cars for fall delivery have been placed by the Chicago Railways Company.

"These Chicago Railways cars will embody some modifications over previous types. The car will be 48 ft. 5 in. in length over bumpers with platforms 8 ft. in length, giving an unrestricted entrance passageway of about 40 in., thus insuring very rapid loading.

"In the endeavor to secure a lower entrance and exit step, the diameters of the driving wheels are reduced to 32 in. and the car floor is slightly inclined, resulting in step heights as follows: Ground to first step, approximately, 12½ in.; first step to platform step, 11 in.; platform step to car floor, 10 in. As wear takes place and the diameter of the wheels is reduced, the height of the first step will be lowered still further to a maximum of 1 in., making the minimum possible height of the first step 11½ in. and an average height of 12 in. With this improvement, it is expected that even faster loading than at present will be possible, less than one second per passenger for ordinary groups up to ten or twelve passengers. The front exit step will be raised automatically by the closing of the door as the car starts, which will tend to reduce accidents.

"This car is about 30 per cent lighter than the present standard cars of the largest type. It will seat forty-eight passengers in the car body with five additional seats on the front platform, and while having a maximum comfortable capacity of eighty-two passengers, it will be able to carry 132 passengers in an emergency without intolerable overcrowding. Over two-thirds of the entire seating capacity is in cross seats.

"Field control motors will be used. Thermostatic regulators for the automatic control of car heating will further economize the power requirements for heating which are very heavy during the winter months, averaging as much as 15 per cent of the actual net power requirements of the car for traction. With motor-driven ventilating fans, this equipment is expected to meet the ordinance requirement regarding ventilation.

### SCHEDULED EQUIPMENT

"Except for temporary fluctuation in schedules necessary to meet variable traffic conditions from month to month, the basic schedules operated by the two principal companies have called for a continual increase in equipment. On Feb. 27, 1913, the net reserve equipment available for winter operation by all companies, exclusive of all extra cars in shops for repairs, was as shown in Table III.

"The companies usually prefer to order a large number of cars at a time in order to reduce the price per car. But if the reserve equipment on hand at the time of placing the order is too low, this method leaves a long period unprovided for, during which time the reserve cars are absorbed by the growth of traffic and a car shortage then occurs before delivery of the new cars begins. On this plan of ordering cars, a greater reserve is necessary to meet in-

Table III—Net Reserve Equipment

| | Chicago Railways Company | Chicago City Railway | Both Companies | Calumet & So. Chicago Railway Co. |
|---|---|---|---|---|
| In operative condition | | | | |
| Double truck | 1586 | 957 | 2543 | 92 |
| Single truck | 75 | 274 | 349 | 20 |
| Total | 1661 | 1231 | 2892 | 112 |
| Net reserve | | | | |
| Double truck | 60 | 57 | 117 | 14 |
| Single truck | 28 | 111 | 139 | 3 |
| Total | 88 | 168 | 256 | 17 |
| Per cent reserve | | | | |
| Double truck | 3.78 | 5.95 | 4.60 | 15.2 |
| Single truck | 37.40 | 40.5 | 3.98 | 15.0 |
| Total | 5.30 | 13.65 | 8.85 | 15.2 |

creasing schedules than if cars are added month by month. Generally speaking, for surface railways, a total reserve of from 7 to 10 per cent should be provided according to frequency of additions. And with carhouses as well distributed as in Chicago from 3 to 5 per cent will be required as net reserve only, i.e., exclusive of all equipment undergoing repair, painting or other overhauling in the car shops. While the present net reserve in single-truck equipment is ample, that of the double-truck equipment will be somewhat improved by the additional equipment now on order.

ADDITIONAL EQUIPMENT

"The car requirements of both present and future have already been determined by this board in connection with the re-organization merger plan for surface lines. In this analysis, the actual car shortage of the operating schedules of 1912 was determined from traffic counts on most of the heavier lines. Assuming this shortage to have been made up at that time, the future equipment requirements were then proportioned to the estimated growth in passenger traffic.

"Three service standards are considered in this estimate: First, a maximum of seventy passengers per forty-seat car during any thirty-minute rush-hour period; second, a maximum of eighty passengers per car under the same conditions; third, a maximum of eighty passengers per car for the maximum thirty minutes and seventy for the remaining thirty minutes of the rush-hour periods.

"The first-named standard was recommended on the above date by the majority of the board under the assumption of complete through-routing and zone operation in the outlying residence territory contingent upon unified management of the properties. The second represents a so-called maximum comfortable loading, which ought not to be exceeded at the present time even in the absence of unified management. The third represents a compromise standard, the necessary equipment which ought to be provided in the near future. On this compromise basis, the actual requirements for the next five years will increase, in round numbers, from 140 to 160 cars per year not including this reserve nor the shortage of about 200 cars in 1912 which has not yet been made up.

"It is unquestionable that with complete unification and re-routing of the system so much more effective use of cars would be possible as to provide a large increase in actual service rendered for the same amount of equipment operated, as compared with the present time, i.e., that, relatively speaking, a large saving in cars for the same service would result together with correspondingly decreased street congestion.

"Now that the unification of the properties has temporarily been deferred, considerable new equipment is required to absorb the present shortage and to meet the needs of the immediate future. For this purpose, the compromise service standard (eighty passengers, maximum thirty-minute period) represents the minimum that should now be considered. The new cars on order by the Chicago Railways Company and to be ordered by the Chicago City Railway will only suffice to absorb the shortage of 1912 and the growth up to the present time (although complete deliveries can hardly be expected until the close of the present year) and not to meet the growth of traffic as herein estimated.

THROUGH ROUTES

"All of the through routes designated in the revision ordinance of July 15, 1912, are being operated strictly in accordance therewith with the exception of five (1, 3, 6, 9, 23) which are also in operation but are permitted alternative routing or temporary terminals to be later extended further into outlying territory. Obviously the fullest use of the advantages of the through-routing plan cannot be realized until unified operation of the properties is brought about; for there are practical difficulties in the establishment of complete through-route service under divisional operation that the companies do not seem as yet able to remove.

"The results generally indicate that through routes are extremely sensitive to changes in location but when properly routed respond quickly to the increase in service and that, with a headway longer than ten or fifteen minutes, the route is practically killed for through-route purposes, especially when operating on streets giving quicker local service with transfers. Thus many of these through-routed cars become inconvenient for other than local service and the fundamental purposes of the through-route plan are only partially fulfilled. Under unified operation the unbalancing of traffic and earnings that now concerns the companies in every proposed change will disappear.

ADDITIONAL TRACKAGE

"An analysis of the disposition of additional cars recommended indicates that about 86 per cent of them should reach the mile zone business district during rush hours on the present basis of operation. This means that in the absence of universal through-routing track facilities must be found for accommodating about 265 additional cars on the 70/70 standard or 170 cars on the 80/70 standard, equivalent to 15 per cent increase in the existing loop service. It is idle to consider the addition of all this equipment to the present tracks in the center of the loop unless a subway is provided, for the present surface tracks have neither the required capacity nor freedom from traffic obstructions. However, the expansion of the return loop (or short run tripper) service to meet these conditions is entirely feasible and represents the only possible method of relieving the loop district prior to the construction of subways.

TABLE IV—RUSH-HOUR TRIP—OUTBOUND—EVANSTON AVENUE LINE

5:28 p. m. Trip from Dearborn and Monroe Streets

| Section of Line | Average Stops per Mile (a) | Average Speed, m.p.h. | Remarks |
|---|---|---|---|
| Dearborn and Monroe Sts. to South End tunnel | 18.85 | 4.24 | Loop district |
| Michigan St. to Chicago Ave. | 21.10 | 6.27 | Track congestion |
| Chicago Ave. to North Ave. | 5.0 | 9.23 | Unusually free running |
| North Ave. to Fullerton Ave. | 4.63 | 10.81 | Along park |
| Fullerton Ave. to Diversey Blvd. | 13.24 | 9.06 | |
| Diversey Blvd. to Grace St. | 10.48 | 10.72 | |
| Grace St. to Wilson Ave. | 10.27 | 11.68 | |
| Wilson Ave. to Balmoral Ave. | 7.98 | 9.35 | Cars bunched |
| Balmoral Ave. to Devon Ave. | 8.76 | 12.57 | |
| Average | | 9.6 m.p.h. for trip | |

Length of run 8.6 miles.
Average stops per mile = 9.27. Actual stops = 82.4 per cent.
Maximum stops per mile = 11.24.

(a) Including street stops and stops due to obstruction of track by vehicles, etc.

"At the present time over 95 per cent of the total rush-hour equipment entering the mile zone also traverses the inner loop district. But, from the comparative traffic counts it develops that at least 25 per cent of the total evening rush-hour passenger travel from the downtown district originates somewhere in the district between the inner loop and the outer or mile zone; in other words, the total traffic leaving the mile zone is fully one-third higher than that of the inner loop only. This fact is reflected in an average car loading about one-third higher at the boundaries of the mile zone than those at the loop zone.

"For the return loops certain curves and track connections are absolutely essential and the companies have endeavored for sometime past to secure the necessary trackage rights but without success owing to the obstructions interposed by certain property owners who withheld property consents in order to permit freer use of the streets for delivery purposes.

OPERATING SCHEDULES AND SUPERVISION

"During the past three years the average car speed has increased from 8.50 m.p.h. (year ending Jan. 31, 1911), to

8.99 m.p.h. (year ending Jan. 31, 1913), that is, the entire city of Chicago is now operating on practically a schedule of 9 m.p.h. This increase is the result of improved operating conditions due to track rehabilitation, completion of river tunnels and extensions into outlying districts. It seems proper to emphasize here that increased schedule speed does not necessarily mean increased maximum speed, but rather reflects the results of more efficient operation, elimination of unnecessary delays and a better condition of physical property. Much of the recent improvement has resulted from investigations by the companies of prompt and efficient acceleration and braking to minimize the effects of the numerous stops on the schedule speed made by the cars.

ELIMINATION OF UNNECESSARY STOPS

"In Chicago, the standard subdivision for a section one mile square usually results in a tract eight blocks long by sixteen wide. Fortunately, in perhaps the majority of subdivisions, the long dimensions of these blocks have been located along trunk lines requiring street car service. This particularly applies to the South Side lines leading out of the business district and the limited number of stops at street crossings contributes greatly to the rapid transportation desired. On the other hand, the North and West Side lines are distinctly handicapped in operating through the 'close-in' districts, where the blocks vary from twelve to sixteen per mile, resulting in an excessive number of stops on these important trunk lines. In the example shown in Table IV, the actual number of stops represents 82 per cent of the possible number.

"In view of the condition existent, this board is of the opinion that rapid surface transportation in Chicago would be very generally improved if permissible stops could be confined to the standard subdivisions of eight blocks per mile or thereabouts. Irregular stopping points should be distinctly indicated by means of colored poles or posts, suspended signs or other distinctive methods, especially in all districts where stops are not made at every street intersection. Much improvement has already been made by the exclusive adoption of the near-side stop, where formerly full stops were made on both near and far side.

SNOW REMOVAL

"In an endeavor to meet the conditions of the 1907 ordinances, various modern methods of snow removal have been investigated and tests made with a snow-melting apparatus, using high temperature steam. The results have been very unsatisfactory both in regard to economy and rapidity of operation. In view of the enormous mileage involved and the resulting investment in special equipment that would remain idle throughout the year, the board regards it as necessary to exercise great caution in authorizing such investment until a thoroughly efficient apparatus has been developed.

ELECTRIC SWITCHES

"For some years electric switches have been in use in Chicago, and over 100 of these switches are now in use by the traction companies with successful results. Additional switches are being added from time to time.

EXTENSIONS OF SERVICE

"The companies, as a whole, have been active in extending their lines, particularly the Chicago Railways, which has built about 32 miles of new extensions since the end of its rehabilitation period against a maximum of 23 that could be called for by the city under the 1907 ordinance. The Chicago City Railway since its rehabilitation period has constructed about 17 miles of new extensions against a possible maximum of 22 miles under its ordinance and in lieu of additional new extensions added to its system by purchase 18 miles of track which extended the 5-cent zone to the extreme southwest limits of city, thus making a total additional mileage of 35 miles since 1910. Considering the three years' construction season, 1910 to 1912 inclusive, it appears that the total new track construction has just about kept pace with that stipulated by the 1907 ordinance for the post-rehabilitation period.

SUMMARY

"It is necessary to state in conclusion that these facts should not be misinterpreted by assuming present conditions to be due to failure of the companies to keep pace with transit growth. Rather, the absence of adequate rapid transit development may be regarded as the prime cause of the present limitations in transit facilities. Admittedly the growth has been faster than expected and continuously involves questions of raising the money for necessary capital expenditures which it has been a duty of this board to supervise. But any surface transit system can be developed, as such only to the extent that there are streets available for its occupancy, and it then cannot fulfil the demands of rapid transit. The surface line system has been perfected to its present state by the expenditure (in addition to its original cost of $55,775,000) of more than $80,000,000 within a period of six years and has reached a state of development unparalleled in this country, not only in actual mileage of track construction, number of cars installed and auxiliary equipment provided, but also in the methods and efficiency of operation as evidenced by the ability of the system under the present handicaps to give the class of service it is now giving in handling over 1,000,000,000 passengers per year."

## IMPROVEMENTS ON DETROIT UNITED RAILWAY'S INTERURBAN LINES

The Detroit (Mich.) United Railway has completed so far this year or has in progress track improvements on its interurban lines which will approximate in cost $250,000 for labor and material. The following review of this work is contained in *Electric Railway Service,* which is published in the interest of the company and distributed to the public.

Detroit, Jackson & Chicago Railway.—A new switch in Ann Arbor; rails have been renewed around the campus at Ann Arbor; a double track has been constructed through Dearborn; the old steel bridge on Congress Street, Ypsilanti, has been replaced with a double-track concrete arch bridge; the track at Foster curve, dangerous because of the obstructed view, has been straightened; a very heavy fill is being made on the Stellwagon property, west of Wayne, for which a right-of-way was purchased, to eliminate a dangerous curve and save time on the Jackson division schedules.

Detroit, Monroe & Toledo Short Line Railway.—A grade is being prepared for double track from Milan to Rockwood and four old bridges being rebuilt with concrete and steel; the track on Elm Avenue, Monroe, from Anderson Street to Lincoln Avenue, is being reconstructed with the most modern standard construction; a double track is being constructed between State and Kay switches; the grade from the Toledo north city limits to Shantee Creek is being prepared; a new sand dryer plant is being built at the Oakwood yards to dry the lake sand which is used in construction.

Rapid Railway System.—A double track has been built from Hagadorn switch to South Park Y; a loop track has been constructed near Glauker's Point, Grosse Pointe, to be used in connection with city car service and develop the property through improved facilities.

Pontiac Division.—A new waiting room and freight house has been built at Long Lake road, and shrubbery has been planted to improve the appearance of the grounds round the building.

Orchard Lake Division.—The track at Cass Lake curve, a dangerous curve, has been straightened.

Flint Division.—A new wash house building, to be used for the washing of cars, has been built at Rochester.

## CROSS-TIE DATA FOR 1911

*Forest Products Bulletin* No. 8, dealing with cross ties purchased in 1911, has just been issued by the Department of Commerce, Bureau of the Census, in co-operation with the Department of Agriculture, Forest Service, Henry S. Graves, forester.

### CROSS TIES PURCHASED IN 1911

The total number of cross ties purchased by the steam and electric railroads of the United States in 1911 was 135,053,000. This represents a decrease of 13,178,000, or 9 per cent, as compared with the number purchased in 1910, but is 11,302,000, or 9 per cent, greater than the number reported for 1909. Only 11,041,324 ties, or 8.2 per cent, were for new track—the lowest percentage since 1908. In 1910 over 22,000,000 ties, or 15 per cent of the purchases, were for new track. Both steam and electric roads reported decreased purchases for this purpose in 1911, the steam roads reporting 9,271,954 and the electric roads 1,769,370. This is the smallest number reported by the electric roads for new track during any of the years covered by the table.

TABLE I—CROSS TIES PURCHASED, BY KINDS OF WOOD; 1907 TO 1911

| Kind of Wood | 1911 | 1910 | 1909 | 1908 | 1907 |
|---|---|---|---|---|---|
| Oak | 59,508,000 | 68,382,000 | 57,132,000 | 48,110,000 | 61,757,000 |
| Southern pine | 24,265,000 | 26,264,000 | 21,385,000 | 21,530,000 | 34,215,000 |
| Douglas fir | 11,253,000 | 11,629,000 | 9,057,000 | 7,988,000 | 14,525,000 |
| Cedar | 8,015,000 | 7,305,000 | 6,777,000 | 8,172,000 | 8,954,000 |
| Chestnut | 7,542,000 | 7,760,000 | 6,629,000 | 8,074,000 | 7,851,000 |
| Cypress | 5,857,000 | 5,396,000 | 4,589,000 | 3,457,000 | 6,780,000 |
| Tamarack | 4,138,000 | 5,163,000 | 3,311,000 | 4,025,000 | 4,562,000 |
| Hemlock | 3,686,000 | 3,468,000 | 2,642,000 | 3,120,000 | 2,367,000 |
| Western pine | 2,696,000 | 4,612,000 | 6,797,000 | 3,093,000 | 5,019,000 |
| Redwood | 1,820,000 | 2,165,000 | 2,088,000 | 871,000 | 2,032,000 |
| Gum | 1,293,000 | 1,621,000 | 378,000 | 262,000 | 15,000 |
| Maple | 1,189,000 | 773,000 | 158,000 | 151,000 | ..... |
| Beech | 1,109,000 | 798,000 | 195,000 | 192,000 | 52,000 |
| All other | 2,682,000 | 2,895,000 | 2,603,000 | 3,421,000 | 5,574,000 |
| All kinds | 135,053,000 | 148,231,000 | 123,751,000 | 112,466,000 | 153,703,000 |

Table I shows the total number of cross ties purchased each year from 1907 to 1911, distributed according to kinds of wood arranged in the order of numbers purchased in 1911. Ten kinds of wood supply 95 per cent of all ties purchased. The more durable woods are preferred, although the growing practice of treating ties with chemical preservatives is reflected in the figures for gum, maple and beech, which were reported in very small numbers a few years ago.

No reports were obtained upon the average cost of ties. In 1909 the average cost was 49 cents, the prices by kinds of wood ranging from 33 cents for hemlock to 53 cents for redwood and for Western pine. It is stated that as a whole prices have not changed considerably since that time, although there have been fluctuations in many tie-producing localities.

The number of ties of each kind purchased by the electric railroads in 1911 was as follows: All kinds, 8,898,000; oak, 3,174,000; southern pine, 1,441,000; douglas fir, 491,000; cedar, 909,000; chestnut, 1,670,000; cypress, 188,000; tamarack, 59,000; hemlock, 21,000; Western pine, 81,000; redwood, 777,000; gum, 8000; maple, 6000; beech, 5000, and all other, 68,000.

The steam railroads purchased 93 per cent of the total number of ties, which is somewhat smaller than the proportion reported in 1910. The purchases of the electric railroads have shown a regular, though slow, increase in recent years, reflecting the steady development of these lines, while the purchases by the steam railroads have fluctuated considerably according to industrial conditions. The electric roads use the same kinds of wood as the steam roads, but in somewhat different relative quantities. This is due principally to the fact that the development of the electric lines has not been uniform throughout the territory covered by the steam roads. Oak, Southern pine, chestnut, cedar and redwood supply the greater part of the ties required by the electric lines. The increasing electric mileage has been followed by an increased demand upon the durable species. The competition of the roads for tie material was greater in 1911 than in 1910 in the purchase of Southern pine, cedar, chestnut, redwood and gum; while the purchase of other species showed a decline. The steam roads showed increased purchases of cedar, cypress, hemlock, maple and beech.

### TIE PRESERVATION, ETC.

Of 112 treating plants of all classes of record in 1912, nearly ninety were well-equipped plants operating in representative sections of the country from coast to coast, but chiefly in the Eastern States. Most of these plants treat cross ties, piling, poles, construction timber, paving blocks and miscellaneous material under contract, but the steam roads operate twenty-two plants to meet their own needs, chiefly in the treatment of cross ties. A few electric roads, mining companies and firms handling poles also operate a number of relatively small plants, usually for the treatment of their own material.

In 1911 more than 73,000,000 gal. of creosote oil (70 per cent imported), the principal preservative used, was reported by the wood-preserving plants of the United States. Large quantities of cross ties, construction timbers and miscellaneous material are also treated with zinc chloride in water solution or receive a combination treatment with creosote oil and zinc chloride. More than 16,000,000 lb. of zinc chloride, all of domestic manufacture, was used by preserving plants in 1911.

Crude petroleum was employed extensively by one large railroad and to a limited extent by several small companies. Water-gas tar, corrosive sublimate, preservatives sold as carbolineum and a number of other substances were reported.

In 1911 cross ties formed 74 per cent of all material receiving a preservative treatment from the plants reporting to the forest service. The numbers of ties treated before and after purchase by the steam and electric railroads of the United States in each year, 1907 to 1911, inclusive, is shown in Table II. The table clearly indicates the progress being made by tie consumers in the use of treated ties and the growing tendency toward the treatment of ties after purchase, presumably in plants owned by the railroads. In 1911 over 31,000,000 ties, or 23 per cent of the total purchased, were treated either before or after purchase. Each of the years from 1908 to 1911, inclusive, except 1909, has shown, as compared with the preceding year, an increase in the proportion of ties treated. The number reported by the steam roads represented only a slight gain over that for 1910, a year in which there occurred a very considerable increase in the number of ties treated. The number treated by the steam roads after purchase increased greatly, however, reflecting the tendency of the steam roads to build and operate their own plants.

The electric roads continue to report more treated ties each year, and, since these roads have few plants, most of their ties are treated before or after purchase in commercial plants.

TABLE II—CROSS TIES PURCHASED—NUMBER ALREADY TREATED OR TREATED AFTER PURCHASE, BY CLASSES OF RAILROADS PURCHASING; 1907 TO 1911

| Class of Railroad Purchasing | Total Treated | Treated Before Purchase | Treated After Purchase |
|---|---|---|---|
| 1911: | | | |
| Steam railroads | 29,759,000 | 4,197,000 | 25,562,000 |
| Electric railroads | 1,382,000 | 773,000 | 609,000 |
| 1910: | | | |
| Steam railroads | 29,359,000 | 10,770,000 | 18,589,000 |
| Electric railroads | 1,185,000 | 874,000 | 311,000 |
| 1909: | | | |
| Steam railroads | 21,198,000 | 7,081,000 | 14,117,000 |
| Electric railroads | 835,000 | 582,000 | 253,000 |
| 1908: | | | |
| Steam railroads | 23,157,000 | 10,566,000 | 12,591,000 |
| Electric railroads | 619,000 | 407,000 | 212,000 |
| 1907: | | | |
| Steam railroads | 19,192,000 | 7,975,000 | 11,217,000 |
| Electric railroads | 664,000 | 414,000 | 250,000 |

Ties of Southern pine, oak and Douglas fir constituted in 1911 nearly 80 per cent of the total number treated. These woods are also the leading species used without treatment. Western pine, gum, beech and lodge-pole pine are generally

treated before being used for cross ties, but most of the remaining woods shown in the table are used in greater numbers untreated. The figures show plainly that large numbers of ties of the less durable woods are being used without treatment. In fact, preservative processes are being employed principally to increase the service of the relatively durable woods commonly used without treatment, and full advantage is not being taken of the opportunity which these processes afford for the use of woods not naturally resistant to decay.

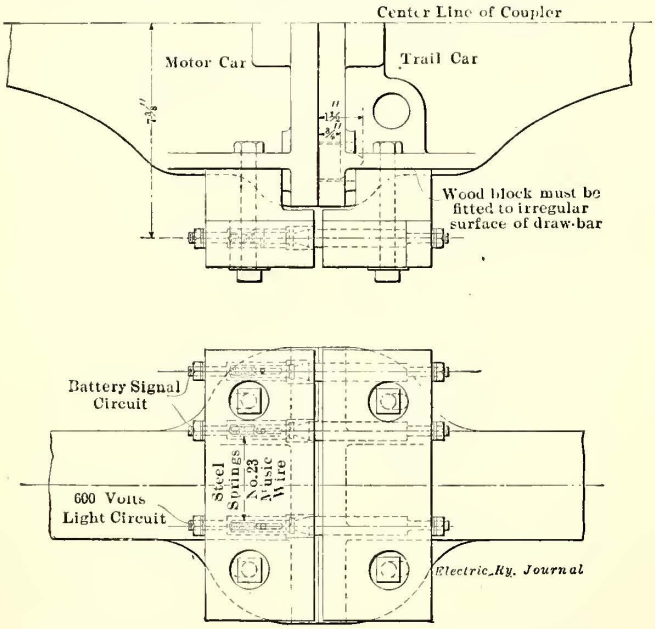
More than half (56.6 per cent) of the preserved ties were treated with creosote oil, 27.8 per cent with a solution of zinc chloride, and the remainder with combinations of these preservatives, crude oil or various other materials. Southern pine, oak and gum are generally creosoted, although large numbers of ties made from these woods are treated with zinc chloride. Nearly all of the Douglas fir ties were treated with zinc chloride. Large numbers of Western pine ties were treated with one or the other of these preservatives or with crude petroleum. Table III shows the number of cross ties treated in 1911 by electric railways, by kinds of wood and by kinds of preservative.

Table III—Cross Tie Preservation by Electric Railways in 1911

| Kind of Wood | Total | Kind of Preservative: Creosote | Zinc Chloride | Creosote and Zinc Chloride | Miscellaneous |
|---|---|---|---|---|---|
| Southern pine | 831,607 | 578,725 | 67,438 | 5,000 | 180,444 |
| Oak | 401,795 | 208,585 | ..... | 15,000 | 178,210 |
| Douglas fir | 80,402 | ..... | ..... | ..... | 80,402 |
| Western pine | 8,000 | 8,000 | ..... | ..... | ..... |
| Gum | 5,550 | 4,650 | ..... | ..... | 900 |
| Tamarack | 42,334 | 3,400 | ..... | ..... | 38,934 |
| Beech | 4,595 | 3,452 | 243 | ..... | 900 |
| Birch and maple | 500 | ..... | ..... | ..... | 500 |
| Elm | 900 | ..... | ..... | ..... | 900 |
| Spruce | 5,000 | ..... | ..... | ..... | 5,000 |
| White pine | 1,000 | 1,000 | ..... | ..... | ..... |
| Chestnut | 200 | ..... | ..... | ..... | 200 |
| All kinds | 1,381,883 | 807,812 | 67,681 | 20,000 | 486,390 |

## COUPLER WITH SIGNAL AND LIGHTING ATTACHMENTS

In equipping its new trailers the United Railways of St. Louis has greatly simplified the coupling of motor and trail cars by some home-made additions to the standard form of Tomlinson coupler. As shown in the accompanying drawing, the coupler has been provided with two wooden blocks carrying three spring contacts. Two of these contacts are used for the signal circuit and one for the lighting circuits. Thus at one operation the coupler couples the cars, air, lights and signals.




**St. Louis Coupler with Signal and Lighting Connections**

# COMMUNICATIONS

## A QUESTION OF NAMES

Dobbs Ferry, N. Y., Aug. 10, 1913.

To the Editors:

In your issue of Aug. 2, 1913, you have an article entitled "Single-Phase Traction for Norfolk & Western Railway." It is therein stated that it is the intention of this road to use twenty-five-cycle, single-phase currents at a potential of 11,000 volts at the trolley, with induction motors on the locomotive.

Why is it that this thing is not called by its proper name? From all the information available, this motor is our old friend the polyphase motor in disguise. As a matter of fact, a single-phase motor, whether of the commutator or of the induction type, could not economically be built for the heavy work required by this railway. According to the best information, these locomotives are to be equipped with polyphase motors and with a phase-spitting or phase-converting device which will enable them to make use of the single-phase current in a manner similar to what I outlined several years ago.

The motor is the decisive part of any railway equipment. If the Norfolk & Western equipment goes in as now planned, it will be just as truly a polyphase equipment as, for instance, the Great Northern equipment. If the Great Northern decides to experiment with the phase-splitting device, it will not call itself a single-phase road on that account.

The use of single-phase currents for transmission and distribution purposes may or may not justify itself in the end. But, in any event, the mere fact that single-phase currents will thus be used for transmission purposes should not be a reason for calling this Norfolk & Western equipment a single-phase equipment. It would be practically just as sensible to call the New York Central equipment a three-phase equipment because the New York Central generates and transmits its energy in the form of three-phase alternating currents.

The fact that the single-phase enthusiasts want to let themselves down easily should not be allowed to mix up our already complicated railway vocabulary. Nor should this attempt to christen a polyphase line as a single-phase line be allowed to mislead our brethren across the ocean, who might thus come to think that American engineers have gone back to the single-phase delusion.

C. L. de Muralt,
Professor of Electrical Engineering, University of Michigan.

## CHOICE OF GEAR RATIO

Vigo Electric Tramways.
Vigo, Spain, July 5, 1913.

To the Editors:

In view of your undoubtedly competent judgment in matters relating to electric traction, we make free to consult you in regard to a little problem which we are anxious to solve. The matter concerns the electrical equipment of our street railway system, the necessary data being as follows:

Track gage, 1 m. (37.37 in.); motor cars equipped with Brill 21-E rigid trucks; weight of a train (motor car and trailers, inclusive of load), about 19 tons; grades up to 65 per 1000. The minimum radius of curves on the line is 20 meters (65.6 ft.). The trolley wire carries 550 volts d.c.

One dealer offers us inclosed motors (two for each car) with series winding and auxiliary poles, developing 36 hp per hour with 550 volts and 540 r.p.m., with a gear ratio of 1:5.1, and gear cases. The efficiency under full load is 89 per cent. The power is understood to be measured in accordance with the regulations of the Association of Ger-

man Electricians. Another dealer recommends motors of similar description, but with a gear ratio of 1:6.25. Our cars are to run at a speed of 9 km per hour (5.57 m.p.h.) in the city streets, and of 13 km per hour (8.1 m.p.h.) on the highways or suburban roads.

In view of the physical features of the territory covered by our system, which has long and steep grades as well as long sections that are practically horizontal, we think that a ratio of gearing of 1:6.25 would not give our cars sufficient speed unless compensation is provided by increasing the motor speed, a measure which would result in an increased cost of maintenance.

What gear ratio will be the most desirable for us, and what are the advantages or disadvantages of each of the types of equipment proposed?

MARTIN ECHEGARAY,
Chairman of the Board of Directors.

REPLY

To select a proper motor for this service, speed-time and power curves should be plotted for the two types of service, city and suburban. To do this accurately, in addition to the information furnished, it would be necessary to have characteristic curves of the motors and to know the diameter of the driving wheels, the number of stops per kilometer and their average length, also the length and character of the grades. We have taken the characteristic curves of a standard 35-hp railway motor having an armature speed of 575 r.p.m. when taking a current equal to its one-hour rating and have corrected these curves for gear ratios of 1:5.1 and 1:6.25, assuming the diameter of the driving wheels as 30 in. (750 mm) and the average voltage at the motor terminals as 500 volts. From these curves, shown in Fig. 1, we have worked out the speed-time and current curves shown in Fig. 2 for runs on level tangent track at a schedule speed of 13 km per hour.

Curve 1, Fig. 2, is the speed-time curve for a train with 1:5.1 gearing running 300 m (984 ft.). Curve 2 is for a train with 1:6.25 gearing running 300 m and curve 3 is for a train with 1:6.25 gearing running 400 m (1312 ft.). Curve 4 shows the current taken per motor with 1:5.1 gearing and curve 5 the current per motor with 1:6.25 gearing.

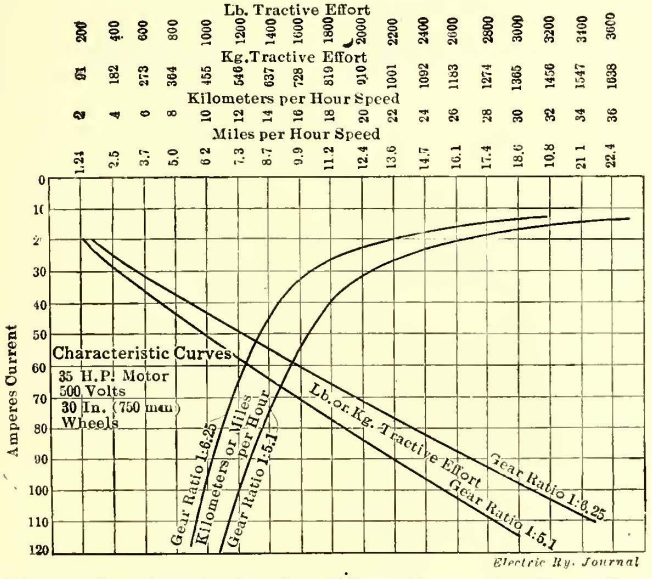



Fig. 1—Speed and Tractive Effort Curves for Two Gear Ratios

These curves are calculated for the conditions shown in the accompanying table.

Curve 2 shows that a train equipped with the 1:6.25 gearing can make a schedule speed of 13 km an hour with a twenty-second stop every 300 meters and still have a reasonable margin for making up lost time, as the coasting time for this run is 28 per cent of the total time consumed.

By comparing curves 4 and 5 it is found that the accelerating current per motor is 71 amp with 1:5.1 gearing, and 62 amp with 1:6.25 gearing, and that the average current per motor for a run of 300 m, including stop, is 12.8 amp with 1:5.1 gearing and 11.4 amp with 1:6.25 gearing. The low-

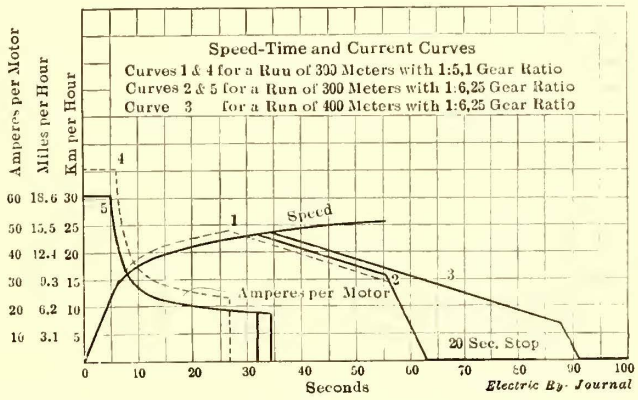



Fig. 2—Speed-Time and Current Curves with Two Gear Ratios

speed gearing thus shows a saving in energy consumption besides greatly reducing the temperature of the motors. This advantage will be much more pronounced with the short runs and low schedule speed of the city service and will also prove of far greater advantage on the long, steep grades.

The most common error in the selection of gearing has been to gear for high speed when the service gave no opportunity for using it to advantage. This improper selection of gear ratios alone has caused a loss of hundreds of thousands of dollars due to overloads and consequent burn-outs of motors and the apparatus in power houses and substations. Line losses have been greatly increased and large motors have been used where much smaller ones would have done equally well if properly geared. The best practice is to provide for rapid acceleration, short coasting and rapid braking, and after the selection of a motor which is suitable for this service the best gear ratio to use is the lowest speed gear which will give the desired schedule speed with a reasonable margin for safety.

| | |
|---|---|
| Weight of train, including equipment and live load | 19 tons |
| Average motor voltage | 500 volts |
| Length of run | 300 m and 400 m |
| Length of stop | 20 seconds |
| Schedule of speed | 13 kw (8.1 miles) per hour |
| Initial acceleration | 2.4 kw (1.5 miles) per hour per second |
| Braking rate | 2 kw (1.5 miles) per hour per second |
| Track | 20 lb. (10 kg) per ton |
| Train resistance | Straight and level |

Characteristic curves of motors as shown in Fig. 1.

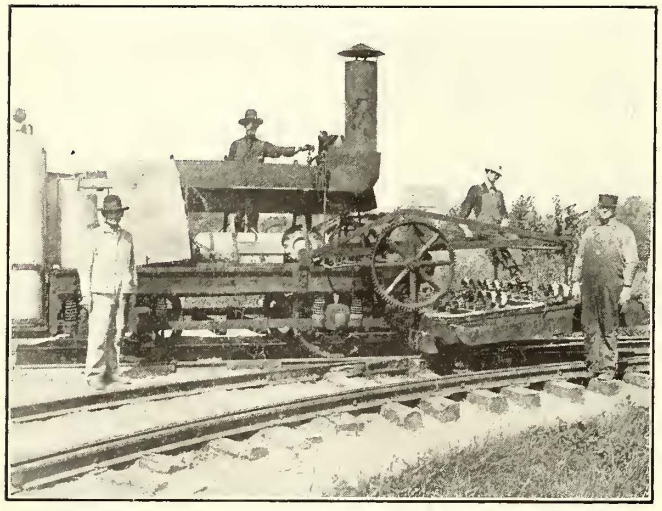
The curves which we have given will serve to illustrate the effect of different gear ratios. We would further suggest that you consider motors arranged for field control, as they are particularly well adapted to just such service conditions as you have. You would thus be able to use a slow-speed motor with high-gear ratio to its greatest advantage. Field control would produce more economical running in the slow-speed city sections, permit the use of a high-gear ratio for the grades and with the same gearing produce a higher speed for the suburban districts than could be obtained with the same size non-field control motor geared for the local schedule.—EDS.

The record of passenger train performances on the steam railroads of New York State for June, 1913, shows that during the month the number of trains run was 66,325. Of the number of trains run 84 per cent were on time at the division terminal. The average delay for each late train was twenty-five minutes and the average delay for each train run was four minutes.

## A NEW RAILROAD WEED BURNER

The Waynco railroad weed burner, manufactured by the Wayne Process Company of Fort Wayne, Ind., is an improved form of the apparatus often used for burning weeds from the tracks of railroads. Its fuel is common kerosene oil which is vaporized in a large coil mounted on the car. This, by special design, is reported to avoid the difficulty heretofore encountered in all vaporizing burners in the frequent renewal of the vaporizing chamber made necessary by the effect of the decomposition of the oil upon its walls. The vapor-generating coil contains several hundred feet of pipe which is heated by an auxiliary self-vaporizing burner. Oil under a pressure ranging from 50 lb. to 75 lb. per sq. in. is supplied from pressure tanks on the car to the coil and the coil is connected to a battery of burners on the rear of the car.

Each burner produces a flame 4 in. in diameter and 2 ft. long, and the burners are so arranged that the several flames uniformly spread over the ground and weeds. They are inclosed by a hood which is lined with asbestos, and this serves to retain the heat of the flames and reflect it onto the ground, thereby greatly intensifying the effect. The high temperature, over 2000 deg., wilts the green weeds down as



Kerosene Weed Burner for Interurban Lines

the car travels along, and if necessary, after they are permitted to dry a little, the burner is again run over them in order that they shall be consumed.

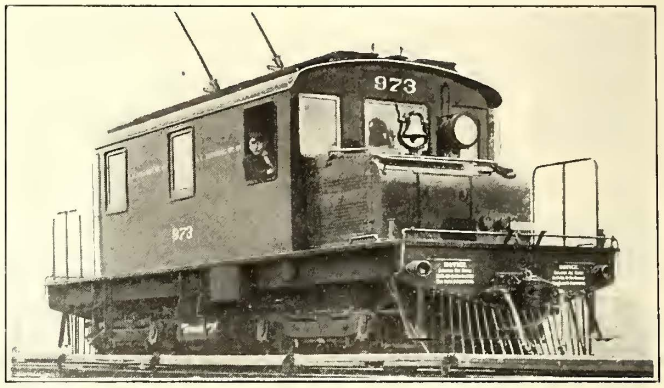
A throttle valve in the connection between the coil and the burners controls the passage of the vapor to the burners and as many of the burners may be lighted as the operator may choose. The car may be driven at a speed of 3 m.p.h. or more, according to the height and quantity of the weeds, and 50 gal. to 60 gal. of oil an hour is consumed when the apparatus is running full blast.

The air under pressure is furnished by a standard air-brake compressor, and as it does not flow out of the tank but simply forces the oil from the tank into the vaporizing coil, the pump is run only to keep the pressure above a minimum point, being controlled by a standard type of governor. Consequently the constant operation of the compressor is not required as it is in the case of atomizing devices. A compressor that will furnish 60 cu. ft. per hour is ample for the needs of the machine.

The accompanying illustration shows the equipment mounted on a short single car, but it may be applied to a double-truck car equally well. The auxiliary burner is started with alcohol or gasoline, and after it has reached the vaporizing temperature it becomes self-vaporizing. Its flame does not strike the large coil but heats a bushing within it, and the bushing in turn heats the large coil to vaporize the oil which flows into it.

## 50-TON, 600-1200-VOLT FREIGHT LOCOMOTIVES FOR BRITISH COLUMBIA

Five 50-ton electric freight locomotives have recently been built for the British Columbia Electric Railway Company, Vancouver, B. C., similar to the 60-ton locomotives of the Southern Pacific Company which were described in the Electric Railway Journal for Oct. 5, 1912. They

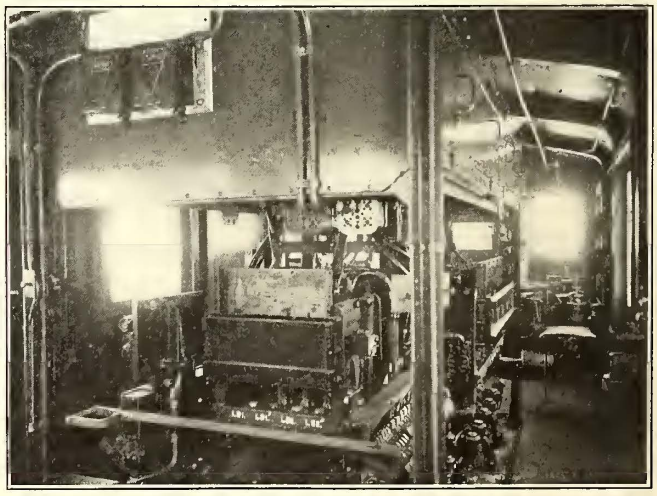



British Columbia Locomotive—Side View

are of the double-truck type with a steel central cab of steeple form.

Each locomotive is equipped with four Westinghouse No. 308-D-3 box-frame commutating-pole 600-1200-volt railway motors and type HB unit switch control. For 1200-volt operation two motors are permanently connected in series. The control equipment consists of the following apparatus: two master controllers, two switch groups, two reversers, one series-parallel switch, one line switch, one control resistor, two hand-operated change-over switches and two sets of storage batteries (ten cells, each set giving 20 volts).

All control equipment, except the master controller, is inclosed in a wire cage supported by an angle-iron framework in the center of the locomotive cab. The grid re-



British Columbia Locomotive—Control Equipment

sistors are mounted in the roof of the locomotive cab over the unit switch apparatus in a portion framed off and ventilated through the roof by means of two ventilators. The two master controllers have three running notches on 600 volts and two on 1200 volts.

An interesting item of this equipment is the series-parallel switch. This switch is controlled by a single-pole, double-throw knife switch at either end of the cab. On 1200 volts the connections are so arranged on the change-over switch that the series-parallel switch is in the 1200-

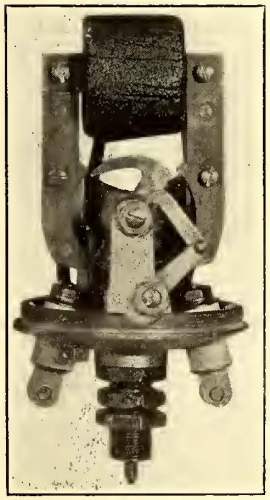
volt position connecting two motors in series regardless of the position of the knife switch. On 600 volts the connections on the change-over switch are so altered on changing over to the 600-volt position that the motors of each pair by means of the series-parallel switch may be thrown either two in series or two in parallel, whereas in the 1200-volt position the motors are two in series only. This is of particular advantage on 600 volts in accelerating heavy loads. The motors are first connected four in series until the train is started. The controller is then returned to the off position, and the series-parallel switch is thrown to connect the motors of each pair in parallel. The master controller is then operated to connect in series parallel and finally in parallel. In changing over from 1200 volts to 600 volts the resistances are paralleled and the dynamotor circuits are also adjusted for 600 volts. All of this is done by the two change-over switches.

The dynamotor-compressors are used to furnish compressed air for the brakes and to control the blower fan (attached to the dynamotor shaft) which furnishes the air for ventilating the main motors. One of these sets is mounted under each end hood.

These locomotives are designed to negotiate curves of 40-ft. radius, when running without trailing loads. Their principal dimensions are as follows: Wheelbase, rigid, 7 ft. 4 in., total, 25 ft.; driving wheels, diameter, 36 in.; journals, 5 in. x 8 in.; width over all, 10 ft.; height of top of cab, 12 ft., and length between coupler knuckles, 36 ft. They weigh 100,000 lb. each. The equipment includes air and hand brakes on all wheels, air sanders, a pilot and head light at each end, a bell gong and air whistle. The 600-volt locomotives of this company were described in the ELECTRIC RAILWAY JOURNAL for Jan. 6, 1912.

## ELECTRO-PNEUMATIC VALVE FOR A.-C. CURRENT

The "Z" armature electro-pneumatic valve magnet shown in the accompanying illustration has just been developed by the Union Switch & Signal Company for the control of electro-pneumatic switch and signal apparatus by alternating current. It consists essentially of a "Z" armature rotating in a magnetic field, both armature and field cores being made of laminated iron. Through a lever the armature drives a crank of which one arm appears in the illustration and the other arm of the crank presses down on the head of the pin valve stem when the magnet is energized. The whole instrument is pronounced to be very compact, neat and efficient. The cover is made of aluminum and is designed to be screwed into place very readily. A spring is attached to the cover to prevent it from working loose.



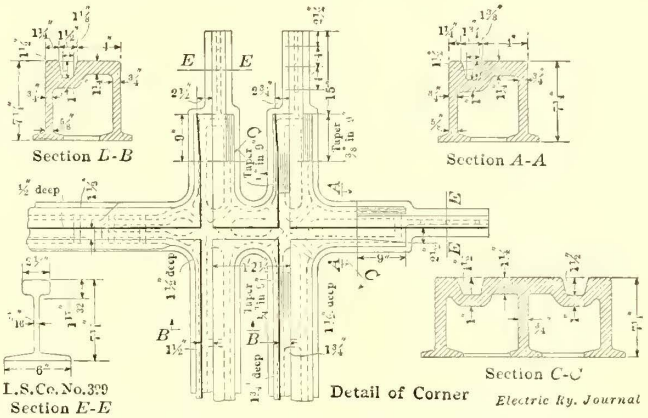
Magnet Valve

## UNION CLAMPS FOR METAL BLADES

A clamp for holding metal signal blades in place has recently been put on the market by the Union Switch & Signal Company. The clamp is made of steel, stamped cold, sherardized and painted in two lengths suitable to the taper of the blade grip with which it is to be used. Both lengths fit accurately in the corrugations of the blade, and the spacing of the bolt holes is the same in each. The detail parts of the clamp include protecting pads of cow hair which are placed between the clamps and the blade to protect the enamel from abrasion and to take up any strain due to inequalities of the metal. These pads are of different lengths, corresponding to the clamps under which they are used. Two pads are placed between the blade and the spectacle at right angles to the other two pads. Nut locks made of sheet steel are also used. A portion of the clamp is raised to act as a stiffener and to keep the bolt heads from turning. The nut locks, bolts and nuts are sherardized. All of these parts can be made to fit any spectacle or metal blade.

## TYPE OF SOLID MANGANESE STEEL CROSSING INSTALLED BY PACIFIC ELECTRIC

Owing to its unusually heavy rolling stock, which is operated in trains of six cars, the Pacific Electric Railway has found crossing frog maintenance a serious problem. In its recent practice the company has used solid manganese steel crossings to obtain maximum life, but it has also given a great deal of attention to methods of strengthening even this type of crossing. The chief trouble experienced has been that the points of impact in the crossing, when constructed in the usual way, are not directly




Supported Hard-Center Crossing Installed by Pacific Electric Railway at Los Angeles

supported from below, and, in consequence, have dropped slightly. Hence the way department of this company has developed and installed a design of manganese crossing which provides supports for the points of impact. This support is obtained by replacing with diagonal webs the four-sided or box-like web support in the old design. The intersection of these diagonal webs comes directly under the point of impact or the intersection of the gage lines of the running rails.

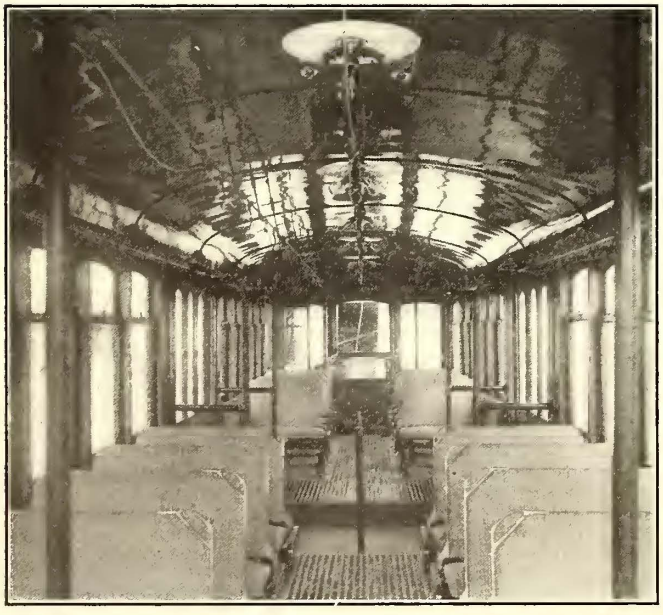
The specifications call for a crossing cast of solid manganese steel free from shrinkage cracks and blow holes and perfect as to surface and alignment. The manufacturers found these requirements especially hard to meet owing to excessive shrinkage in manganese steel castings. To replace the boxed web support with the diagonal webs produced a critical condition so far as providing for shrinkage was concerned, making it difficult to obtain perfect castings. This trouble has been overcome, however, and satisfactory crossings are being manufactured. Plan and sections of this crossing are shown in the illustration.

In explanation of the two running rails at 1-ft. 2½-in. spacing shown in the illustration, it should be said that while the Pacific Electric Railway Company operates only standard-gage cars, the city line in Los Angeles is equipped with a narrow gage (3 ft. 6 in.) and the crossing illustrated is for a crossing of the two lines. The details shown in the drawing are to fit the Lorain Steel Company's section No. 399. The crossing shown has been manufactured by the Edgar-Allen Manganese Steel Company, Wm. Wharton, Jr., & Company, and the St. Louis Steel Foundry.

## CENTER-ENTRANCE CARS FOR BUTTE, MONT.

Four center-entrance cars of the type shown in the accompanying illustrations were recently shipped to the Butte (Mont.) Electric Railway by the Niles Car & Manufacturing Company. The cars seat fifty-two passengers each and have already carried comfortably a total of 100 passengers, although their length over the end sheathing is but 40 ft. 10 in. The weight of a completely equipped car, including four 40-hp motors and air brakes, is about 36,000 lb., or 692 lb. per seated passenger; the weight of the car body alone is 14,000 lb. The trucks are of the railway company's type as designed by J. S. Wathey, superintendent.

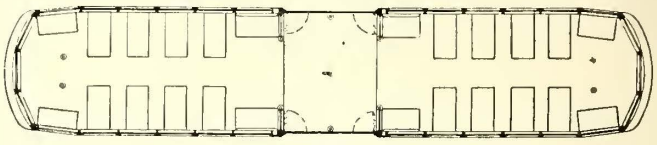
The principal framing members of this design are two center sills of 6-in. I-beams, which are bent downward under the center vestibule or well and which extend the full length of the car from buffer to buffer. The side sills are reinforced with ½-in. x 6-in steel plates, cut out under the center vestibule, and 2-in. angles, also by under truss rods with turnbuckles. Quartered oak and bronze trimmings



Butte Center-Entrance Car—Interior View

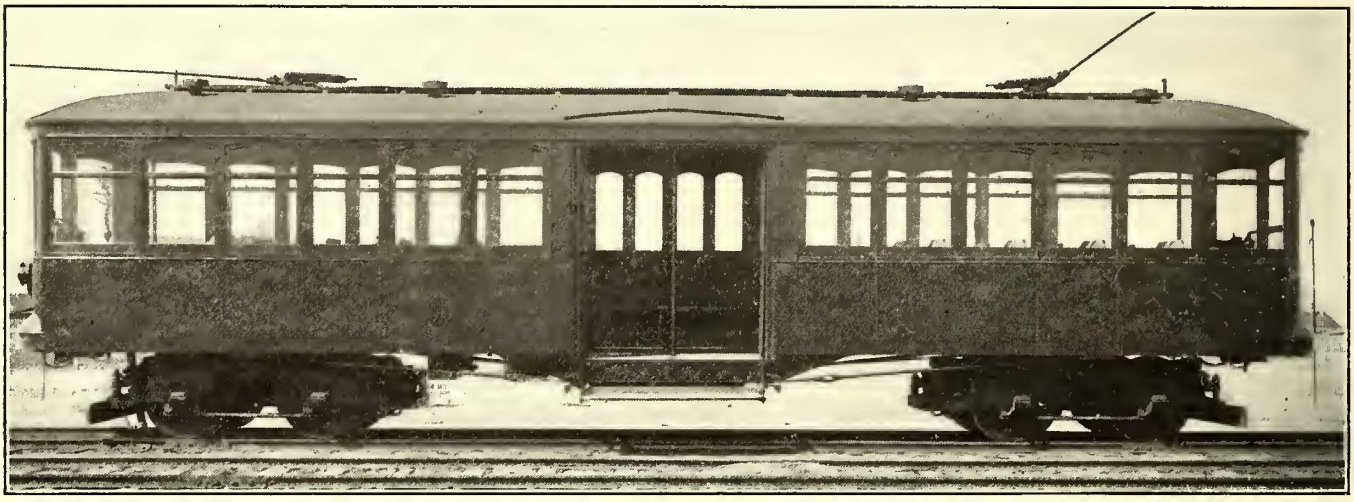
are used for the interior finish of the car and agasote for the single-arch ceiling. The roof carries eight Globe ventilators. The upper sashes are stationary, while the lower sashes are arranged to drop.

The center vestibule is 6 ft. long for the full width of the car and is 9 in. below the main floor. Each side is fitted with two-panel doors which fold inward in connection with a folding step, all controlled by means of handles at the conductor's station in the center of the vestibule. A folding seat extends along the devil-strip side of the vestibule, thus



Butte Center-Entrance Car—Plan

increasing the seating capacity and preventing the opening of the idle doors. At the front end, the motorman is separated from the passengers by means of iron pipe rails and light-excluding curtains. The same control space at the rear of the car is utilized by standing passengers. The principal dimensions of these cars follow: Length over the burfers, 41 ft. 10.; width over the side sheathing, 8 ft. 3¾ in.; width over all, 8 ft. 5½ in.; width of aisle, 23¼ in.; length of seats, 34 in.; distance between seat centers, 29½ in.; distance between bolster centers, 26 ft.; height under sills to top of roof, 8 ft. 3⅜ in.



Butte Center-Entrance Car—General Exterior View

## TELEPHONE AND TROLLEY WIRES IN ENGLAND

The Municipal Tramway Association of England has lately accepted a proposal from the Postmaster-General with reference to trolley wires crossing telephone wires, which in England are now under the control of the Post Office Department. This proposal stated that there was now available an insulation material which will admit of the insulation of each wire crossing a power circuit at a comparatively low cost. While not so satisfactory in some ways as guard wires, the department was prepared to adopt it on certain conditions. On the new system the cost of insulating a span of one circuit of two wires would be about $2.75. The department suggested that when a tramway contractor desired to avoid the erection of guard wires he should pay a first and final charge for each post office crossing averaging sixteen wires (that is to say, any arrangement of wires under which all wires are terminated on one side at least on the same support) of $21.85 when the post office is the first-comer and one-half that amount when it is the second-comer. The proposal to use insulated wire does not for the present apply to trunk wires and wires running parallel to power circuits for considerable distances. The department has agreed to charge $2.75 per circuit for second-comers and $1.38 for first-comers.

# News of Electric Railways

### Railway Men in Automobile Accident

As the result of an automobile accident near Detroit, Mich., on the evening of Aug. 9, Louis E. Beilstein, until recently general manager of the Toledo Railways & Light Company, and James T. Ross, consulting engineer of the Northern Ohio Traction & Light Company and the Lake Shore Electric Railway, lost their lives and J. F. Collins, vice-president and general manager of the Michigan United Traction Company, and Edward F. Wickwire, sales manager of the Ohio Brass Company, Mansfield, Ohio, were seriously injured. Howard Davis, the chauffeur, was killed. Mr. Wickwire, who was able to talk after reaching the hospital, said that a ditch was encountered suddenly on the outskirts of Wyandotte. The driver endeavored to turn the machine out, but the right front wheel collapsed and the machine turned over. Mr. Beilstein was thrown clear of the car, but his neck was broken by the fall. Messrs. Ross, Collins and Davis were pinned under the car. Mr. Wickwire was thrown clear of the wreck. Messrs. Ross and Davis were dead when the car was righted and Mr. Collins was in a serious condition. He was taken to Emergency Hospital at Ford City, near Detroit, while Mr. Wickwire was taken to Solvay Hospital at Delray. The bodies of Messrs. Beilstein, Ross and Davis were removed to their homes.

The plans for the trip from Toledo to Jackson, Mich., were made in the office of the Lake Shore Electric Railway at Cleveland. Charles Currie, general manager of the Northern Ohio Traction & Light Company, accompanied the members of the party to Toledo by train, but returned home when they started on the auto trip. With the exception of Mr. Collins the victims of the accident left Toledo early on Aug. 8 for Jackson, where they were joined by Mr. Collins. The party spent the afternoon of Aug. 8 and the morning of Aug. 9 inspecting the line of the Michigan United Traction Company and on Saturday afternoon started for Toledo.

Mr. Collins, who sustained a broken thigh, and Mr. Wickwire, who has a broken ankle and is suffering from severe strains, were both reported on Aug. 14 to be doing well and no serious complications are expected to develop.

### Findings of Buffalo Arbitrators Modified

Following the rejection by the employees of the award of the board of arbitration named to settle their grievances with the International Railway, Buffalo, N. Y., Edward G. Connette, president of the company, announced that he would hold a conference with a committee of the men. Conferences were held on four days during the week ended Aug. 9, and an agreement was reached under the terms of which certain provisions in the report of the board were modified and the term of contract between the men and the company was reduced from five years to three years. Provision is also made in the agreement for an increase of 2 cents an hour in the wages paid to the shopmen and barnmen. This will give them a minimum wage of 24 cents an hour. No provision for an increase in wages for these employees was made in the findings of the board of arbitration. Although the agreement was made in writing, both sides say they are bound to secrecy until after the modified agreement has been ratified at a general mass meeting of the men. It was expected that this meeting would be held on Aug. 14 or 15.

As soon as the agreement was reached, Edward G. Connette, president of the company, issued the following statement on its behalf: "All questions raised have been settled satisfactorily and in accordance with the findings of the board of arbitration, except as to the term of the contract, which has, with the assent of the majority of the board of arbitration, been reduced from five years to three years."

William B. Fitzgerald, upon whose recommendation the men refused to accept the findings of the board, said:

"Everything is now settled satisfactorily. The modified agreement will not be made public until it has been ratified by the men. I have recommended that the new agreement be ratified. It provides for wage increases not included in the original findings of the board of arbitration."

### Special Legislative Session in Minnesota

Governor A. O. Eberhart, of Minnesota, has announced that he will call a special session of the Legislature this fall, principally to secure action on the proposed public utilities bill which a special legislative committee is now investigating. It has been charged that the committee is attempting to foster opposition to the creation of a public utilities commission. Representative H. H. Flowers, Cleveland, Minn., a member of the House public utilities committee, has protested to Governor Eberhart concerning a letter sent out under the committee's authority by its secretary, D. H. Holbrook, Minneapolis, the objectionable portion of which follows:

"The Governor has announced his intention of calling a special session of the Legislature to enact a general public utility law. In a general way the plan proposed contemplates the appointment by the Governor of a commission of three men, who shall have complete control over the regulation of all water, electric and gas plants, street railways and telephone systems in the State, whether publicly or privately owned, this commission to have the power to value plants, fix rates and regulate service. It is further proposed to take away from the municipalities the right they now have to regulate utilities and grant franchises. This is a radical departure from the policy hitherto pursued in this State, and the committee is anxious to get an accurate indication of public sentiment on this point. Do the people of the villages and cities of Minnesota wish to continue to regulate their utilities or do they wish to surrender that privilege to an appointive state commission?"

The committee is also sending out circulars to mayors, city clerks and other persons of prominence over the State.

### H. A. Blair on the Chicago Traction Situation

Henry A. Blair, chairman of the board and of the finance committee of the Chicago (Ill.) Railways and a member of the governing committee of the Chicago Elevated Railways, was quoted as follows by the Chicago *Daily News* on Aug. 7 in a special dispatch from Paris, France:

"After tramping through the streets of London and Paris I am convinced that the chief transportation advantage of these cities over Chicago is the speed with which cars are allowed to run in the busiest thoroughfares. In centers where the traffic is nearly twice as heavy as on the most congested corners in Chicago, street cars and autobuses push along at high speed the moment the crossing policeman signals. I saw in Piccadilly, London, a continuous procession of autobuses as far as the eye could reach, moving quickly and continually and yet without the slightest inconvenience to themselves or to pedestrians.

"Speed regulations in Chicago are foolish and must be revised before the city will have adequate transportation. If the cars were allowed to run faster not only would the passengers get to their destinations more quickly, but a crew could make another trip before the end of the shift, resulting in a considerable saving to the company and also permitting many more cars to run.

"The more I see of transportation in European cities the more I am convinced that the proposition we have made to the city of Chicago is the most remarkable ever made anywhere. Chicago now has an exceptional opportunity to consolidate all its transportation lines. Of the Chicago City Railway's stock 97 per cent is held by J. P. Morgan & Company, New York. Now that Mr. Morgan is dead the stock could readily be obtained, but once the trustees dispose of it throughout the country it would be extremely difficult to reassemble.

"All the elevated railway stock is held by Frank R. Vanderlip, Samuel McRoberts and myself, so there is no difficulty there. The Chicago Railways securities are held by some 3000 stockholders, but I am chairman of the finance committee and so probably could influence this organization. We, therefore, offer to consolidate all the lines with 5-cent fares and universal transfers, and also to begin work on the subway system, extending it as the city's needs grow. In

return we ask 7 per cent profits and an indeterminate franchise, but give the city the right to take over the whole business at any time.

"The city, however, will allow only 5 per cent profit and a twenty-year franchise. The truth is that it is impossible to operate a traction system on such a basis, for the people will not buy shares at such a low rate of interest and the banks will not take such a huge quantity of bonds falling due in twenty years. That is an absolute fact.

"The trouble is that politicians of both parties use the traction question to gain the people's sympathies, whereas they do not know the first thing about running traction systems, which is not a mere engineering feat but an intricate business proposition requiring high technical knowledge. In the meantime, while the politicians orate and hinder progress, the people suffer."

## The Value of Publicity

The *Journal* of the Cleveland Engineering Society dated July, 1913, contains the paper, "The Value of Publicity," presented before the members of the society on June 10, 1913, by W. R. Rose, associate editor of the Cleveland *Plain Dealer*. Mr. Rose referred to the once supposed impassable dead line between the newspaper and the engineering societies. Continuing, he said:

"It appears that the Cleveland Engineering Society has been a pioneer in its friendly attitude toward newspapers. It can be congratulated on this fact. It can accept the assurance that this alliance is highly gratifying on the newspaper side of the once impassable dead line.

"Science, a little obtuse at times, will learn that newspapers are not entirely devoted to baseball and casualties, to politics and gossip. The newspaper reaches out in countless directions. It wants the best that is available and it wants it in prodigious variety. It stretches a warm hand to science. It realizes that the annals of invention and technical achievement put romance to shame. It knows that the soldiers of science, bridge spinners, canal diggers, are the dauntless skirmish line of advancing civilization. The newspaper stretches a hand for your copy, assuring you that the public is interested in your proceedings because they advance public welfare. The newspaper offers you space in its columns, leaving to your judgment the selection of matter best calculated to interest the layman reader. It asks you to refrain in your reports from puzzling technicalities—that the copy reader may rise and call you blessed—and as far as possible to cover a variety of the themes that should make a popular appeal."

## Developments in Connection with the Buffalo & Lake Erie Traction Reorganization

The Canadian-American Power Corporation, with principal offices in Niagara Falls, has been incorporated in Albany to develop and distribute electricity in Erie, Niagara, Orleans, Monroe, Chautauqua and Cattaraugus Counties. The corporation is capitalized at $4,000,000. The directors of the company are: Edward G. Connette, president of the International Railway, Buffalo; S. Reading Bertron, Marshall J. Dodge and Francis T. Homer, New York, and Rodman E. Griscom, Haverford, Pa. Mr. Connette says that the Canadian-American Power Corporation has been organized to bring to the American side of the Niagara River 46,000 hp of electrical energy developed by the Electric Development Company, Niagara Falls, Ont., for use by the reorganized electric railways out of Buffalo.

Condemnation proceedings have been started by officials of the Frontier Electric Railway, which proposes to construct an electric railway from Buffalo, N. Y., to Niagara Falls to connect with the Canadian Northern from Niagara Falls, Ont., to Toronto and points east, to secure a right-of-way through a parcel of land north of North Tonawanda, Niagara County, N. Y., and La Salle. The company has bought one parcel of land outside of North Tonawanda and officials of the company say they have more than 98 per cent of the right-of-way. Work on the line may be started next spring. The franchise through the villages of North Tonawanda and Tonawanda will be void if work is not started before June 1, 1914.

## Recommendation to Enter Into Agreement with Detroit Company Adopted

By a vote of 22 to 4, the Common Council of Detroit, Mich,. in special session on the evening of Aug. 7 repealed the ordinance requiring the payment of rental of $300 a day by the Detroit United Railway and adopted the recommendation made by Mayor Marx to enter into an agreement with the company on the terms proposed by the company on Aug. 5. The action of the Council will put into effect on Aug. 15 the plan of seven tickets for 25 cents, under the terms noted in the Electric Railway Journal of Aug. 9.

W. D. Mahon has presented a communication to the Mayor in which the employees of the company complain that they were not provided for in the agreement. According to their view, they were not considered by the city administration or the company. A meeting had been fixed for the evening of Aug. 9 to consider the matter. The men propose to ask an increase in wages from 30 cents to 35 cents an hour maximum and a ten-hour workday to be completed in twelve consecutive hours.

## Toronto Street Railway Rates

The *Mail and Empire*, Toronto, Ont., published the following editorial on Aug. 7:

"The Acting Mayor of the city of Toronto is reported to have said that he is prepared to favor a flat 1-cent rate for the whole civic system of street railways. Possibly he takes the view that so long as the city receives upward of $1,000,000 a year from the Toronto Railway it ought to make the operation of its own lines a charge on that revenue. But if the city acquired the Toronto Railway's system and operated the entire street railway service, it is not to be supposed that Mr. Church or any other member of the Council would be in favor of lower fares than those at which the company now carries passengers. If any member of the present Council, or any candidate for a seat in the next Council, would favor for an all-city service, supplied by the municipality, lower rates than those charged by the company, now is the time for him to say so.

"For some time the Mayor has been negotiating for the purchase of the Toronto Railway. In these columns it has long been contended that the only way in which Toronto can proceed to provide itself with an extended, well-developed, unified street railway system such as it now needs is by acquiring the Toronto Railway's rights and property here. We have not been led to that view by any partiality for public ownership. Toronto's experience of public ownership is a warning against it. But the city has already extended its ownership into street railway enterprise and is operating lines at a loss. That venture has added confusion to a street railway situation that was already unsatisfactory. The street railway agreement provides for less than half of the area now included within Toronto's bounds. The large proportion of the Toronto Railway's gross earnings that goes into the city treasury ought to be used to develop the system. But, of course, the company, which has to surrender that money, cannot so use it, and the City Council, which has the use of it, can hardly say what it does with it. At the same time, the population grows at the rate of more than 20,000 a year and expands over a constantly widening site. There must be a change, and we can see nothing better than the application to the whole of the public ownership that has been applied to the part.

"The *Mail and Empire* would strongly oppose any scheme that would put the control of the system in the hands of the City Council. Unless a properly constituted commission is provided for in advance of the purchase and unless men of the highest trust and business capacity are selected the purchase should be opposed. In the hands of the City Council the system would be administered by statesmanship of the 'one-cent flat rate' type."

## Chicago Convention Train Arrangements

The transportation committee for Chicago, northern Illinois and Wisconsin has arranged with the Pennsylvania lines to run a special all-steel train from Chicago to the Atlantic City convention. The train will consist of compartments, observation car, library, club car, baggage car, stand-

ard sleepers and two dining cars, and will be electric lighted throughout. The train leaves Chicago at 10.30 a. m. Sunday, Oct. 12, and will arrive in Atlantic City about 9.30 a. m. the following day. Harry L. Monroe, of the General Electric Company, has been elected chairman of the entertainment committee, and he and his assistants will undoubtedly do everything possible to entertain all the delegates and guests.

---

**New Long Island Road Opened.**—The Freeport Railroad has been completed and placed in operation between the depot of the Long Island Railroad and the terminal of the Great South Bay Ferry Company. Thomas P. C. Forbes, Jr., is president of the company and Roland M. Lamb is treasurer.

**Municipal Railway Terminal Proposed for San Francisco.**—The Board of Supervisors of San Francisco, Cal., has adopted a resolution directing the city engineer to make a preliminary study of the amount of ground required to provide a suitable railway terminal at the foot of Market Street under municipal control.

**Compulsory Electrification Bill Introduced at Washington.**—Representative Charles M. Thompson, a Progressive Republican, of Illinois, has introduced a bill in the House at Washington to compel railroads entering Washington to electrify their lines within a radius of a score of miles of the border of the District of Columbia.

**Progress on New Road.**—The new interurban electric railway between Grand Rapids and Kalamazoo and the Allegan division of the Michigan Central Railway from Allegan to Battle Creek are both one enterprise. The property is in process of construction or alteration by the Michigan Railway Engineering Company, Jackson, Mich., and it is expected in the near future to operate between Grand Rapids, Kalamazoo, Battle Creek and Allegan. It is understood that the property will be known as the Michigan & Chicago Railroad.

**Mr. Mitten on the Philadelphia Transit Plans.**—Thomas E. Mitten, chairman of the executive committee of the Philadelphia (Pa.) Rapid Transit Company, has written to Transit Commissioner Taylor to the effect that the question as to participation of the company in the elevated and subway development plans prepared by Mr. Taylor cannot be answered until the return of E. T. Stotesbury, chairman of the board, who is now in Europe. Mr. Mitten is reported to have said that he intends to analyze the recommendations in order to prepare a report on them for the consideration of the directors of the Philadelphia Rapid Transit Company.

**Bus and Coach Line Certificates.**—The Public Service Commission of the Second District of New York is in receipt of a large number of applications for certificates of convenience and necessity from persons and corporations desiring to operate stage coaches and auto bus lines over what are commonly known as "good roads" in various sections of the State. All operating lines over improved state highways are required by Chapter 495 of the Laws of 1913 to apply to the commission for a certificate as the basis of their operation. In many counties such stage coaches and auto bus lines are being operated without apparently any attention to this legal requirement, but the commission is in daily receipt of new applications.

**Baltimore Company Wins Paving Case.**—The Court of Appeals of Maryland has announced that the United Railways & Electric Company will have to bear no part of the $5,000 000 now being expended by the paving commission in improving local streets. The court flatly decided that the city cannot hold the company for any portion of the money so to be spent. The estimated saving to the company is $1,500,000. The decision of the Appellate Court is merely a memorandum opinion to the effect that the city cannot hold the company for the cost of repaving Linden Avenue, between Dolphin Street and North Avenue. The ground on which the decision was based will not be known until next October, when the court reconvenes.

**Probable Controversy as to Value of Tracks.**—The Sutter Street Railway, San Francisco, Cal., has presented to the city of San Francisco a demand for $25,000, as the city's share of the purchase of the outer tracks on lower Market Street. The city uses the tracks for the Geary Street Municipal Railway, and the Sutter Street cars of the United Railroads also run over them. The demand was referred to the city engineer by the public utilities committee of the Board of Supervisors, which maintained that the company's figures, $51,706, probably represented the actual cost of the roadbed and tracks, without allowance for depreciation. Half of the company's appraisement is $25,853, but by the terms of the agreement with the railway the city's share was to be no greater than $25,000.

**Successor Commission to the Ohio Public Utilities Commission.**—On Aug. 8 the Public Utilities Commission of Ohio passed out of existence to give place to another commission, provided for in a law passed by the Legislature last winter. The members of the new body have not been named and Governor Cox has stated that the members of the old commission will hold over until new members are named. It is said that he has practically decided upon Judge Dechant, Middletown, and Oliver Hughes, Columbus. Both are Democrats and the latter was a member of the old commission. John L. Sullivan, East Liverpool, has been spoken of for the third member. Governor Cox, it is said, will appoint a member of the so-called Progressive party to work with the two Democratic members.

**Interborough Company Power Improvements.**—As previously noted in the ELECTRIC RAILWAY JOURNAL, the Interborough Rapid Transit Company, New York, N. Y., has awarded to the Westinghouse Machine Company the contract for three 30,000-kw steam turbo-generator units for installation in the Seventy-fourth Street station to assist in supplying energy for operating the enlarged New York subway. It is understood that the company expects to put all the generating equipment for the new subways in the existing power station, this being possible on account of the smaller area taken by the modern units. It is not expected to add any more room for boilers. The additional steam capacity will be secured from superheaters and improved grates and stokers, and it is not thought likely that any material changes will be necessary in the boilers.

**Newark Franchise Grants in Connection with Terminal Plans.**—Five of the twenty-nine franchises sought by the Public Service Railway, Newark, N. J., in connection with the proposed electric railway terminal have been granted by the Board of Works. Action was deferred on other franchises that have passed first and second reading, and the public hearing on some was continued for one week, while six applications remained untouched. The franchises granted are for fifty years and will become effective if accepted by the company within twenty days. While none has any immediate bearing on the terminal, they will all be employed in the operation of the system that will be created when the terminal becomes a reality. The company has substituted a new application for the franchise to run an elevated structure over Pine Street to the second floor of the terminal in Park Place.

**Consent Asked for Additional Tunnels Under East River.**—The Public Service Commission for the First District of New York has written to the Secretary of War asking the consent of the United States government to the construction of two tunnels under the East River, for operation by the Interborough Rapid Transit Company and the New York Municipal Railway Corporation under the dual system contracts. As the War Department has jurisdiction over navigable streams, its consent is necessary before the city can proceed with the construction of a tunnel under any such stream. One of the tunnels will be built under the river from Old Slip, on the Manhattan side, to Clark Street, on the Brooklyn side. This will be used by the Interborough Rapid Transit Company and will connect through William Street and Park Place with the proposed West Side extension of the existing subway up Seventh Avenue, on the Manhattan side, and with the existing subway in Brooklyn. The other tunnel will run from Whitehall Street, Manhattan, to Montague Street, Brooklyn. It will be operated by the Brooklyn company, and will connect on the Manhattan side with both the Nassau Street extension of the Centre Street Loop subway and the subway running up Broadway. On the Brooklyn side it will connect with the Fourth Avenue subway. These tunnels will be built not less than 45 ft. below the mean low-water mark, as established by the government.

# Financial and Corporate

## Stock and Money Markets

Aug. 13, 1913.

In the early trading on the New York Stock Exchange to-day persistent buying forced many issues to new high levels. During the afternoon the tone became irregular, with a decrease in the buying. A number of specialties made material gains for the day, but the majority of the issues, after some vigorous advances, showed slight net losses in the final dealings. Rates in the money market to-day were: Call, 2 @ 2½ per cent; sixty days, 3½ @ 4 per cent; ninety days, 4½ @ 4¾ per cent; four months, 4¾ @ 5 per cent; five months, 5½ @ 5¾ per cent; six months, 5½ @ 5¾ per cent.

All the Philadelphia stocks closed dull but firm, with slight recessions from the top prices.

Stocks were strong in Chicago to-day and bonds were steady.

In Boston stocks opened dull to-day. There were a few recessions from the previous day's closing prices. Later there was a broadening of interest in the market.

The Baltimore market as a whole tended higher to-day. Pennsylvania Water Power issues were a feature. The stock transactions totaled 1370 shares; the transactions in bonds amounted to $47,000.

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

| | Aug. 6. | Aug. 13. |
|---|---|---|
| American Brake Shoe & Foundry (common) | 90¼ | 91 |
| American Brake Shoe & Foundry (preferred) | 129 | 131 |
| American Cities Company (common) | 37½ | 37⅜ |
| American Cities Company (preferred) | 65½ | 66 |
| American Light & Traction Company (common) | 345 | 350 |
| American Light & Traction Company (preferred) | 104 | 104 |
| American Railways Company | 38 | 38 |
| Aurora, Elgin & Chicago Railroad (common) | 39½ | 41 |
| Aurora, Elgin & Chicago Railroad (preferred) | 82 | 82½ |
| Boston Elevated Railway | 91 | 91 |
| Boston Suburban Electric Companies (common) | 7½ | 7½ |
| Boston Suburban Electric Companies (preferred) | 55 | 56½ |
| Boston & Worcester Electric Companies (common) | *8 | *8 |
| Boston & Worcester Electric Companies (preferred) | *42 | 42 |
| Brooklyn Rapid Transit Company | 88½ | 89⅝ |
| Capital Traction Company, Washington | 115 | 115½ |
| Chicago City Railway | *165 | 170 |
| Chicago Elevated Railways (common) | *25½ | 25 |
| Chicago Elevated Railways (preferred) | *75 | 70 |
| Chicago Railways, ptcptg., ctf. 1 | *92 | 92 |
| Chicago Railways, ptcptg., ctf. 2 | 27⅛ | 26½ |
| Chicago Railways, ptcptg., ctf. 3 | *7½ | 7 |
| Chicago Railways, ptcptg., ctf. 4 | *2½ | 3 |
| Cincinnati Street Railway | a110 | 105 |
| Cleveland Railway | a102¾ | 103¾ |
| Cleveland, Southwestern & Columbus Ry. (common) | *6 | a5½ |
| Cleveland, Southwestern & Columbus Ry. (preferred) | *29 | a30 |
| Columbus Railway & Light Company | 18 | 18 |
| Columbus Railway (common) | a69 | 69½ |
| Columbus Railway (preferred) | a90 | 88 |
| Denver & Northwestern Railway | *107 | 104 |
| Detroit United Railway | a70 | a80 |
| General Electric Company | 140 | 142½ |
| Georgia Railway & Electric Company (common) | a114¾ | 114½ |
| Georgia Railway & Electric Company (preferred) | *82½ | 83 |
| Interborough Metropolitan Company (common) | 15¾ | 16⅜ |
| Interborough Metropolitan Company (preferred) | 58¼ | 60⅞ |
| International Traction Company (common) | *30 | 30 |
| International Traction Company (preferred) | *95 | 95 |
| Kansas City Railway & Light Company (common) | *15 | 18 |
| Kansas City Railway & Light Company (preferred) | *36 | 37 |
| Lake Shore Electric Railway (common) | *9 | 5 |
| Lake Shore Electric Railway (1st preferred) | *90 | 92 |
| Lake Shore Electric Railway (2d preferred) | *25 | 26 |
| Manhattan Railway | 126 | 130 |
| Massachusetts Electric Companies (common) | *14½ | 16½ |
| Massachusetts Electric Companies (preferred) | 74½ | 72 |
| Milwaukee Electric Railway & Light Co. (preferred) | *90 | 95 |
| Norfolk Railway & Light Company | 25 | 25 |
| North American Company | 70½ | 72 |
| Northern Ohio Light & Traction Company (common) | a70 | a70 |
| Northern Ohio Light & Traction Company (preferred) | a100 | a100 |
| Philadelphia Company, Pittsburgh (common) | 42 | 43½ |
| Philadelphia Company, Pittsburgh (preferred) | 40 | 40 |
| Philadelphia Rapid Transit Company | 23⅜ | 23½ |
| Portland Railway, Light & Power Company | *58 | 55 |
| Public Service Corporation | 108 | 109 |
| Third Avenue Railway, New York | 35¾ | 36¾ |
| Toledo Railways & Light Company | *12 | a6 |
| Twin City Rapid Transit Co., Minneapolis (common) | 104¼ | 104 |
| Union Traction Company of Indiana (common) | *4½ | 5 |
| Union Traction Company of Indiana (1st preferred) | *80 | 80 |
| Union Traction Company of Indiana (2d preferred) | *30 | 30 |
| United Rys. & Electric Company (Baltimore) | 26⅞ | 27 |
| United Rys. Inv. Company (common) | *23 | 25 |
| United Rys. Inv. Company (preferred) | *42 | 45 |
| Virginia Railway & Power Company (common) | 53 | 52½ |
| Virginia Railway & Power Company (preferred) | *89 | 90½ |
| Washington Ry. & Electric Company (common) | 91 | 91 |
| Washington Ry. & Electric Company (preferred) | 88¼ | 88 |
| West End Street Railway, Boston (common) | 72 | 71¼ |
| West End Street Railway, Boston (preferred) | 88 | 88 |
| Westinghouse Elec. & Mfg. Company | 63½ | 68 |
| Westinghouse Elec. & Mfg. Company (1st preferred) | 111 | 112 |

*Last sale. a Asked.

## ANNUAL REPORT

### Havana Electric Railway, Light & Power Company

The Havana Electric Railway, Light & Power Company, Havana, Cuba, has published a report for the period ended Dec. 31, 1912. In this report F. Steinhart, president of the company, says in part:

"It is well known to many of you that for some time past the management of the Havana Electric Railway has had under consideration the question of entering into the electric lighting and power business in the city of Havana and its suburbs, and as well the method of raising the large amount of capital required for that purpose, and that one of the propositions considered was the amalgamation of the interests of the shareholders of that company with those of the stockholders of the Compañia de Gas y Electricidad de la Habana, which company controls practically all the lighting, both gas and electric, in the city.

"After careful consideration, bearing in mind that many of the leading families of Havana have their fortunes invested in stocks of both the companies mentioned and to avoid great harm to the money value of said securities, a plan for the amalgamation of the Havana Electric Railway and the Compañia de Gas y Electricidad de la Habana was formulated by Messrs. Speyer & Company of New York, under date of March 8, 1912, and as a result thereof your company, the Havana Electric Railway, Light & Power Company, was incorporated under the laws of the State of New Jersey under date of March 26, 1912, with the objects, among many others, of acquiring and holding $5,000,000 par value, or any less amount, of the preferred capital stock of the Havana Electric Railway, $7,500,000 par value, or any less amount, of the common capital stock of the last mentioned company, and $6,000,000 of the capital stock of the Compañia de Gas y Electricidad de la Habana, and to construct in the West India Islands, acquire, improve, develop, operate and manage railways, wharves, piers, docks, warehouses, harbors, dams, tunnels, bridges, viaducts, subways, conduits and pipe lines in said islands, together with any other buildings or works capable of being advantageously used in the transportation or care of freight or passengers, or the laying of cables, wires, pipes, etc., to generate, accumulate, distribute and supply electricity and gas for light, heat, power, signals and other purposes; to construct, own and operate lines for the conveyance of electric current for telegraph, telephone, cable and other purposes; to construct, own and operate electric telephone exchanges; to make, own, sell or lease the machines, instruments, apparatus and other equipment necessary for the generation, distribution, accumulation and employment of gas and electricity or either of them for any purpose; to manufacture, use and sell gas and electricity or either of them for any and all lawful purposes, etc.

"The fusion or amalgamation was agreed upon to date from April 1, 1912, and consequently this first report covers only a period of nine months.

"The plan formulated by Speyer & Company, New York, has met the approval of all, as is shown by the fact that on Dec. 31, 1912, 59,279.74 shares of the Compañia de Gas y Electricidad de la Habana had been deposited for the purpose of exchange for securities of your company, and of the Havana Electric Railway stock 49,455 preferred and 74,462.12 common shares had been deposited for like purpose.

"Negotiations have been entered into for the construction of a new and modern 37,500-kw electric power plant, also for a new enriched water-gas plant consisting of two duplicate units, each with a capacity of 3,500,000 cu. ft. per day.

"It is expected that the gas plant will be completed and ready for operation in July of the coming year and that the electric plant will be in regular service early in 1914.

"The island of Cuba is in a highly prosperous condition. Investments in productive industries have yielded most encouraging returns and are being extended on a large scale. Important and long-needed improvements are being carried out in the harbor and water front of Havana which will increase the capacity and effectiveness of the port, in connection with which the railroad freight terminals are being extended and have already been greatly improved during the past year. A new and modern union passenger terminal has just been put into operation."

"The growth of population in Havana and its environs has been large and wholesome as shown by the unusual amount of building construction, especially in the newer residence districts, and the extreme scarcity of unoccupied buildings of any sort, together with the steady increase in the street railway traffic.

"There is every reason to believe that the prosperity and confidence felt throughout the island and especially in this city, its commercial center, will be reflected in the earnings and growth of your company, which is prepared with every necessary element in order to meet whatever demands of a private or public nature will be made upon it in the illumination and transportation necessities of the city and its suburbs.

"In conclusion we wish to express our sincere appreciation of the earnest and untiring efforts of the management and the entire staff of employees during the period covered by this report, which the heavy demands incident to the consolidation and reorganization of the company, in addition to their usual duties, have made exceptionally difficult and arduous to all."

A table was attached to the report, from which was obtained the following revenue and profit and loss statement for the nine months ended Dec. 31, 1912:

| | | |
|---|---|---|
| Earnings: | | |
| Sale of electricity | $959,781 | |
| Sale of gas | 529,795 | |
| Miscellaneous | 163,567 | |
| Gross earnings | | $1,653,144 |
| Operating expenses: | | |
| Electric light department | $278,989 | |
| Gas department | 261,481 | |
| Total operating expenses | | 540,470 |
| Net earnings from operation | | $1,112,674 |
| Income from securities owned | | 487,247 |
| Total income for period | | $1,599,921 |
| Deductions from income: | | |
| Taxes | $41,624 | |
| Interest | 476,047 | |
| Total deductions from income | | 517,672 |
| Net profits | | $1,082,249 |
| Dividend No. 1, 3 per cent on $15,000,000 of preferred stock, Nov. 16, 1912 | $450,000 | |
| Dividend No. 1, 2¼ per cent on $15,000,000 of common stock, Nov. 16, 1912 | 337,500 | |
| Total dividends | | 787,500 |
| Profit and loss balance | | $294,749 |

Appended to the above report there was also a statement from Warren Bicknell, president of the Havana Electric Railway, which was one of the parties to the amalgamation forming the new corporation, the Havana Railway, Light & Power Company.

This statement regarding the Havana Electric Railway follows in part:

"The gross earnings of the railway and stage properties of the Havana Electric Railway for the years 1907-1912, inclusive, were as follows:

| | Earnings | Increase in Percentage Over Previous Year |
|---|---|---|
| 1907 | $2,143,122 | .... |
| 1908 | 2,276,807 | 6.23 |
| 1909 | 2,488,647 | 9.30 |
| 1910 | 2,656,979 | 6.76 |
| 1911 | 2,991,501 | 12.59 |
| 1912 | 3,144,141 | 5.10 |

"The following is a condensed statement of the results of operation of the properties of your company for the year 1912:

| | | |
|---|---|---|
| Gross earnings | | $3,144,141 |
| Operating expenses | | 1,626,380 |
| Earnings less operating expenses | | $1,517,761 |
| Fixed charges and taxes | | 493,873 |
| | | $1,023,888 |
| Other income | | 26,502 |
| Surplus earnings for the year available for use of company | | $1,050,390 |
| Surplus Jan. 1, 1912, adjusted | $1,327,208 | |
| Amortized bond discount | 201,616 | |
| | | 1,125,592 |
| Total | | $2,175,982 |
| Dividends paid during year 1912: | | |
| 6 per cent on preferred shares | $300,000 | |
| 6 per cent on common shares | 450,000 | |

| | Miles |
|---|---|
| Single-track mileage owned Dec. 31, 1912 | 65.70 |
| Revenue track mileage owned Dec. 31, 1912 | 55.90 |
| Average revenue track mileage operated during 1912 | 55.15 |

| | Operating Railway Mileage | Gross Railway Earnings per Track Mile | Net Railway Earnings per Track Mile | Ratio Operating Expenses to Gross Earnings (per Cent) |
|---|---|---|---|---|
| 1906 | 50 | $31,406 | $12,252 | 60.98 |
| 1907 | 50 | 36,218 | 16,923 | 53.27 |
| 1908 | 50.4 | 38,448 | 19,168 | 50.15 |
| 1909 | 51.5 | 40,908 | 22,360 | 45.34 |
| 1910 | 51.5 | 44,128 | 23,600 | 46.52 |
| 1911 | 53.9 | 48,016 | 25,535 | 46.82 |
| 1912 | 55.15 | 49,939 | 26,165 | 47.59 |

| Stage Lines: | 1911 | 1912 |
|---|---|---|
| Gross earnings | $403,451 | $390,001 |
| Operating expenses | 307,617 | 315,279 |
| Net earnings | $95,834 | $74,722 |

"The statements of earnings contained in this report are exceedingly gratifying to your officers and directors, and when the difficulties attending the operation of the property are taken into consideration, it will be appreciated that great credit is due to General Manager Steinhart and his operating organization for the excellent results which they have obtained with the property.

"It affords me gratification to report that the plans formulted for the amalgamation of the properties of the Havana Gas & Electric Company and the Havana Electric Railway have received the hearty approval of the shareholders of your company, evidenced by the deposit of shares aggregating over 99 per cent of all outstanding shares for conversion into shares of the new corporation, which it is proposed will be known as the Havana Electric Railway, Light & Power Company.

"It is contemplated that the legal steps necessary for the complete fusion of the Havana Electric Railway with the Havana Electric Railway, Light & Power Company will be taken at an early date."

## Calgary Municipal Street Railway

The city clerk of Calgary, Can., has compiled a manual of 166 pages in regard to the municipal undertakings of the city, a considerable part of which is devoted to a review of the Calgary Municipal Street Railway. Figures of earnings are presented from July 5, 1909, to June 30, 1910, from July 1, 1910, to June 30, 1911, from July 1, 1911, to June 30, 1912, and for the four months ended Oct. 31, 1912. The system in Calgary was placed in operation on July 5, 1909, with two cars. On July 1, 1910, there were fifteen cars in service; on July 1, 1911, twenty-two cars; on July 1, 1912, forty-eight cars, and on Dec. 31, 1912, fifty-four cars. The system as first opened comprised 3 miles of track, whereas on Dec. 31, 1912, there were 59 miles of track. Service was begun with sixteen employees, whereas on Dec. 31, 1912, there were 269 employees. Since 1905 the population has increased from 12,500 to 85,000 for 1913, estimated. The system is operated by the city commission, consisting of Mayor J. W. Mitchell, chairman; A. G. Graves and S. J. Clark as commissioners, with T. H. McCauley as superintendent.

The power department is operated separately from the railway and supplies the city with light and power and charges the railway for such power as it uses at 2 cents per kw-hr. Five classes of tickets are sold, namely, school tickets, good to and from school for adults and any time for children, ten for 25 cents; work tickets, good morning and evening, eight for 25 cents; ordinary tickets, good any time, six for 25 cents; ordinary tickets in book form in lots of twenty-five at $1, and pads of civic employees' tickets, thirty for $1, the latter charged to the departments in which they are used. No passes are issued. Transfers are made over the different routes at ten different points in the city and the establishment of a special labor fare between 12 noon and 2 p. m. is being considered. Employees are paid a sliding scale as follows: first three months' service, 28 cents an hour; second six months, 30 cents an hour; second year, 32 cents an hour; third year, 34 cents an hour, and after the third year, 35 cents an hour. A sick benefit association has been established among the men and free club rooms have been provided.

The statement of earnings from July 1, 1911, to June 30, 1912, as contained in the report, shows the surplus from operation to be $196,639 and the net profit to be $107,253. During the year mentioned 12,941,530 passengers were carried and the car mileage was 1,643,328.

**Birmingham-Tuscaloosa Railway & Utilities Company, Birmingham, Ala.**—The Birmingham-Tuscaloosa Railway & Utilities Company, which was incorporated in Alabama in February, 1913, with $3,500,000 of capital stock, has filed a mortgage to the Fidelity Trust Company, Philadelphia, Pa., as trustee, to secure an issue of $5,000,000 of 5 per cent bonds, dated March 1, 1913, and due March 1, 1938, and has pledged the entire lot as collateral for an issue of $3,500,000 of 6 per cent three-year notes dated May 1, 1913, due May 1, 1916. The notes are subject to call on and after Nov. 1, 1913, at 101 and interest. The proceeds of the notes will be used for improvements and additions to the plants in Tuscaloosa and to extend the electric railway to Birmingham, more than 50 miles. The Birmingham-Tuscaloosa Railway & Utilities Securities Company was incorporated in Virginia in March, 1913, as a holding company with $3,500,000 of stock and owns the entire stock of the Birmingham-Tuscaloosa Railway & Utilities Company.

**Brantford (Ont.) Street Railway.**—Court actions have been commenced by the city of Brantford against the Brantford Street Railway to recover this year's street railway taxes. The street railway owes the city approximately $29,000, and two actions have been entered to recover same. A campaign has been started to have the city acquire the street railway.

**Cincinnati (Ohio) Street Railway.**—Alfred J. Becht, secretary and treasurer of the Cincinnati Street Raiway, has been elected a director of the company to succeed Briggs Cunningham, deceased.

**Cleveland (Ohio) Railway.**—The statement of the Cleveland Railway for June shows receipts of $605,800. Owing to the large amount of maintenance work done and the cost of arbitration, the statement shows an actual deficit of $53,900 and a book deficit of $36,436. To liquidate the cost of arbitration $5,000 was taken from the operating allowance and $14 561 from the interest fund. The amount gained for the month toward making up a deficit of $28,000 in the operating fund was $801. The amount now in the interest fund is $616,365.

**Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.**—The Cleveland, Southwestern & Columbus Railway has been authorized by the Public Service Commission of Ohio to issue and sell its twenty-five-year 5 per cent first consolidated mortgage gold bonds of the aggregate principal sum of $251,069, the proceeds to be used to reimburse the petitioner's income for expenditures aggregating $122,310, and to acquire real estate and extend and improve the company's interurban lines, such bonds to be sold for the best price obtainable, but for not less than 85.

**Dominion Traction & Lighting Company, Ltd., Toronto, Ont.**—The Dominion Traction & Lighting Company, incorporated on Jan. 16, 1913, with an authorized capital stock of $12,500,000, has acquired the total capital stock and $1,000,000 of bonds of the Windsor (Ont.) Gas Company, Ltd., and all of the $750,000 of first mortgage bonds of the Windsor, Essex & Lake Shore Rapid Railway. The share capital issued and fully paid up consists of $500,000 of preferred stock and $2,500.000 of common stock. The Investment Registry, Ltd., London, Eng., recently offered for the company at 93 per cent $1,250,000 of its present issue of $1,450,000 of first mortgage thirty-year 5 per cent gold bonds of 1913. The officers of the Dominion Traction & Lighting Company, Ltd., are William C. Kennedy, president; Charles T. King, Edmund I. Sculiy, Thomas P. Pincard and T. Le Suer, directors.

**Lehigh Valley Transit Company, Allentown, Pa.**—It is reported that practically all of the recently offered first mortgage 5 per cent bonds of the Lehigh Valley Light & Power Company, a subsidiary of the Lehigh Valley Transit Company, have been sold. The Lehigh Valley Light & Power Company is a merger of light and power companies controlled by the Lehigh Valley Transit Company. The Light & Power bonds are dated April 1, 1913, and are due April 1, 1943, the authorized issue being $2,000,000. By creating a separate organization for its light and power companies the Lehigh Valley Transit Company is able to finance its light and power requirements without drawing upon bonds reserved in its refunding and improvement issue, which will thus be available for use in extensions and improvements of the railway department.

**Medfield & Medway Street Railway, Westfield, Mass.**—Receiver Eugene H. Mather gives legal notice that, pursuant to a decree of the Supreme Court entered on July 11, 1913, in the case of the Old Colony Trust Company vs. the Medfield & Medway Street Railway, defendant, he will sell the road at public auction on Sept. 15 at the office of Hayden, Stone & Company, Boston.

**New York Municipal Railway Corporation, Brooklyn, N. Y.**—The Public Service Commission for the First District of New York has approved a further issue of $400,000 of the capital stock of the New York Municipal Railway Corporation. This company's total authorized capital is $1,000,000, and when it was organized the commission allowed an issue of $100,000 to cover preliminary expenses. With the $400,000, just allowed, the company now has permission to issue one-half of its total capital stock. In granting permission to issue this $400,000, the commission stipulates that it shall be sold at not less than par, that it shall be issued for money, and that the proceeds shall be applied only to the following purposes: "For acquisition of property, or for construction, completion, extension or improvement of its facilities, or for the discharge or lawful re-funding of its obligations."

**Northern Illinois Light & Traction Company, Ottawa, Ill.**—The Northern Illinois Light & Traction Company has increased its capital stock from $250,000 to $750,000.

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—The Oakland, Antioch & Eastern Railway has applied to the Railroad Commission of California for a ruling to determine whether $500,000 of its bonds placed on contract were legally issued. The $500,000 in bonds are part of the issue the proceeds of which were used to construct the line from Bay Point to Sacramento. The directors of the company have called an assessment of $5 a share on the 100,000 shares of capital stock outstanding, the $500,000 so realized to be devoted to the purchase of equipment. At the same time an assessment of $10 a share was called on the 35,000 shares outstanding of the Oakland & Antioch, a subsidiary. The Oakland, Antioch & Eastern Railway owns 34,500 shares of this stock.

**Ohio Traction Company, Cincinnati, Ohio.**—Application has been made by the Ohio Traction Company to the Public Service Commission for permission to issue $300,000 of additional preferred stock. The reason for the issue is the prospective changes in Cincinnati caused by the general re-routing of the city lines, the company estimating its expense at $302,312. If allowed, this will bring the total outstanding stock to $8,800,000.

**Pacific Gas & Electric Company, San Francisco, Cal.**—The Railroad Commission of California has authorized the issue by the Pacilc Gas & Electric Company of $5,000,000 of general and refunding mortgage gold bonds, maturing on Jan. 1, 1942, to bear interest at the rate of 5 per cent per annum, payable semi-annually, under the terms of the mortgage made on Dec. 1, 1911, to the Bankers' Trust Company, New York, corporate trustee, and Frank B. Anderson, San Francisco, individual trustee. The authorization of the company is dependent upon execution of the following conditions: (1) The Pacific Gas & Electric Company may sell $1,590.000 of bonds to net the company not less than 85 per cent of the par value of the principal thereof, besides interest accrued thereon, or, as an alternative, shall have the right to pledge the bonds as security for notes of a period of less than twelve months, this indebtedness to be not less than 75 per cent of the face value of the bonds pledged. The proceeds of the sale or pledge of said bonds shall be applied only for the discharge or re-funding of obligations of the company incurred for the acquisition of property, the construction, completion, extension or improvement of facilities and the maintenance of service during March, April and May, 1913. (2) The Pacific Gas & Electric Company may sell $3,410 000 of bonds for not less than 85 per cent of the par value of the principal thereof besides interest accrued thereon. The proceds of this sale should be applied only to discharge or re-fund similar obligations of the company incurred subsequent to May 31, 1913. The authority given to issue bonds shall apply only to bonds issued on or before June 1, 1914.

**St. John (N. B.) Railway.**—The St. John Railway is issuing $200,000 of new stock to cover the cost of extending

its lines. Some time ago efforts were made by the company to float a bond issue of the same amount, but under present conditions in the money market the bonds were not taken up and a stock issue was substituted. Present holders of stock have the right to subscribe for the new issue on the basis of one share of new stock to four of their present holdings at par.

**Springfield, Clear Lake & Rochester Interurban Railway, Springfield, Ill.**—The property of the Springfield, Clear Lake & Rochester Interurban Railway was sold for junk on Aug. 2 to Abraham Barker, Springfield, for $12,650. It is estimated that about $6,650 of this amount will be distributed among the bondholders. The rest will be consumed in court costs. The road has not been operated for about a year.

**Toronto (Ont.) Civic Lines.**—A nominal profit of $1,477, with an actual deficit of more than $10,000, is shown in the report of Acting City Treasurer Patterson for the first seven months of the operation of the Toronto Civic Car Lines on Gerard Street. The cost of the line was $283,000. The revenue for one month in 1912 and six months in 1913 was $16,296, while the expenditures during that period were $14,819. Charging of interest and sinking fund at 7 per cent, the figure given by the treasury department, leaves a deficit of approximately $10,000.

**Washington (D. C.) Utilities Company.**—A mortgage has been made by the Washington Utilities Company to the United States Mortgage & Trust Company, New York, N. Y., as trustee, to secure an issue of $1,500,000 of one-year 5 per cent collateral gold notes dated May 1, 1913, and due May 1, 1914, but subject to call on any interest date at par and interest as a whole or in principal amounts of $50,000 or multiples thereof. The notes are secured by the pledge of 27,500 shares of the common capital stock of the Washington Railway & Electric Company.

### Dividends Declared

Binghamton (N. Y.) Railway, 2 per cent.

Central Arkansas Railway & Light Company, Hot Springs, Ark., quarterly, 1¾ per cent, preferred.

Federal Light & Traction Company, New York, N. Y., quarterly, 1½ per cent, preferred.

Illinois Traction System, three-quarters of 1 per cent, common.

Rochester Railway & Light Company, Rochester, N. Y., quarterly, 1¼ per cent, preferred.

Portland Railway, Light & Power Company, Portland, Ore., quarterly, 1¼ per cent, preferred.

## ELECTRIC RAILWAY MONTHLY EARNINGS

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

| Period | | | Gross Earnings | Operating Expenses | Net Earnings | Fixed Charges | Net Surplus |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $40,989 | *$21,731 | $19,257 | $10,396 | $8,861 |
| 1 " | " | '12 | 40,935 | *22,360 | 18,576 | 9,977 | 8,599 |
| 6 " | " | '13 | 188,540 | *106,540 | 81,944 | 62,544 | 19,400 |
| 6 " | " | '12 | 175,985 | *108,704 | 67,281 | 59,429 | 7,852 |

DETROIT (MICH.) UNITED RAILWAY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $1,186,156 | $772,174 | $413,982 | $179,245 | $234,737 |
| 1 " | " | '12 | 1,045,442 | 668,195 | 377,247 | 176,174 | 201,073 |
| 6 " | " | '13 | 6,394,670 | 4,214,029 | 2,180,641 | 1,076,108 | 1,104,533 |
| 6 " | " | '12 | 5,490,941 | 3,494,998 | 1,995,943 | 1,066,026 | 929,917 |

FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $180,935 | $108,230 | $72,705 | ..... | ..... |
| 1 " | " | '12 | 162,894 | 97,774 | 65,120 | ..... | ..... |
| 6 " | " | '13 | 1,181,533 | 675,136 | 506,397 | ..... | ..... |
| 6 " | " | '12 | 1,038,339 | 601,389 | 436,950 | ..... | ..... |

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $127,571 | *$74,406 | $53,165 | $35,315 | $17,850 |
| 1 " | " | '12 | 120,915 | *64,294 | 56,620 | 35,138 | 21,483 |
| 6 " | " | '13 | 626,503 | *404,767 | 221,735 | 210,286 | 11,449 |
| 6 " | " | '12 | 587,251 | *358,532 | 228,719 | 208,874 | 19,845 |

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $291,518 | *$178,355 | $113,163 | $45,214 | $67,949 |
| 1 " | " | '12 | 276,961 | *154,489 | 122,472 | 43,817 | 78,655 |
| 6 " | " | '13 | 1,497,238 | *928,458 | 568,780 | 270,724 | 298,056 |
| 6 " | " | '12 | 1,377,336 | *792,830 | 584,505 | 262,925 | 321,580 |

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1m., | June, | '13 | $248,669 | *$152,028 | $96,640 | $41,992 | $54,648 |
| 1 " | " | '12 | 214,737 | *129,177 | 85,559 | 43,943 | 41,616 |
| 12 " | " | '13 | 2,842,175 | *1,723,933 | 1,118,242 | 535,029 | 583,213 |
| 12 " | " | '12 | 2,518,450 | *1,511,712 | 1,006,738 | 531,378 | 475,360 |

*Includes taxes.

# Traffic and Transportation

### Dealing with the Rowdy in Baltimore

As the result of a complaint against conditions of rowdyism and unseemly conduct prevailing at times on the cars of the Westport branch of the John Street line of the United Railways & Electric Company, Baltimore, Md., the Public Service Commission of Maryland entered an order under date of July 22 directing the company to turn back some of its cars operated to Kline's Park as an experiment to learn whether or not that measure will afford patrons who board cars on Maryland Avenue reasonably comfortable facilities. The opinion by Chairman Laird is particularly interesting because it shows forcibly the effort of the company to deal with the rowdy element. Referring to this phase of the matter, the commissioner says, in part:

"The argument of the company is that it, as a common carrier, cannot refuse passage on its cars when demanded by a person who at the time is behaving in a proper manner, and this contention cannot be successfully combated. The company does not, however, seek to escape responsibility when disorder occurs, but uses every effort to have offenders arrested and prosecuted. According to the testimony of its assistant general manager, before the excursion season opens the matter is taken up with the chief of police of Baltimore City and the chief of police of Baltimore County, and extra patrolling of the line is provided for. In addition to this the company places inspectors on the line to observe conditions and assist the car crews in bringing violations of the law to the attention of the proper officers. Even within the city limits special details of policemen are stationed to watch the Westport cars.

"The United Railways & Electric Company has no power to keep the peace except by stimulating the police force to greater vigilance and activity and it seems to have exhausted its influence in that direction. An increase of the police force during the excursion season would undoubtedly have a salutary effect. The company is interested, as are the patrons, in having a service free from complaints, which are expensive in both time and money."

In conclusion the commissioner says:

"The suggestion is made by the complainants that a cross-over located on Maryland Avenue in the locality of the Farmers' Rest, and the running of a certain number of cars no farther than that point, would afford a considerable measure of relief, as the disorderly element being congregated farther on the route and having ample cars for its accommodation would give to those who board cars on Maryland Avenue reasonably comfortable facilities. The officers of the company argue that the relief would be so slight as to be negligible. Nobody knows what the effect may be. At least it will be an inexpensive experiment, and we think it is not going too far to require the company to put it into operation. Enough of the present excursion season remains to give it a fair trial, and it is the only plan which at the moment seems feasible."

An order in accordance with this opinion has been passed and the service was to begin not later than Aug. 1 and be operated from a cross-over switch to be installed on Maryland Avenue on the crest of the hill north of the turn into Fish House Road. Cars will be run both ways not more than fifteen minutes apart during the excursion hours. Transfers from this service to the cars which go on to the river resorts are forbidden. The latter provision, it is hoped by the commission, will prevent the excursion passengers from using the service intended for the residents.

### Recent Publicity in Minneapolis

The Twin City Rapid Transit Company, Minneapolis, believes in the efficacy of advertising, both in newspapers and by circulars. In one recent newspaper advertisement it explains several changes necessitated in its lines by various building improvements which are about to be undertaken in that city. The Twin City Lines asks the indulgence of its patrons for the temporary and unavoidable irregularities of service that may occur during these municipal improvements. In another it calls attention to the re-routing of lines which will be made necessary by the building of the

Minneapolis Union Passenger Station, and to the occasional necessity of single-track service on the Washington Avenue South lines, owing to repaving. Half a mile of the "Como-Harriet-Hopkins" line will also be reduced to single track because of municipal water mains and a sewer in process of construction along this line. Other recent newspaper advertisements describe the attractions of visits to Wildwood Park and Lake Minnetonka—reached by the Twin City Lines—and to the new Minnesota State Prison, about which this company is distributing a special pamphlet, outlined in the issue of the Electric Railway Journal of July 19, 1913, page 120.

Each advertisement contains the sentence: "Complaints and suggestions always receive prompt, courteous attention." This statement is followed by the name, address and telephone number of the general passenger agent, A. W. Warnock.

---

**Employees' Field Meet.**—The employees of the Beaver Valley Traction Company, New Brighton, Pa., held their second annual field meet at Junction Park on Aug. 5, 1913. More than 130 prizes, consisting of various small articles, were distributed among the winners of the events. There was a total attendance of about 500, 300 remaining for the dance in the evening.

**Wisconsin Automobile Law Amended in Interest of Railway Passengers.**—The Wisconsin Senate has concurred in an amendment by the Assembly to the automobile bill passed earlier in the session which provides that all automobiles must come to a full stop when coming up to a street car that has stopped and that the automobile must not proceed until the car has been started.

**Fare Reduction Asked in Oregon.**—Complaining that the residents of Wichita, Brookside, Stanley, Bell Luther and Watson are charged 10 cents car fare, while residents of Lents are charged only 5 cents, S. L. Mullan, secretary of the Wichita Club, recently asked the State Railway Commission to compel the Portland Railway, Light & Power Company, Portland, Ore., to give Wichita a 5-cent fare.

**Hearing in Regard to Service in Camden.**—At the hearing on Aug. 6 in regard to the adequacy of the service of the Public Service Railway in Camden, N. J., R. E. Danforth, general manager of the company, said that in comparison with other cities similarly situated the number of persons who are compelled to stand in Camden was extremely small. The commission announced that it would convene again on Sept. 16.

**Complete Record of Philadelphia Co-operative Plan.**—A complete record of the operations of the co-operative plan of the Philadelphia (Pa.) Rapid Transit Company is contained in four handsomely bound small volumes, prepared by the management, which contain all the co-operative bulletins issued to date, the text of the co-operative plan and details as to the pension and beneficial arrangements, operating rules, etc.

**Birmingham Company Offers to Reduce Fare.**—In a communication to the City Commission the Birmingham Railway, Light & Power Company, Birmingham, Ala., has offered to reduce its fare from Fairfield and Wylam to Birmingham from 10 to 5 cents. In the communication the company sets forth that as the two communities are growing ones, the reduction is made as an accommodation to the patrons of that section who have been paying 10 cents.

**Employees' Relief Association in Richmond.**—The employees of the Virginia Railway & Power Company, Richmond, Va., have formed a relief association, and there are already many applications for membership. The local organization is to be an extension of the association which already exists in Norfolk and Portsmouth. It is to include Petersburg, and will be known as the Richmond and Petersburg division of the Virginia Railway & Power Company's Relief Association.

**Through Routes in Buffalo.**—In an effort to relieve the congestion in the principal streets in the down-town section of the city, the International Railway, Buffalo, N. Y., has announced that car lines operating east of Main Street will join with lines operating west of Main Street, thus making through car lines from the East to the West Side of the city. Heretofore East Side cars made Main Street a terminal. West Side cars did the same. Under the new system the routes will be joined and cars will be operated across Main Street.

**Agreement in Regard to Wages.**—An agreement in regard to wages has been reached between the officers of the Boston & Worcester Street Railway, Boston, Mass., and the employees of the company. The trainmen will receive an increase in wages of 1½ cents an hour from Aug. 1 to Aug. 1, 1914, and 2 cents an hour from Aug. 1, 1914, to Aug. 1, 1915. The new scale is 23½ cents an hour for the first year, 24½ cents for the second year, 25½ cents for the third year, 26½ cents for the fourth year, 27½ cents for the fifth year and 28½ cents an hour thereafter. The increase is one-half cent an hour for the first five years' service, and 1 cent an hour after five years. This is the scale for motormen and conductors until Aug. 1, next year. The scale will be increased one-half cent at that time. Barnmen, shopmen and power station men in the employ of the company will receive an advance of 5 per cent.

**Smoking Prohibited on Cars in Greater New York.**—The Public Service Commission for the First District of New York has adopted an order directing all street railways in the city of New York to prohibit smoking or the carrying of lighted cigars, cigarettes and pipes on the cars or the platforms of cars operated by them, except the open cars having running boards along the sides and having seats accessible directly from such running boards. On such cars smoking will be permitted on the four rear seats of each car, including the seat on the back platform. The order also prohibits smoking or carrying lighted cigars, etc., in the stations, station platforms, station stairways, waiting rooms, waiting cars or shelters. The companies are required to enforce these regulations and to post conspicuously in cars and stations proper notices stating that such practices are prohibited. The order takes effect at once.

**Free Transportation of Poor Sanctioned in Massachusetts.**—Under the new Massachusetts railroad law there is some question whether the companies have a right to continue to give free transportation to the poor or representatives of the poor, and the Boston Elevated Railway and the Bay State Street Railway asked the Public Service Commission whether they would be permitted this year to be as charitable as in the past. The order of the commission authorizing the several companies to give free cars and free tickets this summer reads as follows: "After consideration, in view of the fact that railroad corporations have heretofore granted free transportation to such charitable organizations, and that such organizations have made their plans anticipating that no change will be made in that respect, it is ordered that the commission approve the giving of the free transportation specified in said petition and accompanying schedule, upon the understanding that this action shall not be construed as establishing a precedent for similar action in the future."

**Full Bench to Consider East Boston Tunnel Toll Situation.**—The full bench of the Massachusetts Supreme Court will sit upon the issue to enjoin the city of Boston from collecting a toll of 1 cent from every passenger in the East Boston tunnel. Representative Benjamin F. Sullivan has brought a bill in equity endeavoring to restrain the city from levying the above charge, which is added to the regular fare imposed by the Boston Elevated Railway and used to meet the interest and sinking fund requirements of the tunnel. An act was passed at the last legislative session authorizing the raising of $125,000 yearly by general taxation to enable the toll to be abolished, subject to the acceptance of the measure by the voters at the municipal election in January, 1914. The consent of the bondholders to a change of security is also required. One of the main questions to be argued before the court is the power of the Legislature in originally authorizing the collection of a toll in the East Boston when no extra charge is made for the use of the other Boston tunnels and subways.

**Accident on Empire United Railways.**—Thirty-five persons were injured, five seriously, when two cars on the Empire United Railways, Syracuse, N. Y., collided, head on, 2 miles south of the city of Oswego at 3:40 p. m. on Aug. 6, 1913. More than fifty passengers were on the two cars.

The front portion of each car was torn to pieces, one telescoping the other. The two cars which came together were the southbound local, which left Oswego at 3.33 o'clock, and the northbound limited, due in Oswego at 3.45 o'clock. The following statement is attributed to W. C. Gray, operating manager of the Syracuse-Oswego division of the company: "The result of the collision was that the northbound car, being on a down grade, mounted the southbound car and telescoped it for a distance of 24 ft., indicating that the southbound car was proceeding at a considerable rate of speed. Fortunately the southbound car contained only eight passengers, who were mostly in the smoking compartment, which was on the rear of the car. This accounts for the few and slight injuries, as the body of this car was badly damaged. The principal damage to the northbound car was to the vestibule, which was demolished. The interior of this car is practically intact. Each motorman jumped before the collision."

**Increase in Wages in Philadelphia.**—The Philadelphia (Pa.) Rapid Transit Company announces the third increase in four months of the wages of its motormen and conductors. On Sept. 1 their pay will be increased 1 cent an hour Similar increases have already been granted on May 1 and July 1. Effective Sept. 1, the wages of motormen and conductors will be as follows: New men, 25 cents an hour; after one year, 26 cents an hour; after two years, 27 cents an hour; after three years, 28 cents an hour; after four years, 29 cents an hour; after five years, 30 cents an hour. Extra men will receive a minimum of $2 a day for each day they are requested to report. Motormen and conductors on the elevated system receive 3 cents more an hour than the surface car crews. Elevated guards in service three years will get 25 cents an hour Sept. 1, with a minimum wage of 22 cents an hour for new men. The increase in wages was discussed in the co-operative bulletin's report by Thomas E. Mitten, chairman of the executive committee of the company, who explains in detail how the seniority of runs has been carried out since the strike of 1910, men who remained with the company receiving preference over those who retired from the service and returned later. He refers to improvements of the "swing-run" system, to afford adequate service to the public during rush hours and work the crews the shortest number of hours possible. "Every man," Mr. Mitten says, "should now help to bury the hatchet, put his shoulder to the wheel and do his part in accomplishing the objects of the co-operative plan, which are to make the street car system of Philadelphia the pride of its citizens and the motormen and conductors the best paid and best satisfied carmen in America."

**Date Set for Kansas Fare Hearing.**—Sept. 22 has been set as the date for the hearing of the application of the receivers of the Metropolitan Street Railway, Kansas City, Mo., asking for an annulment of the order of the Kansas Utilities Commission requiring a joint passenger rate of 5 cents between the Metropolitan Street Railway and the local line of the Kansas City Western Railway. the Leavenworth line, in Kansas City, Kan. The Kansas City Western Railway terminus is at Riverview. It uses the tracks of the Metropolitan Street Railway into Kansas City, Mo. It has a stub line from Riverview to Minnesota Avenue and the westerly approach to the Intercity viaduct. When the Leavenworth line routed its cars over the viaduct it used this stub line from Riverside and carried passengers boarding its cars along the stub to Kansas City, Mo., for one fare, 5 cents. Over a year ago, when the Metropolitan Street Railway canceled its contract with the viaduct company and re-routed its own cars as well as those of the Leavenworth line over the elevated tracks, the Leavenworth line put a local service on its stub line and charged the usual fare of 5 cents between Riverview and the west approach to the viaduct. This 5-cent fare did not entitle passengers bound for Kansas City, Mo., to transfer on cars of the Metropolitan Street Railway and an extra fare of 5 cents was charged by the latter company for bringing passengers to Kansas City, Mo. Some time ago the Kansas utilities commission ordered the Metropolitan Street Railway and Leavenworth company to carry "stub line" passengers between the two cities for one fare and to make a division arrangement between themselves. The receivers of the Metropolitan Street Railway then appealed to Judge Hook.

# Personal Mention

**Mr. H. F. Kempfert,** who has been auditor of the Grand Rapids (Wis.) Street Railroad, has also been appointed superintendent of the company to succeed Mr. E. C. Rossiter.

**Mr. A. E. Stierly** has been appointed chief engineer of the power station of the Newport News & Old Point Railway & Electric Company, Hampton, Va., to succeed Mr. H. I. Holleman.

**Mr. P. J. McIntosh,** New York, has been elected a director of the Montreal (Que.) Tramways. Mr. McIntosh is a director of the Halifax (N. S.) Electric Tramway and is private secretary to Mr. William Rockefeller.

**Mr. T. W. Gregory** has been appointed general passenger agent of the East St. Louis & Suburban Railway and the Alton, Granite & St. Louis Traction Company, with headquarters in East St. Louis, Ill. Mr. Gregory was formerly assistant secretary and assistant treasurer of the companies, the duties of which offices he will continue to fulfil.

**Mr. Philip Dawson,** author of several treatises on electrical subjects and consulting engineer of the London, Brighton & South Coast Railway, London, Eng., is planning to visit this country in October for a tour of inspection of the American heavy electric traction enterprises. He will be accompanied by Mr. Gerald W. Partridge, chief engineer and general manager of the London Electric Supply Corporation, which supplies the London, Brighton & South Coast Railway with electric power for the operation of its trains. Mr. Dawson and Mr. Partridge intend to include the Pacific Coast states in their itinerary while in this country.

**Mr. William C. Baker** has been appointed superintendent of transportation of the Ohio Valley Electric Railway, Huntington, W. Va., a newly created position with the company. Mr. Baker will have charge of transportation on the local lines in Huntington and on the interurban lines, leaving Mr. W. W. Magoon, general manager, free to devote all his time to his managerial duties and to the plans which the company has made for developing and extending the property. The new superintendent was formerly at North Yakima, Wash., where for the past year he was superintendent of the Yakima Valley Transportation Company, a city and interurban system. For four and a half years prior to that he was in the office of the assistant general manager of the Utah Light & Railway Company, Salt Lake City, Utah. There he was in charge of the transportation end of the system, which employs 350 trainmen. During his incumbency at Salt Lake the entire system, which includes 110 miles of city and interurban track, was rebuilt. Before going to Salt Lake Mr. Baker spent seven years with the Norfolk Railway & Light Company, Norfolk, Va.

W. C. Baker

**Mr. John G. Williams** has been appointed assistant superintendent of railway service of the Utah Light & Railway Company, Salt Lake City, Utah, to fill the vacancy occasioned by the promotion of Mr. George W. Manning into the superintendency. Mr. Williams began his service in Salt Lake City as motorman on the Murray line of the old Rapid Transit Company.

**Mr. Joseph K. Choate,** vice-president of the J. G. White Management Corporation, New York, N. Y., has been elected president of the Pottsville (Pa.) Union Traction Company to succeed Mr. W. J. Harvie, who retired as railway manager of the operating department of J. G. White & Company, Inc., some time ago to become assistant to the

president and engineer of construction of the Hagerstown & Frederick Railway.

**Mr. Fred A. Anderson**, former religious work secretary of the Minneapolis Y. M. C. A., has been appointed supervisor of welfare work by the Twin City Rapid Transit Company, Minneapolis, Minn. In his work as religious secretary of the Y. M. C. A. Mr. Anderson conducted meetings regularly at the welfare rooms of the clubs organized among the employees of the company, and he is already well acquainted with the men. He will spend the remainder of the summer studying welfare work in street railway centers over the country and expects to have the new work in Minneapolis well under way early in the fall. The Twin City company will probably add gymnasiums, night schools and more reading rooms to the present establishments. Mr. Anderson has been associated with the Minneapolis Y. M. C. A. for the last seven years. He is secretary of the Federation of Church Men's Clubs and has acted as executive head of the Men and Religion Forward Movement in Minneapolis.

**Mr. R. P. Stevens** has resigned as president and general manager of the Lehigh Valley Transit Company, Allentown, Pa., which operates about 150 miles of electric railway from Philadelphia to Allentown, Bethlehem, Nazareth, Slatington and points in the Lehigh Valley, also several electric light plants located in the Lehigh Valley. He will, it is stated, become associated with Mr. Harrison Williams, head of the Williams Syndicate, which controls a number of electric railways in eastern Ohio and western Pennsylvania through the Republic Railway & Light Company and other properties through the Federal Light & Traction Company. Mr. Stevens was born in Eastport, Maine, on April 3, 1877. He attended school at Eastport and later studied at the East Maine Seminary, a preparatory school in Bucksport, Maine. During the time he attended high and preparatory schools, he conducted an electric wiring business, wiring hotels along the coast of Maine for electric bells, etc. He was graduated from the University of Maine with the degree of bachelor of mechanical engineering and electrical engineering. He took post-graduate work in the Massachusetts Institute of Technology and worked for the Electrical Wiring & Supply Company in Boston. Later he entered the employ of the American Bell Telephone Company in Boston, in the student's course, and subsequently served with the General Electric Company to prepare for construction work. He assisted in building a number of electric light plants for the General Electric Company in the South. He contracted fever and left the South, accepting a position with the Automatic Fire Alarm Company, Boston. Later he invented an apparatus for automatic fire alarms and was appointed superintendent of the Western department, with headquarters at Chicago. He went to Everett, Wash., in February, 1900, to rehabilitate the system of the Everett Railway & Electric Company, and was later appointed general superintendent. He supervised the construction of the interurban line and the electrification of the tracks of the Northern Pacific Railway from Everett to Snohomish under an agreement with the Northern Pacific Railway, the steam road operating freight and the electric company the passenger and express service. He left Everett to accept the position of general superintendent of the Auburn & Syracuse Electric Railroad, in Auburn, N. Y. He was later appointed general superintendent of the Auburn & Northern Electric Railroad and general manager of the Skaneateles Lake Transportation Company and manager of the Interurban Electric Express Company. He was elected president of the Lehigh Valley Transit Company in July, 1907. He will continue at Allentown until a successor to him has been appointed.

R. P. Stevens

## OBITUARY

**A. S. Michener,** controller of the Puget Sound Traction, Light & Power Company, Seattle, Wash., was drowned on Aug. 3, 1913, while on a fishing trip up the Homahoma River near Seattle. He was a member of a party which included among others Messrs. J. P. Dabney, A. L. Kempster, A. W. Leonard and C. C. James of the Puget Sound Traction, Light & Power Company. Mr. Michener was born in Washington, D. C., in 1869 and was a son of the late Captain John E. Michener. After graduating in law from Georgetown University he entered the American Ordnance Company, leaving there later to join the staff of the Stone & Webster organization. At the time of his death he was vice-president and controller of the Puget Sound Traction, Light & Power Company, having left Boston for Seattle in 1912.

**J. T. Ross,** who was killed in the automobile accident at Wyandotte, Mich., referred to elsewhere in this issue, was consulting engineer of the Northern Ohio Traction & Light Company, Akron, Ohio. He was born at Watertown, Wis., but concluded his education in the high school at Coshocton, Ohio. He began his railroad carcer as a rodman on the Coshocton Southern Railroad in 1888. Subsequently he was connected with the Wheeling & Lake Erie Railroad and the Cleveland Frog & Crossing Company. In the fall of 1895 he entered the employ of the Everett-Moore syndicate in Detroit. Later he had charge of the construction of the Shore Line of what is now the Cleveland, Painesville & Eastern Railway and the Lorain & Cleveland line. He was also engineer of maintenance of way of the Cleveland Electric Railway for eighteen months, but in 1901 he resigned to take charge of the construction of the Detroit & Toledo Short Line, after which he was appointed consulting engineer of the Lake Shore Electric Railway, the Northern Ohio Traction & Light Company and the Cleveland, Painesville & Eastern Railway. During the Goff-Johnson negotiations in Cleveland Mr. Ross was employed as an expert adviser by Mr. F. H. Goff. He was subsequently appointed engineer to Mr. G. M. Dahl, then street railway commissioner of Cleveland.

**Louis Edward Beilstein,** who was killed in the automobile accident at Wyandotte, Mich., referred to elsewhere in this issue, was born in Cleveland on Aug. 9, 1868. He was educated in the public schools of Cleveland, and when sixteen years old went to work as an office boy for Mr. Henry A. Everett in the offices of the old East Cleveland Railway. Mr. Beilstein rapidly won promotion and within a few years was made cashier of the company. From the post of cashier he became successively assistant secretary and treasurer, assistant superintendent and, in 1893, secretary and treasurer of the East Cleveland Railway. It was soon after this that the consolidation of the several lines in Cleveland took place and the Cleveland Electric Railway became the controlling company with Mr. Everett at its head. Mr. Beilstein was next made assistant secretary, but in 1895 he was advanced to the position of secretary and treasurer of the Akron, Bedford & Cleveland Electric Railway, which was the first interurban line running out of Cleveland. He was also made secretary and treasurer of the Cleveland, Painesville & Eastern Railway, holding these positions until the latter part of the year, when he accepted the position of general superintendent of the Detroit Railway. Mr. Beilstein remained with this company until 1897, when he reassumed the positions of general superintendent of the Akron, Bedford & Cleveland Railway and of the Cleveland, Painesville & Eastern Railway, with headquarters in Cleveland. In May, 1899, he became general manager of the Northern Ohio Traction & Light Company, a consolidation of the Akron, Bedford & Cleveland line and the Akron Street Railway & Illuminating Company. He conducted the affairs of the Northern Ohio Traction Company until the Everett-Moore syndicate purchased the lines of the Toledo Railways & Light Company, when he was made vice-president and general manager. He remained in that position until about a year ago, when the management of the lines was taken over by the H. L. Doherty interests of New York. Mr. Beilstein was a member of the Century and Electric Clubs of Cleveland, and of the Toledo Club of Toledo. He was married to Miss Emma Reader, Cleveland, in 1893.

# Construction News

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

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

## RECENT INCORPORATIONS

***Minnesota Central Railway, Minneapolis, Minn.**—Incorporated in Maine to build an interurban railway from Minneapolis to St. Cloud, Minn., with a plan for eventual continuation to the Cuyuna range and Mille Lacs. Capital stock, $1,000,000. Officers: E. G. Potter, Minneapolis, president; Edgar M. Nye, secretary, and Edwin M. Potter, treasurer.

***Newell Bridge & Street Railway, Newell, W. Va.**—Incorporated in West Virginia to consolidate the Newell Street Railway and the Newell Bridge Company and to build an electric railway and bridge across the Ohio River with the right to extend the railway in Newell. Capital stock, $500,000. Incorporators: Sterling Newell, Donald McBride, C. C. Owens, Ellis R. Diehm and Harold T. Clark, all of Cleveland.

## FRANCHISES

**Birmingham, Ala.**—The Birmingham Railway, Light & Power Company has asked for a franchise to extend its East Lake line to Roebuck Springs and to take over the Rugby line in East Lake.

**Los Angeles, Cal.**—The Los Angeles Railway has asked the Council for a franchise for an extension of the West Adams and Hooper Street line.

**San Diego, Cal.**—The San Diego Electric Railway has asked the City Council and Park Commissioners for a franchise through Balboa Park in San Diego.

**San Francisco, Cal.**—The Ocean Shore Railroad has asked for a franchise to lay tracks in San Francisco into its grounds adjoining Market Street at Eleventh Street in order to provide for a depot which may be used in the future by all of the interurban lines entering San Francisco.

**Oakland, Cal.**—Efforts will soon be made by Mayor Mott to induce the officials of the San Francisco-Oakland Terminal Railways to apply for a franchise under the provisions of the new city charter for the short block of track in the extension of Washington Street necessary to connect the San Pablo Avenue lines with the Washington Street tracks in Oakland.

**Connecticut Company, New Haven, Conn.**—This company has asked the State Highway Commissioner for the approval of its plan for the reconstruction of the New Haven-Branford line on Main Street in Branford.

***Evanston, Ill.**—The L. E. Myers Company, Monadnock Building, Chicago, has asked the Council for a twenty-year franchise to build an electric railway in the west side section of Evanston and also along the old County Traction Company's right-of-way. This is part of a plan to build an electric line between Chicago and Evanston.

**Evanston, Ill.**—The Evanston County Traction Company has received a twenty-year franchise from the Council in Evanston. Frank M. McCullough is interested. [E. R. J., Aug. 9, '13.]

**Rockford, Ill.**—The Rockford City Traction Company has asked the Council for a ten-year extension of its franchise in Rockford. The company plans to extend its lines in the factory district in the West End and in the northeast section of Rockford.

**Indianapolis, Ind.**—The Union Traction Company of Indiana has received a franchise from the Council over certain streets in Indianapolis. It provides that the freight cars and the Fort Benjamin Harrison cars shall enter the city over Martindale Avenue and that passenger cars shall enter by Thirty-eighth Street and Fair Grounds Avenue to College Avenue.

**New Orleans, La.**—The New Orleans-Kenner Electric Railway has asked the Council for a franchise in New Orleans. This line will connect New Orleans, Shrewsbury, Harahan, Kenner and Hanson City. [E. R. J., July 5, '13.]

**Billerica, Mass.**—The Bay State Street Railway has asked the Council for a franchise on High Street in Billerica.

**Alpena, Mich.**—The Boyne City, Gaylord & Alpena Railroad has received a franchise over certain streets in Alpena.

**Sault Ste. Marie, Mich.**—The Trans-St. Mary's Traction Company has received permission to extend its line west on Portage Avenue as far as the Union Depot in Sault Ste. Marie.

**West Orange, N. J.**—The Mountain Railway has asked the Council for a franchise for an extension to Central Avenue in West Orange.

**York, Ont.**—The Forest Hill Electric Railway has received a twenty-year franchise from the Council in York.

***Farrell, Pa.**—The Sharon-Farrell Railways will ask the Council for a franchise over Fruit Avenue from Haywood Street to New Castle Street in Farrell. The company will also ask the Council in Sharon for a franchise over New Castle Street. This is part of a plan to build a line between Sharon and Farrell.

**Dallas, Tex.**—The Dallas Southern Traction Company has asked for a franchise from the southern end of Zang Boulevard, along Hutchins Avenue and Jefferson Street in Dallas.

**Chehalis, Wash.**—The Olympia & Southern Railroad has asked the Council for a franchise over certain streets in Chehalis. A similar application has been made by this company to the Council in Centralia. This line will extend from Olympia to the Columbia River in either Cowlitz or Clarke County, and a branch line will be built from Centralia to Willapa Harbor. F. R. Brown, Olympia, is interested. [E. R. J., July 19, '13.]

**Parkersburg, W. Va.**—The Parkersburg, Marietta & Interurban Railway has asked the Council for franchises to extend and double-track several of its lines in Parkersburg.

## TRACK AND ROADWAY

**Birmingham Railway & Light Company, Birmingham, Ala.**—The new Owenton-Ensley line has been placed in operation by this company.

**Edmonton (Alta.) Radial Railway.**—This company has awarded a contract to W. H. Main, Edmonton, for setting about 400 steel poles.

**Fresno (Cal.) Traction Company.**—Orders have been placed by this company for track material needed for the line between Biola Junction and Biola. Orders have also been placed for the material needed for the construction of the bridges along the line. It is planned to have this extension finished by Sept. 15.

***Fullerton, Cal.**—Plans are being considered to build an electric railway between Fullerton and Anaheim, 3 miles, and then from Fullerton to Brea and from Fullerton out to the Yorba Linda district, making Fullerton a central point for all of these short lines. The names of those interested have not been announced.

**Los Angeles (Cal.) Railway.**—Residents of the district bounded by Fifty-first Street, Slauson Avenue, Central Avenue and Long Beach Avenue in Los Angeles have filed petitions asking the Council to take steps toward securing an extension of this company's West Adams and Hooper Street line.

**Pacific Electric Railway, Los Angeles, Cal.**—Right-of-way has been assured for this company for its line from Vineyard Junction to a connection with the Eighth Street line in Santa Monica, a distance of 9 miles. Construction has been begun by the company on its line to connect Magnolia Avenue with the Brockton Avenue line at Tibbitts station in Riverside.

**Santa Barbara & Suburban Railway, Santa Barbara, Cal.**—This company has awarded the contract to J. P. Donohoe, Santa Barbara, for the construction of its line in Santa Barbara to the Normal School. Work has been begun. R. H. Gaud, Santa Barbara, general manager. [E. R. J., Nov. 16, '12.]

**Geary Street Municipal Railway, San Francisco, Cal.**—The proposition to extend this railway from its present terminus at Ocean Beach to Oceanside has been approved by the public utilities committee of Supervisors of San Francisco and has been referred to the city engineer for a report on the cost. The plan is to run the cars across Golden Gate Park over the United Railroad's tracks at Forty-ninth Avenue, and thence into the Oceanside section along Forty-seventh or Forty-eighth Avenue.

**Big Four Electric Railway, Tulare, Cal.**—This company has awarded the contract to W. H. Hahn & Sons Company, Modesto, to lay the rails for its 45-mile line between Porterville, Lindsay, Tulare and Visalia. [E. R. J., July 19, '13.]

**Sacramento Valley West Side Electric Railway, Willows, Cal.**—This company, which plans to build a 160-mile line between Solano City and Red Bluff, has sold $465,000 worth of stock along the proposed line. The construction of the first link of the line from Solano City, the southern terminus, to Woodland, 30 miles, will now be begun. [E. R. J., July 26, '13.]

**Washington Railway & Electric Company, Washington, D. C.**—This company is asked to consider plans for a 2-mile extension of its lines along Nicholas Avenue to the plant of the Washington Steel & Ordinance Company in Washington.

**Butte, Boise & Winnemucca Electric Railroad, Boise, Idaho.**—This company states that at present it plans to use steam as motive power for its line between Boise, Butte, Winnemucca, Salmon City and Idaho City. There is a great deal of power that can be easily developed along the route so that eventually this line will probably be electrified. L. O. Leonard, Boise, president. [E. R. J., July 19, '13.]

**Chicago, Waukegan & Fox Lake Traction Company, Chicago, Ill.**—Contracts have been awarded by this company for a 13-mile extension. The line now operating between Sycamore and Marengo is to connect Marengo and Woodstock, and when this is finished present plans call for additional construction between Woodstock and McHenry and from McHenry to Waukegan. The line would then be 85 miles in length. J. P. Mason, of Elgin, has been elected president, Michael Nelson, Chicago, vice-president, and M. W. Whittemore, secretary, counsel and general manager.

**Woodstock & Sycamore Traction Company, Sycamore, Ill.**—This company has awarded the contract to John Seymour to build a line between Woodstock and Marengo. Work will be begun at Woodstock. J. P. Mason, Elgin, president.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company and the County Commissioners have agreed upon a contract relative to the erection of the new Main Street bridge in Fort Wayne and the contract will be approved by the commissioners at the next meeting.

**Tri-City Railway & Light Company, Davenport, Ia.**—It is announced that this company and the subsidiary companies will spend over $750,000 in improvements on its line during this year.

**Waterloo, Cedar Falls & Northern Railroad, Waterloo, Ia.**—Arrangements are being perfected by this company for an extension of its interurban line from Urbana into Cedar Rapids, a distance of about 22 miles. It is expected that contracts for the construction of the line will be awarded as soon as the result of the tax election is known.

**Independence, Neodesha & Topeka Traction Company, Independence, Kan.**—Grading will soon be begun by this company at a point west of Independence. Material is now being ordered.

**Louisville (Ky.) Railway.**—This company plans to extend its Brook Street line to Hill Street in Louisville. Application for a franchise will soon be made.

***Madisonville, Ky.**—The commercial club of Madisonville is advocating the construction of an interurban railway from Madisonville to Dawson Springs, Ky., via Nortonville. The railroad committee of the club has been authorized to secure subscriptions and rights-of-way and the proposition will be put into definite shape in the near future.

**Olympian Springs Railway, Power & Light Company, Olympian Springs, Ky.**—Bids will be received by this company about Sept. 1 to build its 4-mile line from Olympian Springs to Olympia. The line will connect at Olympia with the Chesapeake & Ohio Railway. Albert J. Heliker, 708 Paul Jones Building, Louisville, is interested. [E. R. J., Aug. 9, '13.]

***Smithland, Ky.**—J. B. Trail and J. E. Massey, Smithland, are considering plans to build an electric railway from Smithland through Livingston County. A meeting was recently held at Smithland with those interested at which plans for a commercial report on the territory to be reached were made. It was stated that the arrangements have been made to secure working capital for construction purposes.

**Orleans-Kenner Electric Railway, New Orleans, La.**—Plans have been completed by this company to build its 20-mile line between University Place, New Orleans, Shrewsburg, Harahan, Kenner and Hanson City. The line will be double-tracked in New Orleans. A. Smith Bowman, president. [E. R. J., July 5, '13.]

**United Light & Railways Company, Grand Rapids, Mich.**—B. J. Denman, superintendent for this company, who is making a tour of inspection on the Muskegon interurban line, has announced that it is planned to spend between $125,000 and $150,000 on the property during the coming year. Eventually the line may be double-tracked and the electric signal block system installed.

**Muskegon-Casnovia Land & Development Company, Muskegon, Mich.**—Right-of-way has been secured by this company for the proposed line between Muskegon, Saginaw, Egelston, Moorland and Casnovia. Norman B. Lawson, Muskegon, is interested. [E. R. J., July 5, '13.]

***Traverse City, Mich.**—Plans are being made to build an electric railway from Beulah to Traverse City, via Honor and Empire, and to convert the Empire & Southwestern Railroad into an electric line. Power for the proposed line would be furnished by the Benzie County Power Company's dam on the Betsie River, which will be completed by Sept. 1.

**Electric Short Line Railroad, Minneapolis, Minn.**—Grading is being done by this company on 22 miles of its line out from Minneapolis and contracts will be awarded soon for the construction of 18 additional miles. The line into Bird Island will soon be built as the necessary stock has been raised.

**Minnesota Central Railway, Minneapolis, Minn.**—This company, which plans to build an electric railway from Minneapolis to St. Cloud, has awarded a contract to Petrie & Smith Company, Osseo, for grading the section of the line from Robbinsdale to Champlin. E. G. Potter, Minneapolis, president.

**Southern Railway & Light Company, Natchez, Miss.**—This company contemplates an extension to the Duncan Memorial Park in the near future. Frank J. Duffy, general manager.

**St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.**—An extension of the Wyatt Park line to within a block of the east entrance of Wyatt Park is being planned by this company.

**Columbus, Kenton & Toledo Traction Company, Kenton, Ohio.**—Surveys have been completed by this company for its line between Columbus and Findlay, and the matter is soon to be brought before the State Utilities Commission. The commission has already passed favorably upon the line from Magnetic Springs north to Findlay, where it is proposed that it shall connect with the Toledo, Bowling Green & Southern Railway under an arrangement already entered into with that company. The commission is yet to pass upon the line as planned from Magnetic Springs into Columbus. [E. R. J., Aug. 10, '12.]

**Norman Interurban Railway, Oklahoma City, Okla.**—Contracts have been awarded and work has been begun by this company on its line between Norman and Moore. The company plans to build from Oklahoma City to Guthrie in the near future and ultimately will build an extension to Shawnee, linking up all the important cities surrounding Oklahoma City with a network of electric railways. This company is a subsidiary of the Oklahoma Railway. [E. R. J., May 3, '13.]

***Stratford, Ont.**—Electric lines to Grand Bend, one from London and one from Stratford, were announced in Stratford on Aug. 1 as almost immediate projects, by C. T. McAlister, Chicago, Ill.

**Middle Tennessee Traction Company, Franklin, Tenn.**—Right-of-way has been secured and grading has been com-

pleted by this company on 20 miles of its line, which will connect Franklin, Eagleville, Shelbyville and Fayetteville. P. E. Cox, general manager. [E. R. J., July 5, '13.]

**Jefferson County Traction Company, Beaumont, Tex.**—Work has been begun by this company laying rails on its 20-mile line between Beaumont and Port Arthur. [E. R. J., June 28, '13.]

**San Antonio & Austin Interurban Railway, San Antonio, Tex.**—Right-of-way is being obtained by this company on its line through New Braunfels. This 27-mile line will connect Austin and San Antonio via Kyle, Manchaca, Hunter and New Braunfels. Vories P. Brown, San Antonio, president. [E. R. J., July 26, '13.]

**Southwestern Traction Company, Temple, Tex.**—Estimates of the cost of construction of the line between Temple and Waco and Austin are being made by this company.

**Charlottesville (Va.) Interurban Railway.**—Surveys have been completed and most of the right-of-way obtained by this company for its 15-mile railway from Charlottesville to Alberene. Walter Washabaugh, Charlottesville, chief engineer. [E. R. J., June 21, '13.]

**Virginia Railway & Power Company, Richmond, Va.**—This company plans to build a loop around the Richmond College ground at Westhampton.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—It is reported that this company has obtained the right-of-way for a line to cut across the southeastern end of Washington County to connect Millsboro and California, Pa.

**Yakima Railway & Light Company, North Yakima, Wash.**—Work will be begun at once by this company on a 1¼-mile extension in North Yakima.

### SHOPS AND BUILDINGS

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—This company has opened its new passenger stations at Nichols, McAvoy and West Pittsburg for its new extension to Pittsburg.

**Rockford & Interurban Railway, Rockford, Ill.**—It is reported that plans are being considered by this company to build a new passenger and freight station in Freeport.

**Orleans-Kenner Electric Railway, New Orleans, La.**—This company plans to build a new terminal station in New Orleans to extend from University Place to Rampart Street. The structure will be 200 ft. x 200 ft. H. K. Johnson, chief engineer.

### POWER HOUSES AND SUBSTATIONS

**Connecticut Company, New Haven, Conn.**—This company will place in operation in its substations at South Norwalk three 500-kw rotary converters, three 500-kw frequency-changer sets, six 100-kva and nine 185-kva transformers and switchboard panels. All this apparatus is being built and will be installed by the General Electric Company.

**St. Louis, Springfield & Peoria Railroad, Peoria, Ill.**—This company will install new substation apparatus consisting of an 1800-kw rotary converter, a 1000-kw, 2300-volt frequency changer set and a smaller 100-kw, 2300-volt set. This equipment has been ordered from the General Electric Company.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company is increasing the capacity of its Spy Run power station by the installation of two 6250-kva Curtis turbines. Two 1000-kw motor-generator sets and switchboards will also be installed in substations. The General Electric Company will furnish the apparatus.

**Morris County Traction Company, Morristown, N. J.**—It is reported that this company is in the market for a large amount of substation and power station equipment.

**New York (N. Y.) Railways.**—This company is installing six 2000-kva air-blast transformers recently ordered from the General Electric Company.

**Charlottesville & Albemarle Railway, Charlottesville, Va.**—This company will add to its power plant equipment a 500-kw, 3600-r.p.m., 2300-volt Curtis turbo-generator and switchboard panels which have been purchased from the General Electric Company.

# Manufactures and Supplies

### ROLLING STOCK

**Vicksburg Light & Traction Company, Vicksburg, Miss.,** has placed an order with the St. Louis Car Company for two 21-ft. cars.

**United Light & Railways Company, Grand Rapids, Mich.,** is reported as expecting to purchase about $50,000 worth of new equipment.

**Grand Rapids, Holland & Chicago Railway, Holland, Mich.,** is reported as expecting to purchase six passenger cars and three express cars.

**Montreal (Que.) Tramways,** noted in the ELECTRIC RAILWAY JOURNAL of May 3, 1913, as expecting to purchase 100 double-deck cars, has ordered twenty-five motor and twenty-five trail cars from The J. G. Brill Company.

**Savannah (Ga.) Electric Company,** noted in the ELECTRIC RAILWAY JOURNAL of July 5, 1913, as expecting to purchase three cars, has ordered these cars from the St. Louis Car Company. These cars will have a seating capacity for forty persons.

### TRADE NOTES

**International Oxygen Company, New York, N. Y.,** has appointed Philip J. Krowl its sales agent for the Pittsburgh district.

**Davis-Bournonville Company, Jersey City, N. J.,** has removed its offices from 90 West Street, New York, N. Y., to Jersey City.

**Goldschmidt-Thermit Company, New York, N. Y.,** has moved its San Francisco (Cal.) office from 432 Folsom Street to 329-333 Folsom Street.

**Atlas Preservative Company, New York, N. Y.,** has received an order for its Atlas A weed killer and track preservative from the Milwaukee Northern Railway.

**Thomas A. Edison, Inc., Orange, N. J.,** has appointed F. J. Lepreau assistant Western sales manager for the primary battery department for Central Western territory, with office in Chicago, Ill.

**Union Switch & Signal Company, Swissvale, Pa.,** has received a contract from the Pacific Electric Railway for installing a block-signalling system on its Pasadena Short Line and Venice Short Line. Details of this equipment will follow in a later issue.

**Brown Hoisting Machinery Company, Cleveland, Ohio,** has issued Catalog K, describing Brownhoist locomotive cranes of various capacities, and showing by a series of interesting illustrations how the cranes are used in connection with Brownhoist patented grab buckets.

**J. F. Stevens Construction Company, New York, N. Y.,** has filed a voluntary petition of bankruptcy through its president, John F. Stevens, and its secretary, E. P. Shannon. Joel Rathbone, vice-president of the National Surety Company, and Frederick W. Stelle were appointed receivers to continue the company's business for twenty days.

**Eveland Engineering & Manufacturing Company, Philadelphia, Pa.,** has sold its entire production of electric riveters for the first year to Manning, Maxwell & Moore, Inc. The company is installing a large amount of new machinery to increase its output, and in addition to Eveland electric riveters will manufacture transformers and electric tempering and hardening machines.

**Allis-Chalmers Manufacturing Company, Milwaukee, Wis.,** has transferred Irwin McNiece, formerly on the erecting engineering staff of the company, to its Salt Lake City office as hydroelectric sales engineer. Previous to his connection with this company Mr. McNiece was connected with the Utah Power Company, and before that time he was engaged in electric erecting work at Milwaukee, Wis.

**Titan Copper Products Company, Buffalo, N. Y.,** has begun the manufacture of brass, bronze and aluminum castings. It has a well-equipped plant to meet the demand for a higher grade casting, involving familiarity with the finer principles of alloying non-ferrous metals to produce sound castings for specific requirements. The officers are: Charles V. Slocum, president; A. N. Slocum, vice-president; W. W. Slocum, treasurer; Frank P. Lund, general superintendent.

**Star Brass Works, Kalamazoo, Mich.,** have about completed a new factory on Fullford Street and expect to occupy the new plant early in September. The new building is a two-story brick structure, 110 ft. x 100 ft. in area, and is being equipped with the best machinery obtainable for use in making trolley wheels, which, as heretofore, will be the exclusive product turned out by the firm. The new plant will have twice the capacity of the old one, and because of its admirable location for shipping and its up-to-date equipment it is expected that the work of filling orders will be greatly facilitated. Every machine in the factory is to be equipped with individual motor drive.

**Root Spring Scraper Company, Kalamazoo, Mich.,** reports that its business during the first six months of this year has been treble that of any previous year. Among the large orders recently received for No. 2 scrapers, for either air or hand operation, are the following: Boston Elevated Railway, 200; Boston & Northern Railway, 100; Preston Car & Coach Company, 27; Ottawa Car Company, 24; Laconia Car Company, 110; St. Louis Car Company, 13, and the Wason Manufacturing Company, 8. The pneumatic attachment has proved to be very efficient and many railways in the United States and Canada are making the air-operated scraper standard on all cars equipped with air.

**Pyrene Manufacturing Company, New York, N. Y.,** on Aug. 8, 1913, gave a demonstration of its hand extinguisher before several city officials of Philadelphia. Among those present were George D. Porter, director of public safety, and representatives of several corporations, including the Philadelphia Rapid Transit Company. The demonstration was very comprehensive, including fires of all kinds of material. Through the courtesy of the Philadelphia Rapid Transit Company an electrical apparatus was erected to create an arc of 550 volts at 150 amp between copper bars. This arc was drawn about twenty times and was in each instance instantly put out by the extinguisher. The company has received recent large orders for fire extinguishers from the following companies: New York, New Haven & Hartford Railway; New York, Westchester & Boston Railway; Pittsburgh & Lake Erie Railway; Pittsburgh, Harmony, Butler & New Castle Railway; Cornfield Railway; Syracuse & Suburban Railroad; American Locomotive Company; Westinghouse Electric & Manufacturing Company and National Tube Company.

**Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.,** has introduced modifications of its standard fans, adapting them to railroad coach use. For use on private cars, sleepers, parlor cars, diners and day coaches the wall-mounting fans are used. The wall-mounting fans have drawn steel frames, inclosed end brackets and cast-iron bases. They are furnished in two sizes, the 9-in. size being used especially in smoking compartments and lavatories, and the 12-in. size in the main part of the car, and are wound for 24 to 30 or for 60 volts direct current as desired. A tooth joint with a thumb screw adjustment positively prevents the fan from tilting while the car is in motion. The fan can be readily removed from the bracket if desired. Either single-speed or three-speed fans may be used. For use on electric railway cars, including subway, surface, elevated and interurban, where 500 to 600 volts is the prevailing voltage, the standard railway coach fans, without switch, wound for 220 volts, are supplied with special resistor to take up the extra voltage. They have one lead grounded to prevent shock to any person coming in contact with the fan. The resistor also contains a choke coil to reduce the rush of current when the fan is first connected to the line. The operation of two fans in series on electric railways is not recommended owing to the danger of burning out both fans when one fails to operate. For removing smoke, dust and odors of cooked food from the kitchens of dining cars and from buffet cars, the standard single-speed 12-in. exhaust fan is recommended. This type is wound for 24 to 30 or for 60 volts direct current. A speed regulator to give two additional speeds can be furnished when desired.

## ADVERTISING LITERATURE

**D & W Fuse Company, Providence, R. I.,** has issued a leaflet describing its "Delta" insulating materials, which are "Deltatape," "Delta" sheeting, "Delta" insulating varnish and "Delta" plastic compound, for smoothing the surface and filling cavities of field coils prior to applying the outer insulation.

**Electric Service Supplies Company, Philadelphia, Pa.,** has issued a folder describing, illustrating and listing its new improved Keystone sand drier. The new features embodied in this sand drier overcome many of the difficulties railway, mining and construction companies have met with in solving the problems of drying sand.

**Edward B. Smith & Company, Philadelphia, Pa.,** are preparing for distribution copies of the new Pennsylvania public service company act, which was approved by Governor Tener on July 26. Applications will be filed and the pamphlet mailed as soon as possible. The Pennsylvania public service company act was digested in the issue of the Electric Railway Journal of Aug. 2, 1913, page 194.

**Trussed Concrete Steel Company, Detroit, Mich.,** has issued an illustrated circular, entitled "Kahn System Standards," which describes in detail its new concrete reinforcement material, Seven-Rib Hy-Rib. This product is an important improvement over Four-Rib Hy-Rib, which it replaces, inasmuch as the sheets are 24 in. wide, over twice the former width, and the ribs are ⅛ in. deeper. It therefore saves labor, time and expense in installation and permits a wider spacing of supports owing to its increased stiffness.

**Trolley Supply Company, Canton, Ohio,** has recently issued an attractive forty-eight-page catalog, which completely illustrates and describes several of the products which the company manufactures, which include Knutson trolley retrievers Nos. 2 and 5, Ideal trolley catcher, Peerless roller-bearing trolley base No. 10, Star trolley base Peerless check valve, Peerless Junior headlight and semaphore incandescent headlights for city cars. The catalog also contains price lists of these products, together with special lists giving the price of each individual part which goes to make up these several devices. The company has also printed two folders, one describing and illustrating with dimensions its pressed steel dash headlight No. 14, the other its Simplex roller-bearing base.

**Titanium Alloy Manufacturing Company, Niagara Falls, N. Y.,** announces the publication of *Rail Reports,* of which Bulletin No. 1, devoted to open-hearth rails, is ready for distribution. These reports will record the results of comparative laboratory and service tests of standard carbon rails and rails of the same general composition treated with ferro carbon-titanium. The present bulletin describes the findings on laboratory tests since Jan. 1, 1913, on samples of standard and titanium-treated open-hearth rails submitted by three railway companies. In each case both kinds of rails had been rolled by the same mill under the same specifications, with the single exception of the use of 0.10 per cent titanium in the treated steels. The series of sulphur prints, as reproduced in this bulletin, shows that in every case the sulphur in the untreated steel was badly segregated, while none of the treated steels shows any marked segregation. Further proofs of the value of the treatment are afforded by a series of photomicrographs and tables of physical properties which are contained in the publication "Rail Reports."

---

The Harbor and Subway Commission of Chicago issued a circular letter recently accompanying three pamphlets which set forth tentative plans for a system of subways which will cost $300,000,000 or thereabouts. The pamphlets are "Joint Report on Comprehensive System of Passenger Subways for the City of Chicago by the Harbor and Subway Commission and Sub-Committee of the Council Committee of Local Transportation, dated Sept. 10, 1912." "Supplemental Report on Comprehensive System of Passenger Subways for the City of Chicago by the Harbor and Subway Commission," dated Oct 30, 1912, and "Communication of Mayor Harrison to the City Council Recommending Submission of Questions of Alternative Construction of Subways to a Referendum Vote and Drafts of Ordinances Transmitted Herewith, Dated July 15, 1913." The last pamphlet contains the ordinance for downtown subways to be leased to the elevated roads and the ordinance for a comprehensive independent system of rapid transit subways.