

Electric Railway Journal

A CONSOLIDATION OF

Street Railway Journal and Electric Railway Review

VOL. XXXVIII

NEW YORK, SATURDAY, NOVEMBER 25, 1911

No. 22

PUBLISHED WEEKLY BY

McGraw Publishing Company

JAMES H. MCGRAW, President; C. E. WHITTLESEY, Sec'y and Treas.

239 WEST THIRTY-NINTH STREET, NEW YORK

TELEPHONE CALL: 4700 BRYANT. CABLE ADDRESS: STRYJOURN, NEW YORK.

CHICAGO OFFICE.....1570 Old Colony Building

CLEVELAND OFFICE.....1021 Schofield 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.

NOTICE TO ADVERTISERS.

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements will be accepted up to Wednesday, 9 a. m., of the week of issue.

Copyright, 1911, by MCGRAW PUBLISHING COMPANY.

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

Of this issue of the ELECTRIC RAILWAY JOURNAL, 8500 copies are printed.

The Association of American Advertisers has examined and certified to the circulation of this publication. The figures of circulation contained in the Association's report only are guaranteed.

ASSOCIATION OF AMERICAN ADVERTISERS.

No. A-82.

Whitehall Bldg., N. Y. City.

NEW YORK, SATURDAY, NOVEMBER 25, 1911.

CONTENTS.

Overhauling Control Equipment.....	1087
Final Decision in Third Avenue Reorganization.....	1087
Overhead Crossing Specifications.....	1088
The Johannesburg Gas Engine Fizzle.....	1088
Consolidation in Chicago.....	1089
Traffic Promotion Work of the Hudson & Manhattan Railroad.....	1090
Right of City to Enforce Old Trackage Agreement Denied in Wisconsin.....	1094
Tests of Current Consumption of Interurban Cars on Detroit United Railway.....	1094
Hearing on Transfers in New York.....	1096
Rehearing on Brakes in New York.....	1096
Meeting of the Committee on Subjects.....	1096
Laying a 60,000-Volt Cable.....	1097
Progress on Power and Other Improvements of Northern Ohio Traction & Light Company.....	1098
Papers at the C. E. R. A. Convention.....	1099
Meeting of Engineering Association Executive Committee.....	1110
Decision in Third Avenue Reorganization Case.....	1112
Operation Under Cleveland Ordinance.....	1113
Increase in Fares by Hudson & Manhattan Railroad.....	1113
Coney Island Fare Hearing.....	1114
The Panama-Pacific International Exposition.....	1114
Going Value of Public Utilities.....	1115
Request for Lower Fares Denied by New Jersey Commission.....	1117
Brake Tests in New York.....	1118
Meeting of Central Electric Railway Association.....	1119
Automatic Reactance for Track Circuit.....	1120
New Patents on Single-Phase Apparatus.....	1120
Coasting Clock Order in Chicago.....	1120
Electric Railway Legal Decisions.....	1121
News of Electric Railways.....	1122
Financial and Corporate.....	1124
Traffic and Transportation.....	1126
Personal Mention.....	1128
Construction News.....	1129
Manufactures and Supplies.....	1132

Overhauling Control Equipment

The approach of the winter brings to the front the problem of keeping equipment in service under severe conditions in many localities, and now that the heavier class of repair work is either completed or pretty far along in the shop, so far as closed car equipments are concerned, it is desirable to pay particular attention to control and other lighter apparatus. A few adjustments and a little special lubrication and cleaning at this time will do much to prevent trouble when the season of snow, slush and ice arrives. It is true that a chance is seldom given to the elements to attack the auxiliary apparatus on a car directly, but the severity of the traffic conditions in the winter makes it most important to insure the proper working of every detail. In cities where the principal manufacturing companies maintain resident engineers with headquarters at the district offices much good can be accomplished by inviting these experienced men to give short talks upon their equipment and its proper maintenance before assemblies of shop and carhouse employees. Many little practical points can thus be turned to account, such as the fact that the life of contacts may be increased by applying vaseline in small quantities to the tips, the benefits of reverser lubrication, the selection of the proper oil for piston parts in pneumatic control, the cleaning and adjustment of master controllers, the removal of dirt from strainers, the replacement of packing, the draining of reservoirs, and the adjustment of nuts, contacts and bolts in switch groups. It is surprising what can be accomplished in the prevention of trouble by the policy of what might be called "anticipatory maintenance."

Final Decision in Third Avenue Reorganization

The first immediate result of the decision of the Court of Appeals in the Third Avenue Railroad case will be the completion of the plan of reorganization prepared by the committee of bondholders of the company. The findings of the court are published elsewhere in this issue. A long time has been spent in the legal proceedings. It was anticipated so confidently that the plan prepared on behalf of the committee would be acceptable that the formal foreclosure sale of the property of the old company was made on March 1, 1910. Since that date and during the litigation which followed the refusal of the New York Public Service Commission, First District, to approve the plan, the property has been in the control of the committee of bondholders. As a secondary result of the decision it is announced that the representatives of bondholders in the Metropolitan Street Railway will amend their plan of reorganization so as to conform with the interpretation of the law by the Court of Appeals. Unless, therefore, there is unexpected

delay in action on the Metropolitan plan or conditions should undergo some change it may be expected that the reorganization of that property will also be effected after a short time. As we have explained at other stages of the proceedings in the Third Avenue reorganization case, the issue before the court was resolved simply into that of the jurisdiction of the Public Service Commission. Notwithstanding the elaborate preparations made by both the commission and the company to defend their opposing positions in regard to the value subject to capitalization, the question of the value of the property was totally disregarded in the proceedings. The court confined its consideration of the case to a judgment upon the powers of the commission under the law. In so far as the powers which the Public Service Commission assumed to be granted by the law apply to reorganization cases, the authority of that regulating body is greatly restricted by the decision of the Court of Appeals.

Overhead Crossing Specifications

Among other proposed standards of the Engineering Association which will soon be submitted to letter ballot of member companies of the American Association are the specifications for overhead crossings of electric light and power wires above railway tracks. These specifications have already been approved by the National Electric Light Association, the high-tension transmission committee of the American Institute of Electrical Engineers, the Association of Railway Telegraph Superintendents and the engineering departments of the telephone and telegraph companies. They are not perfect, and it is doubtful if they can ever be made to meet exactly the views of all parties at interest. Nevertheless they have been characterized by many competent critics as "the best specifications yet prepared." They protect the crossed company against inadequate and unsafe structures erected over its tracks, and on the other hand they protect the crossing company against unreasonable demands of the crossed company. The wires of electric railways frequently cross foreign tracks, and in turn their tracks are crossed by foreign wires. They are obliged for their own protection to insist on certain standards of construction for wire crossings over their own tracks, and on the other hand they are subject to the whims of the engineers of steam roads over which their transmission lines are carried. Hence a common standard specification would be very desirable for electric railways. The small companies would particularly be benefited by the general adoption of these specifications. Only by a thorough trial in actual practice can the weak points of the specifications be brought to light, and no serious obstacles should stand in the way of revision in the future if such revision is found necessary or desirable. Some of the objections to the specifications in their existing form are valid and should be covered in future revisions. They are not serious enough, however, to warrant the rejection of the specifications as a whole, in view of the imperative need for the specifications by many companies. It is to be hoped that enough votes of member companies in favor of the adoption of the specifications as standard will be secured to assure a trial of them under a wide variety of service conditions.

THE JOHANNESBURG GAS ENGINE FIZZLE

Reports in the English papers mention the final ending of the litigation over the unfortunate producer gas plant which was to furnish power to the Transvaal mines from the neighboring coal fields. The operative qualities of the plant itself did not in fact play an important part in the legal settlement, inasmuch as the action had chiefly to do with the failure to fulfil a contract for operation. As our readers will probably remember, this plant was installed on the advice of thoroughly conservative and skilful English engineers and consisted of fairly large gas engines, not over 2000 hp, directly connected to polyphase generators and fed with producer gas derived from the Transvaal coal mines. There was nothing in the least sensational about the proposition nor any reason to expect failure, for the generating units themselves were of no unusual type and gas producers have certainly been used for many years even on coal as inferior as the South African variety.

The facts, so nearly as we can ascertain them from the reports, are that the contractors failed utterly in getting the plant equipped on time, and ultimately they were put in the ugly dilemma of having to face heavy penalties for delay or of starting without the gas-cleaning apparatus at hand. They took the latter alternative, and uncleaned gas, as it was pretty certain to do, played havoc with the operative qualities of the engines. After a dismal period of tribulation the contractors took over the plant temporarily and undertook to operate it at their own expense until they could make their contract good. For one reason or another they failed to do this; hence the action which has just terminated and the previous abandonment of the gas plant. It is an unpleasant tale of failure and certainly will not encourage the use of producer gas units on a large scale for the delivery of electric power.

Without here entering into the question of the possibilities of economy in the use of gas engines with producer gas, one may unhesitatingly say that the conditions with respect to the relative economy of gas-driven and of steam-driven units have changed radically within the last two or three years. In the first place, in plants large enough to use large turbo-generators designed for high expansion, a thermodynamic efficiency is reached not greatly inferior to that obtainable by gas engines, assuming weight of fuel per unit output as the criterion. The modern high-power and high-expansion turbo-generator will deliver the kilowatt-hour at full load on 12 lb. to 13 lb. of steam, and at partial loads it holds wonderfully near to its full load economy. Efficiency like this is so near to the best that can be obtained by a producer gas outfit that the gain in using the latter becomes insignificant in a comparison of the total costs of operation, in which initial expense, repairs and space required tell somewhat heavily against the gas engine. It is one thing to compete with an old compound Corliss engine taking from 20 lb. to 25 lb. of steam per kw-hour at average load and another thing to compete against a modern turbine requiring only half this quantity of steam. Even if one is dealing with small units it is a grave question whether steam has not to-day the best of the argument. The recent types of self-contained boiler and engine equipments operated at high pressure and high superheating

will actually deliver the brake-horse-power at their rated output on 8 lb. or 9 lb. of steam, or, in other words, when direct-coupled to a generator they will at least equal the best performance of the big turbines. Whether in large or small units, therefore, steam just at present seems to be able to show practically as high fuel economy as even the best internal combustion engines operated on producer gas. The Johannesburg plant, therefore, is one that would be very unlikely to be duplicated even if all its guarantees had been fulfilled.

CONSOLIDATION IN CHICAGO

The tentative plan for consolidation of the surface and elevated railways of Chicago indicates a development of much significance. It appears to be in strong contrast with the changes in Manhattan, where segregation is the feature of the reorganization of surface properties that has been in progress. But transit conditions in these two cities are very different, and like principles need not be applied to both localities.

The long distances in Chicago and the division of the city into three great sections—the North, West and South Sides—make conditions of transportation different from those which exist on the narrow island of Manhattan. Except at a few minor points of contact in the southwestern part of the city, the Chicago surface companies do not enter into competition. They are required by franchise provisions to operate through routes between different sections of the city, and that condition is one that must be met whether or not a combination is made. The recent rehabilitation was conducted on somewhat the same lines, so that these properties are better adapted to consolidated operation than if the construction work of the last few years had been conducted by each company independent of the other.

As the surface properties of Chicago are not competitive with each other, the same condition should not result from the union of companies as if they were engaged in actual competition, as in Manhattan. In the latter case when companies operating on parallel streets in centers of tremendous traffic were consolidated universal transfers were given, with the result that avenues for constant abuse at the expense of the property were opened. The Chicago plan appears to provide for interchange of transfers between surface and elevated properties, with the partial object of diverting the short-haul traffic to the former and the long-haul traffic to the latter.

Furthermore, a logical step toward the larger consolidation has been taken in the unification of Chicago elevated properties. These properties have had one common interest for many years through their dependence on a union elevated loop for their terminal facilities in the congested district. Owing to its ownership or control of this loop one of the strong companies was able to determine questions affecting the operation of this common track. This condition naturally created a relationship of lessee and lessor which was less likely to produce harmony and satisfactory operation than the unified management existing now.

In using the loop for terminal facilities the different elevated lines deal practically with themselves now, and individual preferences are lost in a broad operating policy

designed to serve the best interests of the property as a whole. It is to be expected that improved methods of operation will signalize the unification of the elevated properties, but the extent of these will depend in some measure upon the support and co-operation of the city authorities in plans for betterment.

Monopoly in transit facilities in one locality is usually desirable, and consolidated properties are found in most cities. They were created generally by the union of competing lines and have not always received the public recognition of the advantages of consolidation which is now generally given. Monopoly in public utility service in each locality, however, has proceeded because the savings which result from consolidation make it a logical step.

In many other cities consolidations have gone so far as to include already not only the railway facilities, but also the lighting and power organizations. The greater unions create one central market for power and through the production of a large output open an opportunity for reduction of costs. Better service results from consolidation of public utility properties in one city or group of communities. To protect such monopolies some of the regulating commissions have refused to approve the construction of independent competing plants or systems. Such independent enterprises are almost invariably consolidated in time with the existing property, and the duplication of facilities and capital merely increases the investment on which the public must pay a return. One factor that has undoubtedly influenced the proposed Chicago consolidation, if it is not the main operating reason responsible, is the arrangement by which the Commonwealth Edison Company now furnishes power for the surface railways. Under this plan the railways have restricted their investments and the electric company has increased its output at favorable hours. A further consolidation of ownership by unification of the surface railways with the elevated railways and ultimately with the electric lighting and power company would centralize, in one property, the production and consumption of a still larger amount of power with new possibilities of operating advantages and economy.

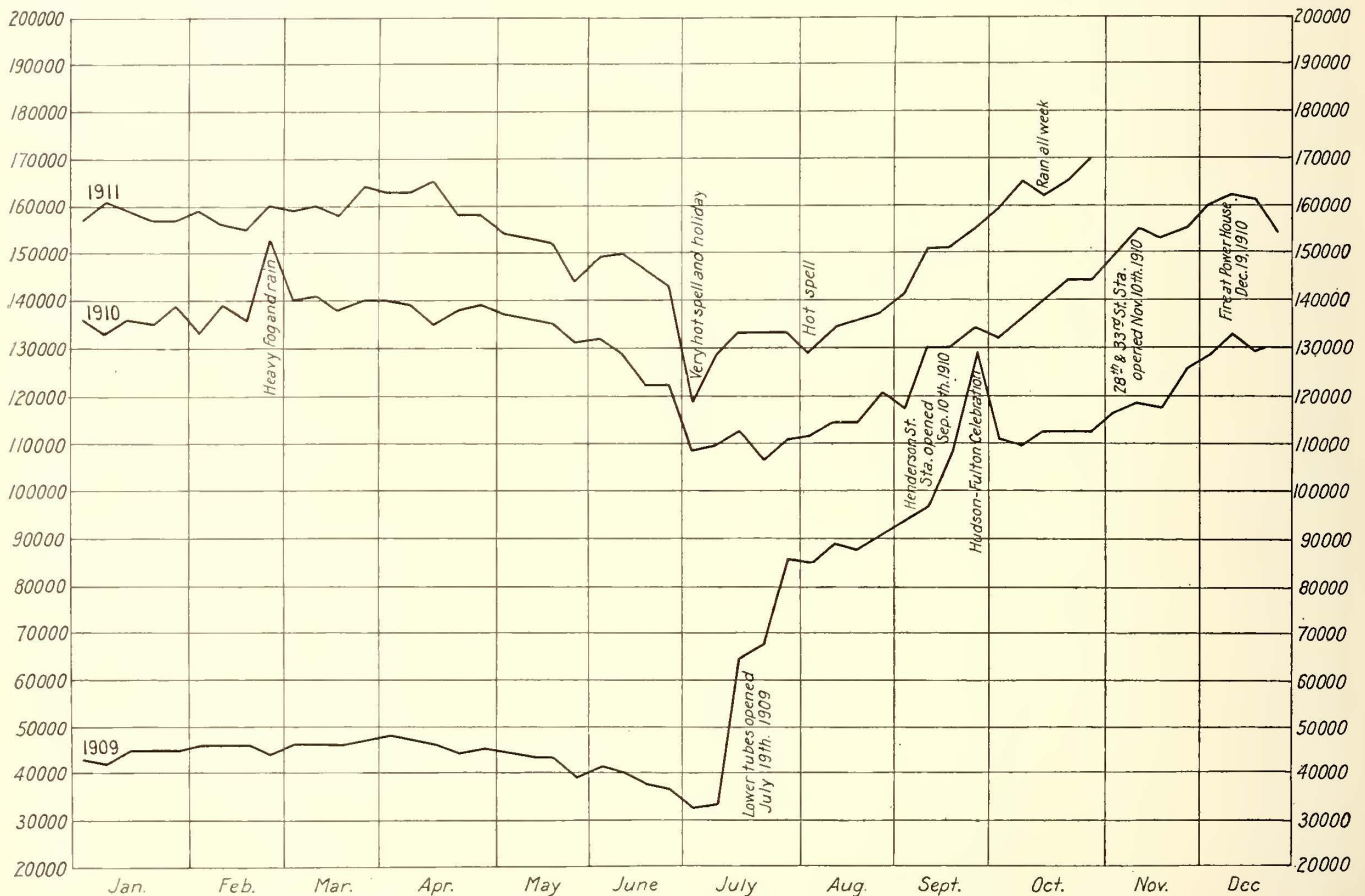
Of all the factors which seem to make consolidation in Chicago logical none is more prominent than the program for city development which is under consideration. The central feature of the new development is the proposed subway to relieve congestion in the downtown business district. The union loop is inadequate to do its part as the city increases in size. It is so limited in capacity and so hampered by the operating hindrances that arise from its use by four operating companies with connections in four different directions at different places that, as now operated, it will not meet the future requirements of the city. With through operation of elevated trains from one section of the city to another, as proposed under the modified arrangement suggested to the city authorities, there would probably be some relief. Universal transfers and additional through lines from one section of the city to another will increase the possible length of haul, but the other changes in operation rising from the removal of the petty obstacles, such as, for instance, those which the city has placed in the way of extensions of the loop platforms, will tend to overcome the effect of these concessions.

Traffic Promotion Work of the Hudson & Manhattan Railroad

This Company Has Been Successful in Diverting Travel from the Ferries and in Creating Much New Traffic Between New York and New Jersey—It Has Advertised in Newspapers and Has Distributed Folders, Maps and Timetables of Connections with Steam Railroad Suburban Trains—Its New Rapid Transit Line to Newark Is Expected to Develop a Large and Profitable Business

The Hudson & Manhattan Railroad occupies a peculiar position in the rapid transit field in New York City. In reality it is a New Jersey railroad with terminals on Manhattan Island. It provides the resident population of northern New Jersey with a quick and convenient means of transportation under the Hudson River which separates their homes from their places of business. For many years the only transportation facilities between Jersey City and Hoboken and Manhattan Island were the ferry boats operated by the steam railroads whose terminals are on the west side of the river. The large number of commuters on the Pennsylvania, Erie and Lackawanna railroads daily

15 of that year the Twenty-third Street station was opened. During the first week of operation the average daily number of passengers carried was 50,800, many of whom rode out of curiosity. During the month of March, 1908, the number of passengers dropped to a normal daily average of 41,677. A year later the increase had been only about 10 per cent, the daily average for March, 1909, being 45,845. On July 19, 1909, the Terminal Station at Cortlandt and Church Streets was opened and the downtown tunnels to the Pennsylvania Station in Jersey City were put in operation. The Erie Railroad station in Jersey City was completed and a regular service of through trains was run for



Hudson Tunnel Traffic—Chart of Average Number of Passengers Carried Daily

crossed and recrossed the river in ferry boats which also carried many local passengers between Jersey City and Hoboken and New York. When the first tunnels of the Hudson & Manhattan Railroad were opened between the Lackawanna station in Hoboken and Nineteenth Street and Sixth Avenue in New York City, the traffic problem which had to be solved was to induce the public which had always crossed the river on ferry boats to use the tunnel trains and pay an extra fare. It was a problem of diverting existing traffic as well as creating entirely new business.

GROWTH OF TRAFFIC

The uptown tunnels between Hoboken and Nineteenth Street were opened for traffic on Feb. 26, 1908. On June

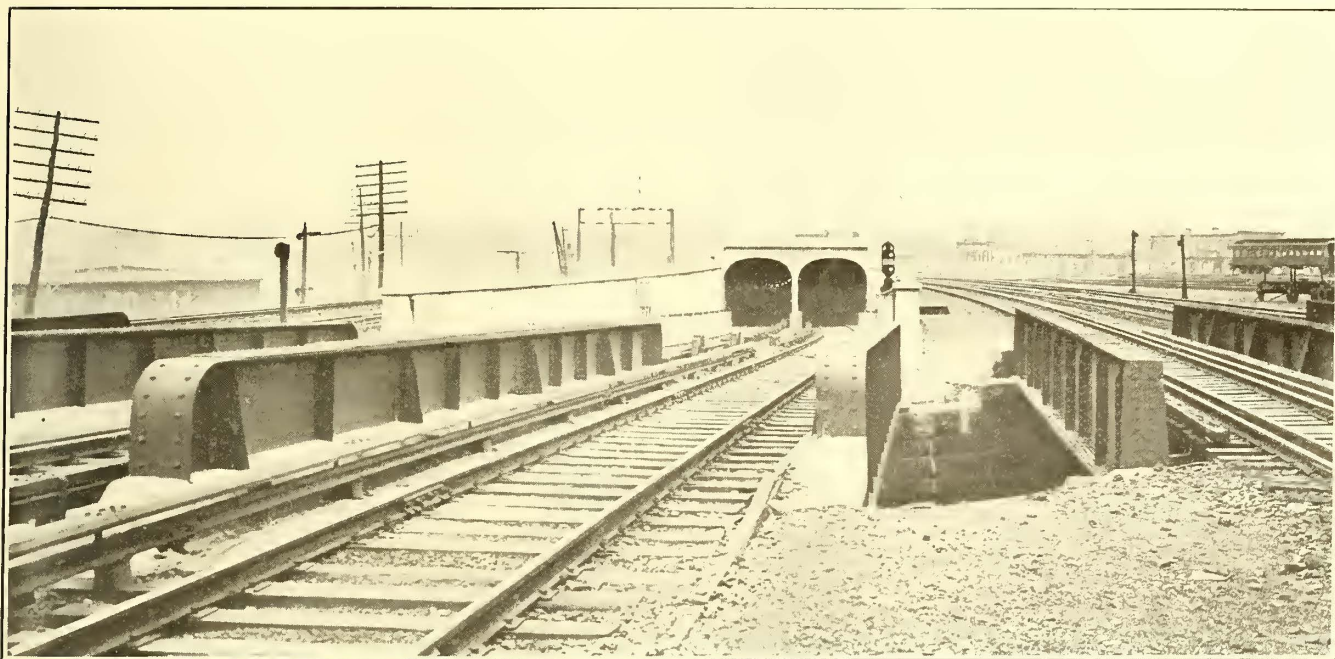
the first time from Cortlandt Street to Hoboken on Aug. 2, 1909. The effect on the traffic was immediate. From an average of 32,000 passengers daily in the summer of 1909 the traffic grew to 130,000 passengers per day by the end of the year, exceeding the maximum travel which had taken place during the week of the Hudson-Fulton celebration, Sept. 26 to Oct. 2, 1909. On Sept. 6, 1910, the station at Henderson Street, Jersey City, was opened, and on Nov. 10, 1910, the Twenty-ninth and Thirty-third Street stations on the Sixth Avenue line were put in use. The immediate effect of the opening of these new stations on the traffic growth was comparatively small, as the traffic at all other stations continued to increase steadily. By the end of 1910

the average was about 160,000 passengers per day. From present indications the daily average by the end of 1911 will be nearly 190,000 passengers, or an increase of nearly 19 per cent.

The accompanying diagram shows by months the growth of passenger traffic from Jan. 1, 1909, to Nov. 4, 1911. The dates of opening of new lines and stations are indicated on the diagram and the effect on traffic is clearly apparent. The variations up or down by seasons and for short periods are of interest. Thus during the week of July 2 to 8, 1911, the daily average dropped from 140,000 to 118,000 on account of the extremely hot weather which prevailed, and because a holiday was included. A few days of foggy weather, which interferes with the regularity of the ferry-boat schedules, has the opposite effect, that of largely increasing the traffic on those days. The average daily traffic during July, 1911, was about 35,000 passengers less than the average of the spring and fall months. This is accounted for not because the tubes are uncomfortable to travel in during hot weather, for on the contrary the temperature in the tunnels is from 15 deg. to 30 deg. lower

the morning and evening papers in New York City, Jersey City and Newark as well as advertising cards in the subway and elevated cars in New York City and the surface cars of the Public Service Railway in New Jersey. A large appropriation for this campaign was secured from the directors of the company, and while it is difficult to trace direct results from it the traffic at all stations showed good increases throughout the year. The newspaper advertising consisted for the most part of single-column advertisements 6 in. deep, calling attention to the speed, comfort and reliability of the tunnel train service. Frequent changes of copy were made. These cards were run in German and Jewish papers as well as in those printed in English.

For about ten days prior to the opening of the Thirty-third Street station quarter-page announcements were inserted in most of the morning and evening papers published in New York City. These advertisements attracted much favorable comment on account of their good typographical appearance. In the center of each was a large black-and-white drawing of a tunnel train standing at the platform of the new station, and particular attention was called to



Hudson Tunnel Traffic—Portal of Tunnels on Pennsylvania Railroad Right-of-Way in Jersey City

than on the streets, but because many business men take week-end holidays during hot weather and because the vacation season reduces the number of persons traveling every day between their homes and offices.

TRAFFIC PROMOTION

The steady and gratifying increase in traffic on all parts of the system is attributable to the energetic campaign of publicity and promotion which has been carried on since the first tubes were opened and to the policy of giving the patrons of the road good service in the form of frequent trains with plenty of seats, operated on an exact schedule, as reliable if not more so than the schedules of the connecting steam railroads.

The company has a traffic department in charge of Oliver T. Boyd, general passenger agent, from which all traffic promotion work emanates. The general passenger agent prepares and issues all folders, timetables, maps and similar printed matter as well as daily newspaper advertisements and also acts as the publicity agent of the company in giving out information to the newspapers. He reports to William G. McAdoo, president of the Hudson & Manhattan Railroad.

NEWSPAPER ADVERTISING

During 1910 the company carried on a general advertising campaign which included the use of space in several of

the fact that the Lehigh Valley, Erie and New York, Susquehanna & Western railroads would have ticket offices in the station. The only newspaper advertising which has been done during 1911 has been the insertion of announcements regarding the opening of the new rapid transit line to Newark.

CAR CARD ADVERTISING

The cards carried in the subway and elevated cars called attention to the saving in time from different parts of the city to the railroad stations in Jersey City and Hoboken by using the Hudson Tunnel trains from the uptown or downtown stations. Thus the cards in the Ninth Avenue elevated trains instructed the passengers to change at Christopher Street station and save ten minutes. Similar cards were placed in the Public Service Railway cars to call attention to the convenient location of the Sixth Avenue stations in the center of the theater, hotel and shopping districts and the Hudson Terminal Station in the heart of the downtown business district.

ADVERTISING STEAM RAILROAD CONNECTIONS

Prior to the opening of the downtown tubes in July, 1909, the Hudson & Manhattan Railroad entered into a traffic agreement with the Pennsylvania Railroad which included arrangements for showing in all Pennsylvania Railroad timetables the leaving and arriving times at the Hudson

Terminal station of connecting tunnel trains. This practice has been continued and has been extended to include the timetables of the Southern Railroad and Seaboard Air Line, which run through trains to New York over the Pennsylvania Railroad from Washington, D. C. The Lehigh Valley Railroad, which uses the Jersey City station of the Pennsylvania Railroad, also advertises tube connections in its timetables. For a time the Erie Railroad showed tube train connections in its timetables, but discontinued the practice some time ago. The Lackawanna has never been willing to assume the responsibility of showing the times of connecting tube trains in its timetables.

As a large number of suburban passengers on the Erie and Lackawanna railroads use the tubes regularly in preference to the ferry boats operated by the railroads for crossing the river, the traffic department of the Hudson & Manhattan Railroad for some time has been issuing for each suburban station on these roads small pocket time cards giving the leaving and arriving times of trains to and from that station together with the leaving and arriving times of connecting tube trains at the Hudson Terminal and Thirty-third Street stations. These time cards are made up from advance proofs of the steam railroad timetables and the times given allow from three to five minutes to make the connections in the railroad stations. They are revised whenever a new timetable is issued by the steam railroads. Racks containing separate compartments for the folders for each station are placed in the tube stations at the Erie and Lackawanna terminals, and these racks are kept constantly supplied. Passengers are free to take as many of these folders as they choose, as the company is anxious to give them as wide circulation as possible. As many as 60,000 folders of this kind are distributed within a few weeks after a change in the railroad timetables.

As the public depends on the advertised tube train connections shown in the timetables to catch the steam railroad trains leaving Jersey City, special precautions are necessary to insure that these connecting trains are operated on schedule time. At the Hudson Terminal large train-departure signs on the concourse show the leaving time of the next connecting train and the destination of the steam train on the Pennsylvania Railroad with which it connects. Before the connecting train leaves the Hudson Terminal the conductor obtains a clearance card from the train starter showing the number of the train, its leaving time and the name of the conductor. This card is handed to a Pennsylvania Railroad usher when the train arrives in Jersey City and he follows the last passengers and delivers the card to the gateman on the concourse floor. When the gateman has received this card and also similar cards from the captains of connecting ferry boats he knows that the connecting train and boats have arrived and permits the outgoing train to proceed.

FOLDERS FOR GENERAL DISTRIBUTION

For distribution in hotels and railroad and steamship offices the company issues a map folder 9 in. x 11 in., which is folded to vest-pocket size, 2¾ in. x 4½ in. The covers

of this folder are printed in light green ink. The front cover is reproduced. The inside of the sheet contains a map of the lower part of Manhattan Island, Jersey City and Hoboken, showing the principal streets, subway and elevated lines, steamship piers and steam railroad stations. The lines and stations of the Hudson & Manhattan Railroad are printed in red ink. The remaining space on the cover side of the sheet is occupied with a summary of the train schedules, running times between stations, connections with surface, elevated and subway lines at all stations, railroad and steamship connections and a few interesting facts about the construction and operation of the tubes. These folders are distributed by a railway timetable distributing company under a contract arrangement.

WALL MAPS

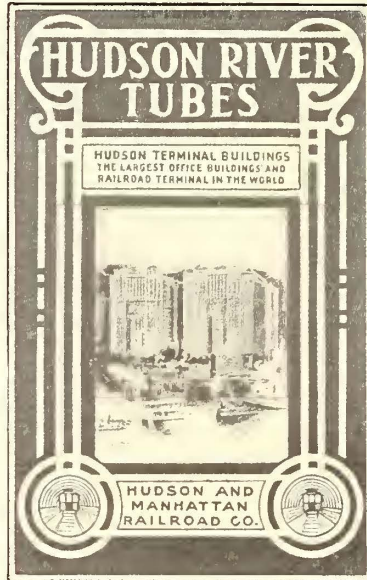
A large-scale lithograph wall map of the tubes and their connections is sent to any one on request and large numbers of these maps have been distributed to hotels, stores and especially to real estate agents in suburban towns.

STEAMSHIP FOLDERS

Arrangements have been made with the pursers of all ships of the North-German-Lloyd and Hamburg-American lines which dock at Hoboken to distribute to the passengers two or three days before landing special folders printed in English and German, which give information about the tube train connections, running times and schedules. These have been the means of acquainting many steamship passengers with the tube service.

DISTRIBUTION OF SERVICE

The traffic handled in the morning and evening rush hours from 7 a. m. to 9 a. m. and 4 p. m. to 6 p. m. constitutes nearly 45 per cent of the daily total. At these times the capacity of the tubes is taxed to handle the crowd. The special effort of the traffic department therefore has been to develop traffic during the middle of the day and at night. The rush-hour travel at present is all in one direction, but when the Sixth Avenue line is extended up to Forty-second Street and east to the Grand Central Station it is expected that a well-balanced rush-hour traffic in both directions will be developed. The steady crosstown travel to and from the Grand Central Station also should improve the off-peak traffic.



Hudson Tunnel Traffic—Cover of Folder

PENNSYLVANIA RAILROAD COMPANY HUDSON DIVISION FROM HUDSON TERMINAL, NEW YORK

No. of Train.....191.....
Time Leaving New York.....M.
Conductor.....

TRAIN STARTER

To be retained by Superintendent New York Division

Hudson Tunnel Traffic—Train Clearance Card

The company does not keep a record of the tickets collected at different stations, but only of the tickets sold. The ticket sales at different stations, while not a true index of the traffic originating at those stations, afford some interesting comparisons. The largest number of passengers are handled at the Hudson Terminal station, although in volume of ticket sales the Hoboken station exceeds the downtown terminal station. In October the ticket sales at Hoboken were 1,035,000 as compared with 1,023,000 at the Hudson Terminal. About 30 per cent more tickets are sold at the street entrance to the Hoboken station than at the entrance from the Lackawanna station. The passengers entering from the street for the most part ride to and from

the station on the cars of the Public Service Railway, which has a large terminal immediately above the tube station. The two stations in Jersey City at Exchange Place and at Henderson Street and the Erie station contribute the next largest amount of revenue. Practically all the passengers using the Erie station are bound to and from trains of the Erie Railroad. The Hudson & Manhattan Railroad has an arrangement with the Erie Railroad whereby tunnel tickets are sold at the ticket offices of all suburban stations on the Erie Railroad. In October the average daily sales at these stations were 1100 tickets. On the Sixth Avenue line the terminal station at Thirty-third Street sells more tickets than any other station, the next largest sales being made at Twenty-third Street.

SOURCES OF NEW TRAFFIC

The steady growth of traffic during 1911 over the traffic of 1910 has been at the rate of about eighty-five new passengers every day, the average daily traffic having increased nearly 30,000 passengers in a year. Much of this increase is attributed to the development of suburban towns in New Jersey. The new residents who move into these towns do not have to be coaxed away from the ferries, for their decision to settle where they do is based largely on the ease, convenience and rapidity of reaching their offices by tube trains. This growth should continue with the further building up of the suburban territory.

NEWARK RAPID TRANSIT LINE

On Oct. 1, 1911, joint through service was put in operation from the Hudson Terminal to the Manhattan Transfer station of the Pennsylvania Railroad just east of Newark, N. J. By Nov. 26 it is expected that this service will be extended into the center of Newark over a new elevated structure. The Hudson & Manhattan tunnels have been extended west in Jersey City beyond the Henderson Street station to Waldo Avenue, where they emerge on a grade to the right-of-way of the old main line of the Pennsylvania Railroad. From this point west the Pennsylvania Railroad has equipped two tracks with third-rail and suitable signal apparatus as far as Manhattan Transfer, where the electric line to the Thirty-third Street station ends. Beyond Manhattan Transfer a new double-track elevated structure has

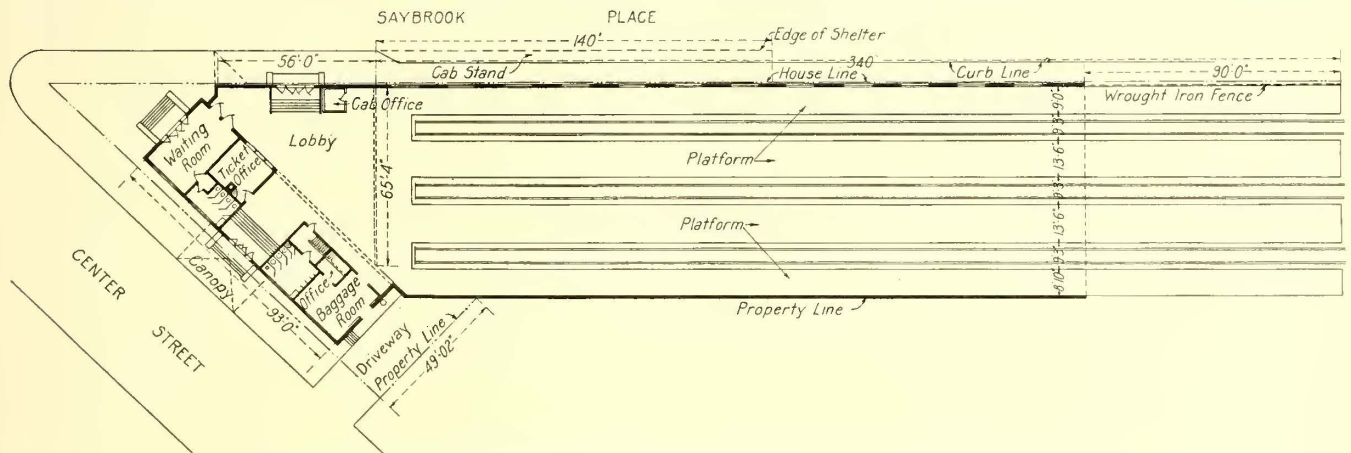
sign. These cars, which are of all-steel construction, were described in the *ELECTRIC RAILWAY JOURNAL* for Aug. 12, 1911. The tentative schedule of train service which has been made up provides for a train in each direction at intervals of from six to twelve minutes during the rush hours, twenty minutes during the middle of the day and thirty minutes after 9 p. m. The running time between



Hudson Tunnel Traffic—Elevated Structure in Newark

Newark and Hudson Terminal will be twenty minutes, but this may be reduced later.

When electric trains were put in operation as far as Manhattan Transfer the Pennsylvania Railroad discontinued its steam shuttle trains between Manhattan Transfer and Jersey City. As soon as the electric service is extended to Newark the Pennsylvania Railroad will take off eighteen Waverly local trains in each direction. For the present the



Hudson Tunnel Traffic—Plan of Terminal Station at Park Place, Newark

been built to the Passaic River, which is crossed on a double-deck swing drawbridge. The electric trains use the upper deck, while the lower deck will be used by freight trains moving in and out of the local freight house and yard in Newark. In Newark the elevated structure is built on private right-of-way and extends to the station building at Park Place, about two blocks from the corner of Market and Broad Streets. A station at Summit Avenue, Jersey City, is also being built and will be opened at the same time as the Newark station.

For the operation of this new service the Hudson & Manhattan Railroad purchased thirty-six cars and the Pennsylvania Railroad purchased sixty cars, all of the same de-

other suburban steam trains now running into Jersey City will not be changed, although passengers may change to the electric trains at Manhattan Transfer and come under the river without additional charge. The one-way and round-trip fares between Newark and New York will remain the same as at present, 17 cents for a one-way trip and 30 cents for a round trip. Passengers desiring to ride uptown in the tube trains will be obliged to change at Henderson Street or Exchange Place in Jersey City and pay another fare.

The Newark Rapid Transit line is expected to produce a large revenue in the future as it provides the quickest route between New York and Newark. The terminal station in

Newark is in the center of the business and shopping district and is only a short distance from any surface car line. Some of the rush-hour traffic obtained no doubt will be at the expense of the present tube traffic to and from the Pennsylvania and Lackawanna stations, but on the other



Hudson Tunnel Traffic—Interlocking Tower at Tunnel Portal on Pennsylvania Railroad

hand some traffic may be diverted from the Central Railroad of New Jersey and the trolley lines across the meadows.

INCREASE IN FARES

On Nov. 22 the Hudson & Manhattan Railroad announced an increase of fares effective Dec. 24, 1911. After that date the fare between all stations in Jersey City and Hoboken and stations on the Sixth Avenue line in New York City will be increased from 5 cents to 7 cents, or 1 cent less than the cost of a journey by ferry and street car. The fare between the downtown terminal and all stations in Jersey City and Hoboken will remain at 5 cents, and the present fare of 5 cents between local stations in New York and local stations in New Jersey also will be maintained.

WISCONSIN DECISION ON OLD TRackage AGREEMENT

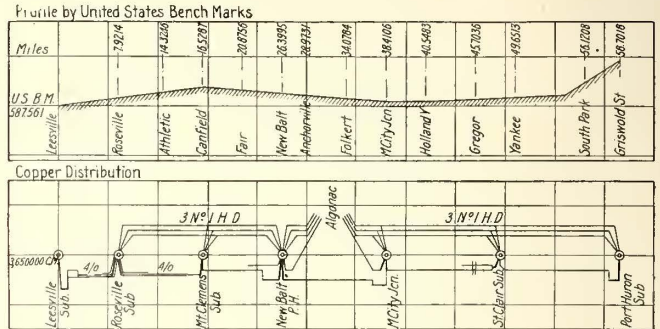
A decision has been rendered by the Railroad Commission of Wisconsin in a case instituted by the city of Green Bay against the Green Bay Traction Company.

This case involves the question of whether or not the city can compel the company to fulfil the agreement of a predecessor company to build and operate additional street railway trackage. The agreement was that such predecessor should remove certain trackage in the west side of the city and within a specified time build and operate an equal amount of trackage in the same section. An application was made to the Common Council for authority to construct a portion of the trackage. No action was taken by the council until several years later, after the expiration of the time specified and after the predecessor company had transferred its property to the present company and had dissolved.

It is held by the commission that the refusal of the Common Council to act within a reasonable time was tantamount to a denial of the application; that the application was for an independent franchise; that at the time the present company acquired the property no right was transferred to construct such line; that the attempted grant by the council was nugatory as the grantee was then no longer in existence; that the present company was not a party, either direct or indirect, to the transaction and is therefore in no wise bound to perform the obligation attempted to be created. The petition of the city was therefore dismissed.

TESTS OF CURRENT CONSUMPTION OF INTERURBAN CARS ON DETROIT UNITED RAILWAY

On Sept. 12, 13 and 14, 1911, an interesting series of tests was made on the Rapid Railway Division of the Detroit United Railway to determine the relative current



Profile of Line and Diagram of Copper Distribution

consumption of a single interurban motor car, a motor car hauling a trailer and a two-car multiple-unit train. The tests were made under the direction of E. J. Burdick, super-

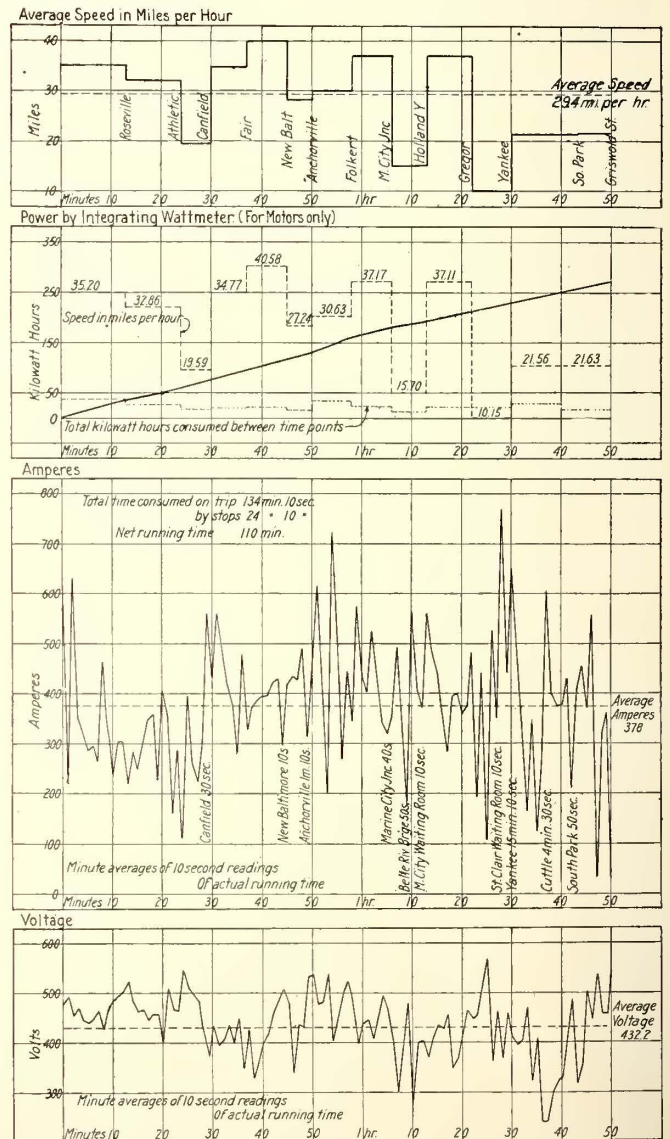


Chart of Test Run of Two-Car Multiple-Unit Train

intendent of power, and Sylvester Potter, master mechanic of the Detroit United Railway.

For the purpose of these tests two of the company's regular interurban cars were taken out of service and

fitted up with the various instruments required. The cars used were of the single-end type with 41-ft. 10½-in. bodies and a seating capacity for fifty-three persons. They were mounted on Baldwin M. C. B. type trucks having a 6-ft. 6-in.

was made at practically the same hour, from the Leesville carhouse at the Detroit city limits to the Port Huron carhouse in Port Huron. The cars were run at the same schedule speed and made the same stops as the regular limited cars operating on this division, and as nearly as possible the same length of stops and the same number of

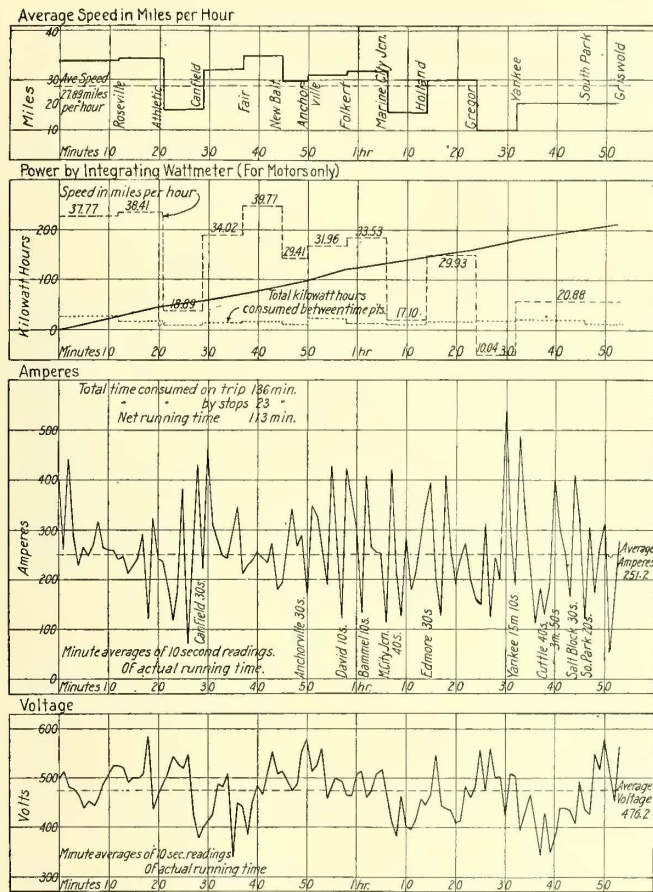


Chart of Test Run with Motor and Trailer Car

wheelbase and 36-in. rolled-steel wheels. They were equipped with four Westinghouse No. 112-B motors of 75 hp each and Westinghouse electro-pneumatic control.

On the first day the two cars, Nos. 7306 and 7307, were

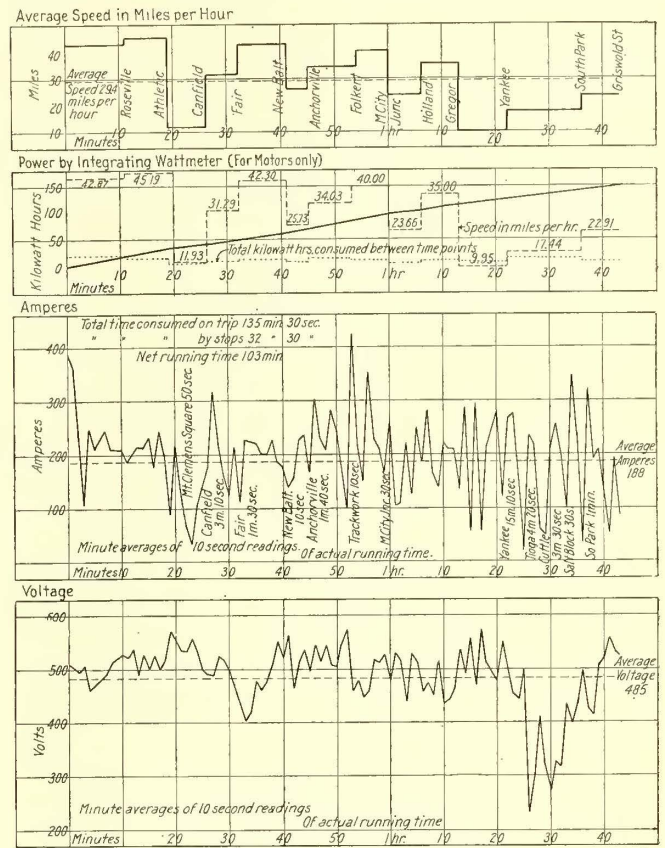


Chart of Test Run with Single Motor Car

stops were made on the test runs each day. Extreme precautions were taken to have the results of the tests correct. Two ammeters and two wattmeters were used, so that one instrument would check the other. The meters were so

SUMMARY OF POWER CONSUMPTION TESTS ON RAPID RAILWAY DIVISION, DETROIT UNITED RAILWAY.

Dates	Sept. 12, 1911.		Sept. 13, 1911.		Sept. 14, 1911.
Make-Up of Train.	Two Motor Cars.		Motor Car and Trailer.		One Motor Car.
Cars.....	No. 7,306	No. 7,307	No. 7,306	No. 7,307	No. 7,306
Motors.....	4 West. 112	4 West. 112	4 West. 112	None	4 West. 112
Gear ratio.....	30:59	30:59	30:59	None	30:59
Trucks, type.....	Baldwin	Baldwin	Baldwin	Baldwin	Baldwin
Controller, type.....	West. Pneumatic	West. Pneumatic	West. Pneumatic	None	West. Pneumatic
Weights, pounds.....	69,240	65,400	69,240	51,360	69,240
Average volts.....	432.3		476.2		485.
Average amperes.....	378.		251.2		188.
Total kw-hours for motors.....	271.4		212.6		149.4
Total kw-hours for batteries and lights.....	8.3		5.8		5.
Total kw-hours consumed.....	279.7		218.4		154.4
Distance, miles.....	58.7		58.7		58.7
Watt-hours per ton mile for motors.....	68.66		60.06		73.51
Total watt-hours per ton mile.....	70.778		61.701		76.

Temperatures, Degrees Fahrenheit.

Average in motor at start.....	87.25	64	75.5	91.5	55	60
Air temperature at start.....						62
Above air in motor at start.....	23.25		11.5	36.5		-2
Average in motor at end.....	137.		122.5	145.		130
Air temperature at end.....		62			62	66
Temperature in motor above air at end.....	75.		60.5	83.		64
Increase in motor temperature.....	49.75		47.	53.5		70

connected together and operated with eight motors as a multiple-unit train. For the second day's test the motors were removed from the trucks of car No. 7307, and it was hauled as a trailer by car No. 7306. On the last day car No. 7306 was operated singly. Each day the same run

wired that the power consumed on both cars was measured, and a separate wattmeter was used to record the energy consumed by the lights and storage batteries. Temperatures of the motors were taken between the armatures and pole pieces at the start and conclusion of each trip.

The results obtained from the tests are shown in the accompanying table and diagrams.

The profile of the division is approximate only, as it was drawn from the elevations taken from the bench marks of the United States Coast and Geodetic Survey at the different stations along the line. The diagram of copper distribution shows the number and sizes of high-tension and low-tension conductors between the seven substations feeding into the line. The wattmeters, ammeters and voltmeters on the cars were read at ten-second intervals, and readings were also taken from the substation and power station instruments at frequent intervals while the tests were being made. No speedometer was available for taking instantaneous readings of the speed, but the average speed between stations as shown on the curves was computed from the time required to run from one station to the next.

As the principal object in making these tests was to determine the relative current consumption of one-car and two-car trains, the watt-hours for the ton mile shown in the summary are of particular interest. The motor and trailer-car train consumed for the motors alone only 60.06 watt-hours per ton mile as compared with 73.51 watt-hours for the single-car and 68.66 watt-hours for the multiple-unit train. The car hauled as a trailer was much heavier than a specially built trailer of the same seating capacity, so that the possible saving in energy under normal operating conditions should be much larger than appears from the tests. No difficulty was experienced in maintaining the schedule speed with the trailer car, and it is significant that the increase in temperature of the motors on the car hauling the trailer was but little more than the increase of temperature when operating as a multiple-unit train, and was well within safe limits for the insulation. The average line voltage in all tests was maintained above 430 volts.

HEARING ON TRANSFERS IN NEW YORK

At the continued hearing on the question of rates of fare on the connecting or intersecting surface railways in the borough of Manhattan before the Public Service Commission, First District, on Nov. 13, 1911, F. T. Wood, assistant to the general manager of the Metropolitan Street Railway, was recalled as a witness. He introduced a blueprint which indicated by curves the variation in the number of revenue passengers, transfer passengers and total passengers carried during the fiscal years 1898 to 1911, inclusive, by the lines of the Metropolitan Street Railway on Manhattan Island. He explained that in 1899 the total number of revenue and transfer passengers carried by the Twenty-eighth and Twenty-ninth Street Crosstown Railroad and the Thirty-fourth Street Railroad were included in the report of the Metropolitan Street Railway. This tended, therefore to reduce by approximately 10,000,000 the number of revenue passengers for 1899.

Mr. Connette was recalled and cross-examined in detail in regard to sheets which he had prepared since the last hearing, showing the separation of property used for railroad purposes from that which he considered was not used for railroad purposes by the Central Park, North & East River Railroad, Second Avenue Railroad and the Metropolitan Street Railway. It was his opinion that a fairly correct estimate could be made of the increase of passengers that would result from a free transfer system if one were put in force at the 151 points designated in the order of the commission. He thought that the total number of transfer passengers would probably increase in the same relative proportions as the revenue passengers increased. In order to arrive at the probable number of transfers at this time with the transfer system restored as ordered by the commission it would be advisable to take the percentage of transfer passengers to revenue passengers in 1907 and apply the same percentage to the total revenue

passengers carried at present. He could not predict the probable increase in transfer passengers if 3 cents or 2 cents was charged for each transfer. He did not know whether more passengers could be taken on between the hours of 10 a. m. and 12 m. without increasing the car mileage. He would not regard as favorable a transfer system under which the ratio of increase of transfer passengers was greater than the ratio of increase of revenue passengers.

The hearing was continued on Nov. 20, 1911, and was given over for the most part to the cross-examination of Mr. Connette by W. D. Guthrie, of counsel for the Third Avenue Railroad. It was hoped to conclude the case on Nov. 24, 1911.

REHEARING ON BRAKES IN NEW YORK

A rehearing was granted by the Public Service Commission of the First District of New York on Nov. 20, 1911, in regard to its recent order directing the surface railways of New York to equip cars of specified weights with power brakes. Commissioner Eustis explained that the proceeding was a rehearing in the interest of the companies that had not accepted the order and that whatever modifications were made after the rehearing would accrue to the benefit of all the companies affected by the order.

George D. Yeomans, counsel for the Brooklyn Rapid Transit Company, said that the officers of that company felt that the order for power brakes had been unnecessarily applied to certain cars. The company desired to make a thorough test of geared brakes and power brakes on the various types of cars included in its equipment, and he suggested that the commission appoint someone to represent it at the tests. Cars had been equipped at some expense for these experiments, but it would be impossible to get all the cars ready so as to complete the tests and compile the results until early in January.

M. E. Burke, representing the receivers of the Metropolitan Street Railway, referred to the section of the order of the commission reading: "After June 1, 1912, all service cars in service other than passenger cars shall be equipped with power brakes and geared hand brakes." He suggested that this should be modified to read: "After June 1, 1912, all double truck service cars in service, other than passenger cars, shall be equipped with power brakes and geared hand brakes."

Mr. Eustis thought that very likely after the rehearing had been completed there would be some modifications. The commission had proceeded with the idea of limiting the power brakes to double truck cars, and as long as the order was not so expressed any modification of it would be so worded.

E. A. Maher, speaking for the Union Railway and the Westchester Electric Railway, said that these companies were opposed to installing power brakes on their cars.

The hearing was adjourned until Jan. 8, 1912.

MEETING OF THE COMMITTEE ON SUBJECTS

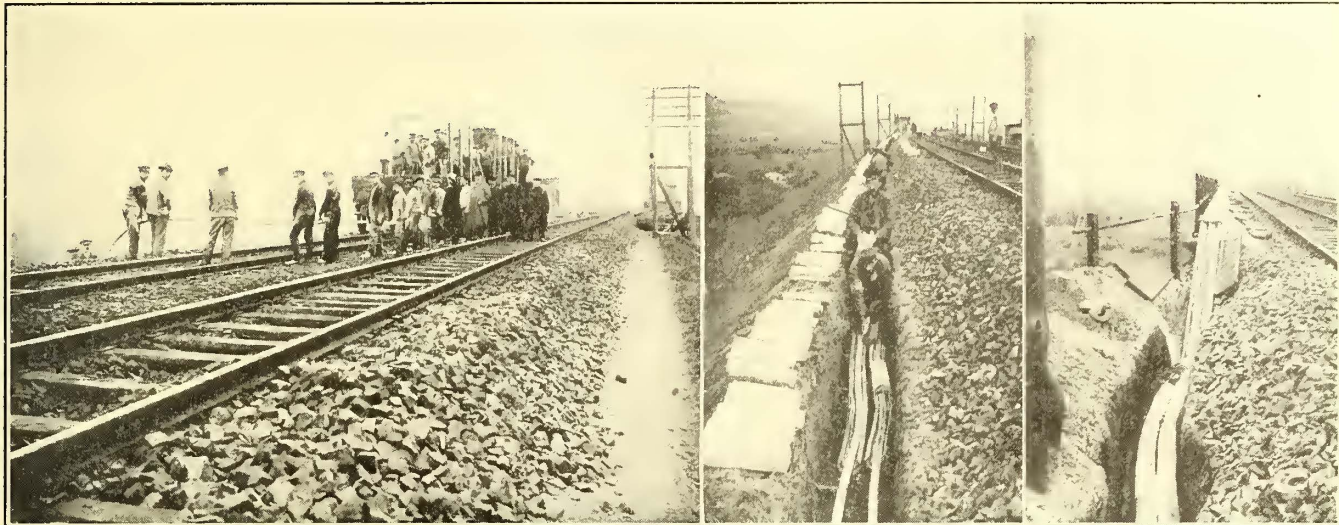
A meeting of the committee on subjects of the American Electric Railway Association was held on Nov. 21 at New York to decide on the topics of the papers to be read at the midyear convention of the association. This meeting will be held during the latter part of January, 1912.

At the meeting were C. Loomis Allen, Utica, N. Y.; James D. Mortimer, Milwaukee, Wis.; E. C. Foster, New York City, and the presidents of the four affiliated associations, P. S. Young, Jersey City, N. J.; E. O. Ackerman, Columbus, Ohio; H. K. Bennett, Fitchburg, Mass., and J. N. Shannahan, New York City. An interesting program was drawn up and will be announced by the secretary before long.

LAYING A 60,000-VOLT CABLE

Since the publication of the article on "Power and Transmission Methods of the Prussian-Hessian State Railways" in the issue for Nov. 4, 1911, particulars have become available of the laying of the 60,000-volt cables furnished by

Five junction boxes had to be installed in each of the two cables laid in the trench. These boxes were mostly placed in the slope at the side of the roadbed. The junction boxes consist of a cast-iron case with conical ends which were soldered to the lead sheath of the cable. The aluminum conductors were connected by means of clamps



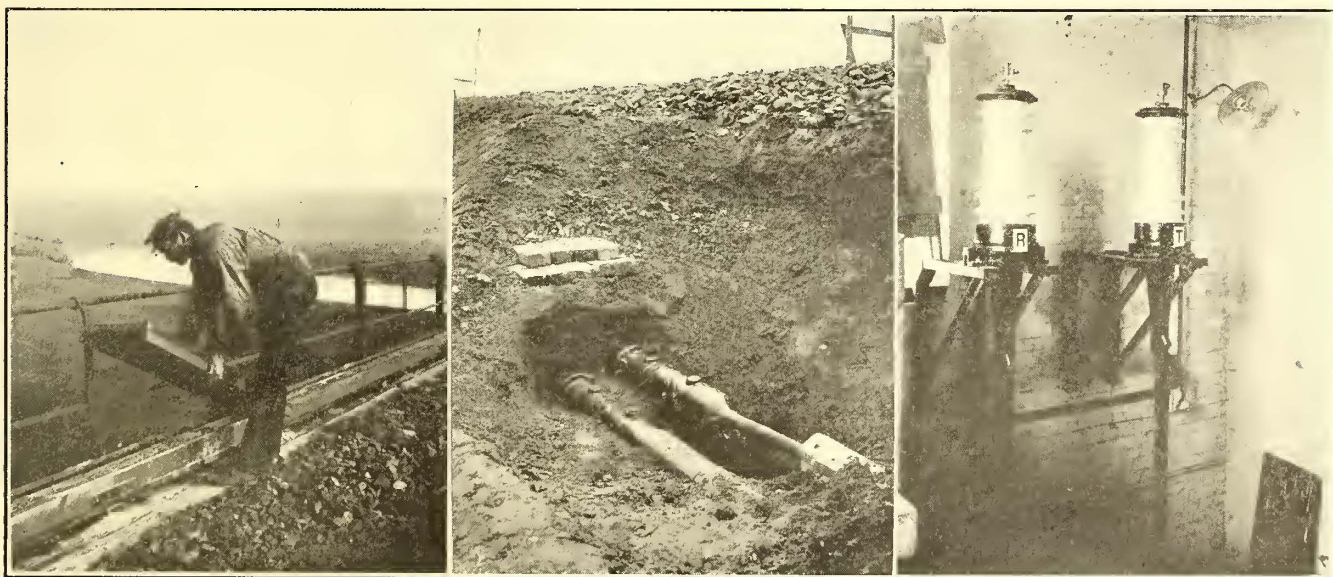
Method of Laying Cable

the Siemens-Schuckert company. This voltage is so high that particulars of the work are of interest.

The individual lengths of this cable varied from 2130 ft. to 2700 ft. The cable drums, weighing about 15,000 lb. including cable, were mounted on railroad flat cars equipped with wooden jacks so that the cable could conveniently be taken to the place where it was to be laid and reeled off as needed. The train was then moved slowly along and the cable was reeled off and lowered directly into the cable trench. Each day two lengths were laid side by side, as the trench could not be left open over night. The trench was dug about 26 ft. deep alongside of the outer track.

which were covered with insulating paper of heavy texture. The junction boxes were then filled with an insulating compound. The joints were made inside of wooden shacks built over the junction places on account of the cold weather, the laying of the cable having taken place in November and December. Two layers of bricks were placed over the junction boxes to protect them from injury.

The places along the roadbed where the boxes were placed are indicated by enameled signs. The position of the cable is shown by indicators along its full length. The indicators consist of inverted cast-iron boxes which are laid almost flush in the ground. On the inside is at-



Cable Protection, Cable Junction and Potheads

The cables were laid in sections of two-part conduit clay piping which was filled with sand. This piping was not considered sufficient protection for the cables where installed on the land adjacent to the generating station, and for this reason a layer of thoroughly baked bricks was placed over the clay piping. The cable was carried over the railroad bridges in wooden cases having a packing of tar paper and filled with sand.

tached a length of wire cable, and to the other end of this a cast-iron cross, which is laid next to the cable and which acts as an anchor for the box.

Potheads are installed in the power plant and the sub-station. They consist of a cast-iron lower part and an upper part of porcelain with a metal cover. The metallic lower part is soldered to the lead sheath of the cable. A brass rod, passing through the cover of the pothead, is

screwed onto the aluminum conductor, and to this are connected the conductors to the busbars. The entire pothead was filled with insulating compound after connections were made.

There were two objects in placing the transmission cir-



A Turn in the High-Tension Cable

cuits underground, the principal one being the immunity from atmospheric disturbances and the other the desire to hide them from the view of any rioters or invading army in case of war.

PROGRESS ON POWER AND OTHER IMPROVEMENTS OF NORTHERN TRACTION & LIGHT COMPANY

The development work now projected by the Northern Ohio Traction & Light Company is one of the largest in the United States. The demands upon this company in railway, lighting and power departments have practically outgrown the capacity of the property.

The business of the rubber companies located in Akron has increased at a phenomenal rate, demanding increased power facilities on the part of the Northern Ohio Traction & Light Company. In addition the general industrial development throughout the territory served has been so great as to require additions to plant and changes in the physical condition of the property to an unprecedented extent.

To meet the conditions that have arisen the Northern Ohio Traction & Light Company through a subsidiary, the Northern Ohio Power Company, is establishing an entirely new power system on its northern division. Brief mention of this project has been made in previous issues of the *ELECTRIC RAILWAY JOURNAL*. A new steam turbine plant of 35,000-hp capacity will be built on the Cuyahoga River between Akron and Cuyahoga Falls. For fourteen years the company has owned water rights on the Cuyahoga River at this point with 105 ft. available head. To supplement the steam plant a hydroelectric plant is being established with a capacity of 3000 kw.

The generating equipment at the steam plant consists of three 60-cycle, three-phase, 1800-r.p.m., 7000-kva turbo-generators; two 150-kw direct-current, 250-volt turbo-generators for exciters; nine 1100-kva, oil-insulated, water-cooled transformers for changing generator voltage to 7625 volts for use with star-connected grounded neutral service, giving 13,200 volts transmission; one 20-kw motor-generator set; three 55-kva transformers, 2300 to 440 volts, and one main switchboard for controlling above apparatus and outgoing lines.

A contract has been placed with the Westinghouse Electric & Manufacturing Company for the entire electrical equipment including substations. One substation will be located within the steam plant and will have 1000-kw ca-

capacity in rotary convertors. Another substation, to be located within the city of Akron, will have 4000-kw capacity for the railway lines and 5000-kw capacity for lighting. One substation, to be located at Bedford, will have 1000-kw capacity and will replace an obsolete steam plant at that point. Another substation will be placed at a point midway between Bedford and Cuyahoga Falls and will have 500-kw capacity. A substation with 500-kw capacity will be established at Kent, Ohio. A substation to be located at South Akron will have 3000-kw capacity and will be used for the lighting, power and railway departments. The company is changing from 25 cycles to 60 cycles two 600-kw substations located on the line connecting Canton and Akron and one 800-kw substation at Barberton, which furnish power for light and railway purposes. In the new development 60 cycles will be used throughout.

The power house at Akron now under construction will contain fourteen Babcock & Wilcox boilers of 600 hp each, normal rating. Taylor stokers, Le Blanc condensers and a Custodis stack, 275 ft. high and 16 ft. in diameter, will be provided. A dam 64 ft. high and 450 ft. long, made of Ransome hollow concrete pattern, will serve a double purpose. It will create a lake nearly 2 miles in length and with an average depth of 40 ft., which will be used both for hydroelectric and condensing purposes.

A 90-in. penstock will be carried 3000 ft. below the dam to supply the hydroelectric plant, in which there will be installed water turbines made by the Trump Manufacturing Company, of Springfield, Ohio, and electrical apparatus made by the Westinghouse Electric & Manufacturing Company.

A private right-of-way is being acquired for 13,000-volt, three-phase, high-tension lines, the city of Akron, 3 miles away, being fed by duplicate lines. Steel towers constructed by the Archbold-Brady Company and 45-ft. and 50-ft. Georgia pine creosoted poles, set in concrete, will be used for transmission. Stranded copper wire with hemp core will be used throughout. The steel cross-arms will be of the heaviest character. Ground wires will be installed on the top of all poles for lightning protection. The sizes of copper wire vary, but none will be less than No. 1 B & S. Each transmission line plant to Akron will consist of three 35,000-circ. mil copper wires.

The substation in Akron will be located in a new terminal building, to be constructed within one block of the business center of the city. The terminal building will contain the general offices of the Northern Ohio Traction & Light Company, facilities for the Electric Package Agency, a train shed and general provision for both the interurban and the city lines. All electric wires, both lighting and power, will reach the terminal building under ground. A private right-of-way is being acquired for the use of the company's interurban lines which enter Akron.

The South Akron development includes, besides the substation, a carhouse and shops. Work upon this improvement has already been begun. The carhouse will have capacity for seventy-five interurban cars and shop facilities sufficient to take care of all the requirements of the entire interurban system, comprising more than 200 miles of track.

All buildings will be thoroughly fireproof and attention will be given to architectural effect. The original Akron, Bedford and Cleveland line of the company is now being relocated on private right-of-way and double track is being constructed. When this trackage is completed into Akron and proper improvements are made in Cleveland for a four-track line—including the subway which is now under construction by other interests and will reach the center of Cleveland—trains can be operated between the center of Cleveland and the center of Akron entirely on private right-of-way and in an hour. The running time of the limited interurban cars between these points is now one hour and forty minutes.

Papers at the C. E. R. A. Convention

Abstracts Are Published of the Five Papers Presented at the Convention of the Central Electric Railway Association, Held at Louisville, Ky., Nov. 23

SUBSTATION OPERATION

BY J. E. COCHRAN, SUPERINTENDENT OF LINES AND SUBSTATIONS OHIO ELECTRIC RAILWAY COMPANY

The companies forming this association have in their service about 525 substation operators. The majority of these men receive very little training; many of them are placed in charge of thousands of dollars' worth of equipment as soon as they have learned the sequence of opening and closing the switches, and without any knowledge whatever of the reasons why they do so or what the results of an error might be. How often we hear of a rotary being destroyed because the operator was away from the machine room during a high-tension failure, or of an employee of a power plant or substation being electrocuted because some operator was asleep and a rotary was running inverted. The death toll of linemen has been very great as the result of careless handling of the high-tension switches by operators. The state railroad commissions insist upon the proper training of men employed in the train service, and general managers should insist upon the proper training of substation operators for the reason that an ignorant or careless operator through failure of equipment in his care will make ineffective the entire train schedule no matter how carefully prepared. The successful operation of substations is purely a question of the personality of the substation employees and the head of that department. The fact that there is but a small amount of manual labor required of an operator has set a low rate of wages for this particular service. Wages lower than those received in other occupations necessitate the employment of men who are content to work for small wages because of the fact that there is but little physical effort required of them.

There are but two classes of men to whom substation work appeals who are worth while for a company to employ. One class is composed of men past the prime of life who are physically unable to perform hard labor and who desire positions where they are not exposed to severe weather conditions. It has been my experience that these men, past forty-five years of age, make the most dependable and trustworthy operators, especially for night duty. The other class is composed of young men, graduates from high school, who are desirous of gaining electrical knowledge and experience while earning money enough to pay for their tuition in some university. These young men are usually very industrious and trustworthy during their time of employment, which is usually from one to two years.

Unfortunately from an operating standpoint many substations are located in towns and villages where the operator is required, in addition to his duties as substation attendant, to act as passenger, freight and express agent. The complex freight and passenger tariffs and the very stringent rules of the railway commissions make this position very hard to fill. The operator is not only required to have an electrical and mechanical knowledge, but he must be an accountant and well versed in railway rules, and he must be a diplomat with the courtesy of a Chesterfield if he fills his position to the satisfaction of both the company and the traveling public. There is no position connected with railway operation that is harder to fill and requires more tact and good judgment than that of an agent in the average small town of from 2000 to 10,000 population.

There are very few men who have both clerical and mechanical ability, and the usual result is that when an operator is promoted to a position where there is considerable

agency work he soon loses interest in the electrical equipment, and his services as an operator become most unsatisfactory, while he may develop into a good transportation man. In such a case this man should be transferred to a larger agency that has no substation in connection with it. Were there no clerical work connected with any substations the selection of operators would be a very easy task. It is a regrettable fact that a large number of the men who have good mechanical ability have a very limited education.

In my department we have sixteen substations, ten of which have agencies connected with them. We have made it a rule to select all our agents from among the substation operators, promoting them to the more responsible positions on merit and not on seniority. With promotion as a reward there is some incentive for bright young men to enter the service, put forth their best efforts and grow up in the business. This also gives the management an opportunity to study the character of each man and assist him to develop along the line in which he seems to be the strongest. We often find men who are indifferent operators but are very successful in some other department. We have linemen, trainmen, dispatchers and clerks who received their first knowledge of railway work and discipline in a substation.

These men are recruited from all walks of life. Among the thirty-six operators we now have employed, the following list gives an idea of the great difference in their previous occupation: Three locomotive engineers, seven stationary engineers, seven laborers, two farmers, five bookkeepers, three printers, one plumber, three machinists, two linemen, one liveryman, one lumber dealer and one carpenter.

Of this number two were experienced operators, having been in the service of other companies. Four had had some small experience in the operation of motors or generators. The remaining thirty had no electrical knowledge whatever, and at least twenty of them had never been inside of a substation before they applied for positions with this company.

The length of their services in years has been as follows: One has been in the service of the company for seven years, four for six years, two for five years, five for four years, eight for three years, three for two years, five for one year and eight for less than one year.

Very few men seek other employment after they have seen three years' service. Most of the men who have climbed to better positions have done so before the end of their second year. About 50 per cent of the men engaging in this work remain less than six months.

A large part of the failures are due to nervousness. Night work, electrical storms and overloaded rotaries are very trying and not conducive to peace of mind.

We now have men employed in the various offices who were almost nervous wrecks after having "bucked" a rotary a few times. Ex-locomotive and stationary engineers, as a rule, are the most satisfactory operators. In their former occupations they have formed the habits of close observation and strict attention to duty.

Country-bred young men who have received a good education have been our most successful agents. They are usually keen-witted, anxious to learn, honest, amenable to discipline, have formed few vicious habits and are not afraid to work.

School teachers and young men who have been employed in the factories of the larger cities have been failures in nearly every instance. Only in extreme cases do we employ an experienced operator who has been in the service of some other company. The same motive that would

cause such a man to leave his former position would prevent him rendering us good service. It has been my experience that this applies to all departments.

Good, experienced men do not often need to hunt for employment. The vicious and incompetent are always seeking new fields.

Owing to promotions, resignations and dismissals we are compelled to employ about twenty-five new men each year. For this reason it has been necessary for us to adopt some definite method of training, which is as follows:

When an operator is employed he is placed under the care and instruction of one of our best operators for ten or fifteen days. He is instructed in all of the duties of an operator and is taught the names and uses of all of the apparatus. At the end of a week or ten days he reports to my office for examination; he then receives from three to five days' more instruction, is again examined, and if found capable is placed upon the extra list. During his spare time he is sent to each of the other substations so that he may be familiar with their conditions should he be called upon to work in any of them. As soon as there is a vacancy he is assigned to the night "trick" in some station. If there is an agency in connection with it and he takes an interest and develops along that line, when there is an opening he receives an opportunity to show his ability as a day operator and agent. If successful his next promotion will be to an agency at one of the larger stations.

If he does not show any inclination toward clerical work his promotion will be from night operator to day operator in some station that has no agency in connection with it; from there he may be taken to any of the mechanical or electrical departments. All of our operators work straight nights or days; that is, there is no changing time of duty, except by promotion. My experience has been that this method is more satisfactory than alternate weeks of night and day duty.

We have procured from the makers of our apparatus their instruction books on the operation of rotaries. The books contain full instructions for operators, with wiring diagrams and photographs of different installations. On these books is placed an additional manila cover and they are placed in each substation.

Inserted in each instruction book is the following type-written list of questions:

QUESTIONS FOR SUBSTATION OPERATORS

1. Define volt, potential, emf, tension.
2. Define ampere, coulomb.
3. Define watt.
4. Define kilowatt.
5. Define ohm.
6. What do you mean by direct current and alternating current?
7. What is meant by positive and negative leads?
8. What do you mean by series connections?
9. What do you mean by shunt connections?
10. What do you mean by parallel connection?
11. Define open, grounded and short circuits.
12. Name the different kinds of transformers in a substation; for what are they used?
13. What circuits are taken from the shunt transformers?
14. What circuits from the series transformers?
15. How would you disconnect series transformers in case of trouble?
16. How do you distinguish between primary and secondary circuits?
17. What is the voltage of the primary and secondary circuits of the shunt transformers?
18. What clearance ought high-tension lines to have?
19. Why should a high-tension line be grounded before attempting to work on or near it?
20. What care should be given transformers, oil switches and alternating-current lightning arresters?
21. What is the object of choke coils in primary of station transformers?

22. What is the object of reactive coils in secondary of station transformers?
23. What takes place when oil switches are tripped during a short circuit or ground?
24. Give regular order of closing and opening switches starting with direct current; also for starting with alternating current.
25. Give order of shutting down of rotary.
26. What would be the result if you should start the rotary with direct current and the alternating-current switch was at half voltage?
27. What would be the result if you should close the alternating-current starting switch to half voltage and the shunt field break-up switch was closed?
28. What attention should be given rotary when shut down?
29. How would you start rotary if voltmeter was open-circuited?
30. What is the object of the oscillating device?
31. What is the object of the speed-limit device?
32. What attention should be given to the circuit breakers?
33. What attention should be given to the alternating-current and direct-current brushes?
34. Why should the direct-current rocker arm never be moved from the position where it is marked to stand?
35. If in starting a rotary the voltmeter should show the voltage was reversed, what would you do?
36. How would you start a rotary if you had no synchronizing plug?
37. Describe fully the difference between series and shunt fields.
38. What would be the result if you should try to run two rotaries in parallel with the equalizer switch open?
39. How would you test for ground on trolley as to the direction of ground?
40. What is a section switch? How used?
41. How would you test with a voltmeter or series of lamps for a ground, open circuit or short circuit?
42. What attention should be given direct-current lightning arresters?
43. Why should the direct-current machine breakers and switches be opened each time the high-tension current is off?
44. How do you fuse the high-tension fused switches?
45. If you were requested to open the high-tension line at your station how would you proceed?
46. How would you ground high-tension?
47. What would you do in case someone was seriously shocked in your presence?
48. What would you do in case of fire?

These questions are used as the basis of all examinations.

They were compiled several years ago, and we have very few operators who have entered the service since that time who are unable to answer intelligently the most of them. A man may be a fairly successful operator and not be familiar with the subjects inquired about, but he would be a much more valuable employee if he thoroughly understood them.

We have men who have been in the service a long time who are unable to answer them, but in case of trouble they are usually helpless and unable to make the needed repairs, whereas the better-posted operators often make slight repairs to their equipment and save long delays and dollars as well.

After a man has been assigned to a station his instruction does not cease. We hold frequent meetings either at my office or in some substation. Those for the night operators are held during the afternoon and those for the day operators at night. Most of the men take great interest in these meetings and are very anxious to attend. More meetings are held with the night operators than with the day men, because more of the day men have passed the critical stage and so they do not need as much instruction.

At these meetings we discuss the elements of electricity and magnetism. With new men these subjects are usually taken up in the form of a lecture of about two hours. We also discuss all matters pertaining to the care of equipment, the best methods of operation and the making of emergency repairs. We trace all of the wiring circuits and explain the use and construction of all instruments and appliances, and in fact touch upon all matters pertaining to substations. These meetings are very often attended by members of other departments, especially the dispatchers. We have found them to be of great social benefit to all the men, inasmuch as they become acquainted with one another and learn of conditions under which others are working.

LIGHTNING PROTECTION

BY E. J. BURDICK, SUPERINTENDENT OF POWER DETROIT UNITED RAILWAY

This subject is of such vital importance that in a great many cases it has been the one thing that has determined the location of generating stations, transmission lines, etc., as it is well known that lightning troubles are more pronounced in mountainous countries and along lakes and streams than in countries that are more level and farther inland. This is particularly the case in engineering projects in connection with long-distance transmission lines, and although engineers in charge of projects of this character appreciate the fact that there are a great many excellent lightning arresters upon the market, it is their duty to locate their lines in such sections as to eliminate as far as possible those static effects. If due care is exercised in the routes and locations and if modern means and apparatus are intelligently applied and used, the trouble, with the exception of bolt lightning, may be almost entirely eliminated or overcome.

My subject may be subdivided under the following heads:

- (1) Power House and Substation Protection.
- (2) Distribution Protection.
- (3) Car Protection.
- (4) Telephone Terminal and Line Protection.

POWER HOUSE AND SUBSTATION PROTECTION

It has been my experience that the best protection on the lines and in the power houses is none too good, and that after this protection is once installed it should have careful inspection, and although these inspections should be made at certain defined intervals, it is also good practice to have the arresters looked over after every heavy lightning storm. Unless a definite system is conscientiously followed the lightning arresters may easily be neglected.

In the direct-current power houses of the Detroit United Railway we protect against lightning in every manner possible. Wherever a feeder circuit enters the power houses it is customary to put a choke coil in circuit with it. This coil is located on the rear of the feeder panel. Back of it, or on the line side, is connected a lead consisting of a No. 4 B. & S. wire which follows in a straight line to a fuse box located on the back of the panel. From this point a connection is made directly to the lightning arresters which are maintained in the basement directly under the feeder circuits. These lightning arresters are connected by large cables to the water-piping system of the plant. Besides these arresters, we protect with the method known as the tank lightning arresters and with the fuse arresters. These tank lightning arresters and fuse arresters are directly connected to the busbars, so that should a static discharge get by the choke coil and arrester on any individual feeder to the busbar we have two further chances to divert it before damage is done to the generators. Even with this extreme precaution and with lightning arresters thoroughly distributed upon the line and each car protected in a manner which I will describe later, we had an experience some ten years ago of having four of our generators put out of

commission by one discharge. This, of course, was very serious. We immediately made an investigation, which proved that on our large mass of wires, coming into the power house as they do, some further protection was necessary. At this time protective wires were being discussed and tried in different parts of the country. After investigation my conclusions were that they were well worth trying on these cables and particularly on the leads and cables which run from power house to power house and are located in close proximity and run as one unit. This was immediately done by installing extra iron cross-arms on top of the iron poles upon which were strung six barbed wires that formed a "cradle" or "umbrella." These barbed wires were tied together and grounded by means of No. 0000 cables and coke baskets buried in the earth at several different points. The results were most gratifying, for this installation eliminated further trouble. Formerly our stations used to be thrown from the line once or twice during every severe lightning storm, but since this protection was installed we have had a consecutive run of more than eight years without losing power in our stations from this or any other cause.

In our several suburban power houses and substations from which high-tension distribution emanates we protect with choke coils and lightning arresters in somewhat the same manner as that just described except that all high-tension lightning arresters are cut through disconnecting switches, so that in case of difficulties in the lightning arresters the arresters may be cut free from the circuit. These disconnecting switches should be cut in the circuits leading from the lines to the arresters and not in the wire leading to the ground. If such a switch was cut in the ground wire instead of in the wires leading to the arresters and the difficulty was in the arresters themselves, one or more of the phases might be short-circuited. In cases of this kind we have found that the operator may be confused. He might assume that if this ground switch was open his lightning arresters were free and clear, although that might not be the case. Therefore arrangements should be made to cut the arresters from the line.

In substations or power houses where rotary converters or motor-generator sets are installed the d.c. side is protected as in our direct-current power houses. Rotaries located in power houses and run directly from the station generators should be carefully guarded, because they do not have the interconnecting link of the static transformers. Hence lightning can get directly to the a.c. machines.

The effect of a lightning or static discharge upon the generators in the power house, if the discharge does not break down the insulation and burn out the machines, is quite likely to set up inductive influences in the armatures and field windings to such an extent that either the voltage of the machines falls or the machines become reversed. The consequence is that the other machines which are running in parallel with the machines affected immediately start to "motor" the affected apparatus, with the result of an overload upon themselves. Therefore the whole station is thrown from the line. It is a serious matter in a large system to lift the load, although no particular damage may be done in the station. This is particularly so if the system of distribution is thoroughly and properly equalized. The same result is apparent in substations. Power and substation operators should be thoroughly trained as to what to do in cases of this kind, especially if the polarity is reversed.

It might be well to add that static discharges do not always arise from atmospheric conditions, but that static strains or oscillating currents may be caused from innumerable effects, such as opening of switches, short-circuits, grounding of lines, etc. These different actions, however, may set up oscillating currents which may surge backward and forward to seek relief at the weakest point in the installation. They may become of such high potential

that they will break down at some point in the installation unless proper precautions are taken. In other words, good lightning arresters may not only protect from lightning but may also act as safety valves upon the lines to protect them from any abnormal pressures.

DISTRIBUTION PROTECTION

It has been the custom of the Detroit United Railway in protecting its d.c. distributions not only to make use of many properly installed lightning protectors, but also to establish fuse arresters at certain equalizing stations and at carhouses where there are attendants. This fuse arrester is a home-made affair, but it has been found very effective where it can be used. Besides these two different methods, the overhead guard or protective wire, as previously described, may be installed over the main feeder leads or where these cables come into the equalizing station.

High-tension transmission lines, outside of their choke coils and lightning arrester protection in the power house, should also be protected with the overhead guard or ground wire. This is one of the best methods that can be used unless the lines are of sufficient length to warrant the establishment of transfer or protective houses at different intervals. These overhead wires not only perform the function of guarding these wires but also relieve them of static stresses, and, further, they are not subject to the many weaknesses of the lightning arrester. Therefore I cannot impress upon you too forcibly the fact that overhead protective wires, properly grounded and maintained, will produce results and pay for their installation in any kind of distribution work.

There are several other methods which have recently come to my notice and are proving satisfactory in some cases, but I have never had any personal experience with them. One of these is a system of arc rings installed around each insulator. These rings take the arc when the flash-over occurs and prevent it from getting underneath the skirts of the insulator and bursting them. Another method uses the high-tension, horn-type arrester and choke coils. It was formerly considered good practice to install these arresters only at points that were convenient and near the power house. On some of the later transmission lines, however, they have been installed on special platforms, or cross-arms at intermediate points upon the line.

CAR PROTECTION

The method of car protection is comparatively simple. Our practice is to install choke coils of ample capacity in the vestibules with inclosed lightning protection tapped off above the choke coils through a suitable fuse to the ground connection on the truck frame.

It is asserted by competent engineers that the rail should be thoroughly grounded at frequent intervals, particularly where the roadbed is an elevated structure, where stone ballast is used, or in very dry and sandy localities. Their theory is that the rail itself becomes electrostatically charged and that a difference of potential between the rail and the moist earth where the lightning arresters are grounded will cause a backlash from the rail up through the motors to the trolleys and from the trolleys back through the lightning arrester rods, thereby burning out the motor equipment. This may seem to be a very circuitous route for the static charges to take, but it is well for all operators to take this theory into consideration.

TELEPHONE TERMINAL AND LINE PROTECTION

In connection with telephone terminal and line protection we have found that it is good practice to use the regular repeating coil in all of our terminal stations, and at all places where we have attendants the ordinary heat coil connected in the circuits by means of clips and held in place by springs to keep the heat coil under tension. Besides these heat coils, we also take taps from our lines. These taps run directly to two small carbon plates, which carbons are insulated by small pieces of tissue paper. The carbons are held together firmly by springs; one of them is con-

nected to the line and the other to the ground. When a lightning discharge takes place, or the line is subjected to high potential, the small piece of tissue paper used as insulation breaks down and the heat coil opens up. We have found that this simple method gives very good results in practice.

INSTALLATION AND MAINTENANCE OF LIGHTNING PROTECTION

All lightning arresters should be located in a clean, dry place so that they can be easily inspected and repaired. All wires used in connecting arresters should be of ample size and should be carried in as direct a path as possible to the arrester and from the arrester to the earth, because coils and bends in the wire have a tendency to impede lightning discharges.

In most lightning arresters one of the inherent defects lies in the condition that difficulties do not usually come from lightning or static discharges but are more often caused by the following up of the static current by the dynamic current, which causes considerable trouble or destroys the arrester itself. In a.c. work, particularly, it is very noticeable that such an action occurs at one time and not at another. This action is attributed to the fact that if the discharge comes at such a point in the line wave that the potential is at or near the zero mark the dynamic current does not follow over the lightning arrester gaps, but that it may follow if the potential is at or near the maximum point.

In many cases lightning arrester wires have been installed in iron pipes which were used for mechanical protection. This is very bad practice, because the pipes act exactly like a choke coil and therefore make the arrester ineffective. This effect also takes place in lightning arresters which are mounted in iron boxes. Both classes of construction should be avoided.

The grounding of arresters has received much attention. My own theory, which may be considered as a hobby, is that lightning arresters, particularly those near a power house or substation, should not be grounded directly to the rail if a reasonably practicable ground can be obtained in moist earth. There are two reasons for this: First, the rail itself may not be of as low a potential as the earth from an electrostatic standpoint, unless the rail is grounded at frequent intervals; second, we are certain that the rail is of a lower or greater negative to the generator than the earth from a dynamic standpoint. It is therefore possible for these static discharges not to seek the earth at the point where connection is made to the rail but to follow the rail back to the power house, through the apparatus to the many pipes that are located in the buildings to the earth at this point. Furthermore, if the lightning arrester should hold over—that is, if the dynamic current should follow up the static discharge—the tendency is to short-circuit across the lightning arrester to the rail, thereby destroying the arrester. On the other hand, if the lightning arrester is grounded to the earth, which I think is correct, the dynamic current has to pass through the arrester and its connecting wires through the earth to the rail, where it is seeking the generator negative. It will readily be seen that when some resistance has been thrown in circuit for the dynamic current to follow over there is less liability of the short-circuiting and the destruction of the lightning arrester itself. In other words, I think it is proper construction to ground the rail at frequent intervals but not at the same point at which the lightning arresters are grounded.

Finally, I wish to impress upon you most forcibly the importance of systematic inspection. It is one of the most vital points we have to deal with in protecting all classes of power houses and distribution lines. Make a study of your conditions and above everything else give your lightning arresters a chance. Systematic inspection and proper reports will pay large dividends upon the time and money expended.

ELECTRIC LOCOMOTIVES FOR INTERURBAN FREIGHT HAULAGE

BY F. E. WYNNE, WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

The purpose of this paper is twofold: First, to call attention to a few facts in connection with the present status of interurban freight haulage, and, second, to outline a method for quick approximate selection of a locomotive for a given service or to determine the approximate performance of a given locomotive.

The report of the Ohio Railroad Commission for 1910 gives some interesting data regarding earnings from freight traffic. In addition to passenger revenue, five other definite classes of revenue from transportation appear in the report, namely, baggage, mail, express, milk and freight. The figures for thirty roads are considered. Only eight reported earnings in all five classes. Five roads reported earnings from express but none from freight, while nine gave revenue from freight but none from express. It is probable, therefore, that there is more or less overlapping in the traffic reported under the several classes.

The revenue from the five classes combined varies between 3 per cent and 39 per cent of the total income from transportation, and the average is 13 per cent. The freight revenue varies from nothing to 31 per cent, and the average is 10.7 per cent. The average of the eight roads reporting all five classes is 18.6 per cent for the five combined and 14.4 per cent for freight alone. Nineteen of the roads show freight revenue less than the average for the entire thirty.

That portion of the freight business which is already best developed consists largely of the transportation of the products of dairies and truck farms to the cities and the distribution of merchandise to the small towns and farms. In general, the trains are made up of a motor car and perhaps one or two trailers, the motor-car equipment being the same as that used for the passenger cars except that it may be geared for lower speed. For this class of freight such operation is essential, and the service may be termed fast freight. As this traffic increases greater motive power will be required in order to maintain the speed and keep down the number of trains. This motive power may be supplied by locomotives or by motor cars with multiple-unit control, the limit to the size of trains being in substation and line capacity.

CARLOAD FREIGHT

The traffic not yet developed is, of course, problematical, but there are several sources of heavy freight, one or all of which may produce revenue for any particular railway. One of these is the handling of coal, stone, gravel and sand in carload lots. Another is raw material for factories and their finished products. Farm machinery and the heavier farm products also come in this class. Another way of increasing freight is through an agreement by which the electric lines will serve as feeders for existing steam railroads with which they connect but do not compete. In some cases it may even be found possible to use the electric line as a connecting link for freight interchange between allied steam roads which at present have no physical connections near the territory served by the electric line.

In any of these cases high speed is not necessary, and an electric railway already equipped for the operation of passenger trains of only one or two cars has ample capacity to operate freight trains of fairly large tonnage at low speed. Such traffic can best be cared for during the hours of light passenger service and at night when no other trains are on the line. Interest on the investment for the power house, substations and distributing system is going on all the time. With the established record of electrical apparatus for reliability an interurban road may operate

twenty-four hours a day as well as eighteen hours or twenty hours and move traffic which it cannot at present handle in the shorter time because of lack of track capacity and limitations in the power equipment and distributing system. The extra expense for station attendance, power and wear and tear on the machinery, and, of course, the cost of locomotive crews, would be covered by the receipts from a comparatively small amount of freight.

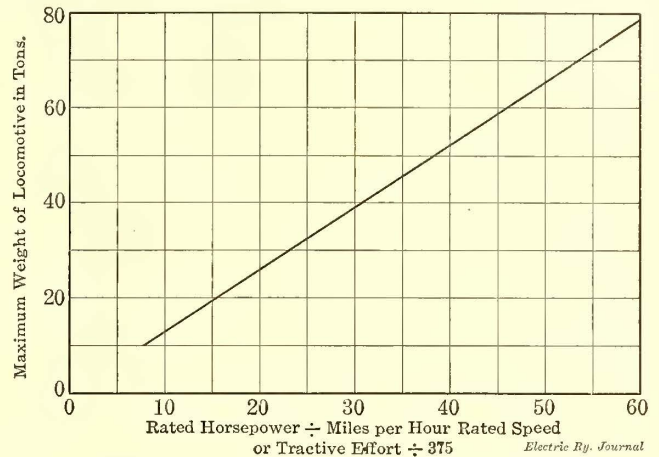


Fig. 1—Electric Locomotives—Curve Showing Maximum Weight of Locomotives for Any Capacity at Any Rated Speed for Any Rated Tractive Power

ENGINEERING CONSIDERATIONS

Granting that a carload freight business is offered or can be built up readily, the railway manager must determine the probable size of trains to be handled, decide upon the speed at which they are to operate and see that the locomotives best adapted to all his conditions are secured. The characteristics of the track, curvature, grades, rail weight, strength of bridges, etc., must be considered. The maxi-

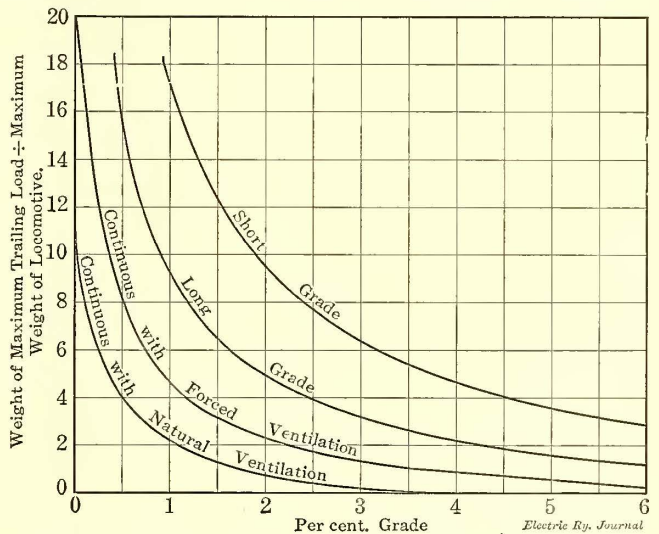


Fig. 2—Electric Locomotives—Curves Showing Number of Times Its Own Weight Which May Be Hauled by Locomotive Under Various Grade Conditions

mum current which the locomotive may safely take from the substations should be known. It is also advisable to know the probable amount of tonnage to be handled daily in each direction and at what points it will originate and be delivered. The locomotive selection may then be made, the basis depending on just what are the limiting features.

The following examples will serve to indicate an approximate method of procedure for several typical cases.

Case I. Assume that a spare equipment of four 60-hp motors is available for locomotive service and that the speed of the equipment at its rated horse-power and volt-

age is 11 m.p.h. What is the maximum weight of locomotive suitable for this equipment? The rating of the locomotive is 240 hp. The rated horse-power divided by the rated speed is $240 \div 11 = 21.8$. From Fig. 1 it will be seen that when the horse-power divided by the rated miles per hour is 21.8 the maximum weight of the locomotive is 28.5 tons.

The next question is; What can this locomotive haul? To answer this definitely requires an exact knowledge of the profile of the road. Suppose that the road in question is practically level except for some overcrossings where there are grades of 2 per cent for 1500 ft. to 2000 ft. The curve for short grades shown in Fig. 2 is used. At 2 per cent this curve shows that the locomotive can haul 9.6 times its own weight, or the maximum trailing load is 9.6×28.5 , which equals 273 tons. The average loaded freight car in many sections is from 35 tons to 40 tons gross weight, so it appears that this locomotive can haul seven or eight average loaded cars.

The above determination of tonnage should be checked against the load which the locomotive can handle continuously under average conditions. The assumption was made that the road was practically level. Assume further that the motors are naturally ventilated; that is, that no

the conditions pertaining to the road in question may be determined as previously described. If it is not sufficiently large more powerful motors may be applied up to the point where the dimensions and weight of the equipment would require a locomotive having a minimum weight of 47 tons.

Case IV. Assume long and short grades as in Case II. What weight of locomotive will be required to handle 500 tons trailing load? Further assume that the nature of the road is such as to be equivalent to a continuous pull up a 0.3 per cent grade. What is the minimum equipment for a locomotive if forced ventilation is used and the free running speed on the level is 12 m.p.h.?

The short-grade curve in Fig. 2 shows that a locomotive will handle 9.6 times its weight on the maximum grade. The continuous forced-ventilation curve of Fig. 2 shows that on a 0.3 per cent grade the locomotive will haul 10.7 times its own weight. Hence the short 2 per cent grade fixes the locomotive weight, and this should be not less than $500 \div 9.6 = 52$ tons. Fig. 4 shows that at 12 m.p.h., with forced ventilation, the minimum equipment should have 7.6 hp per ton. Hence the locomotive should rate $7.6 \times 52 = 395$ hp. The equipment should be four 100-hp

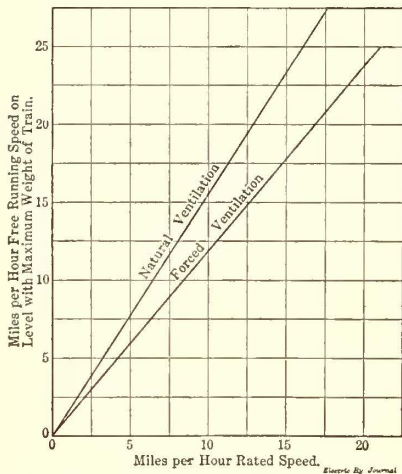


Fig. 3—Curve Showing Relation Between Rated Speed and Free Running Speed on the Level with Maximum Weight of Train

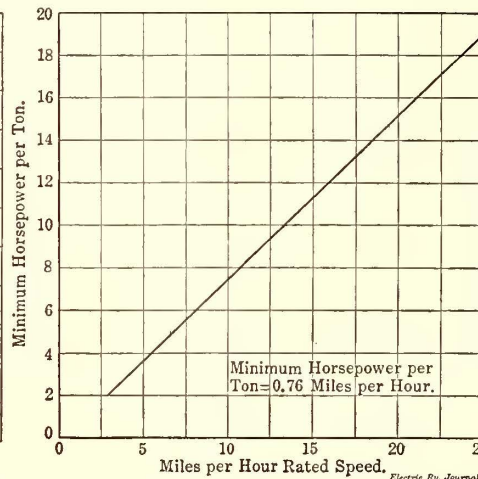


Fig. 4—Curve Showing Minimum Rated Capacity in Horse-Power per Ton of Any Locomotive at Any Rate of Speed

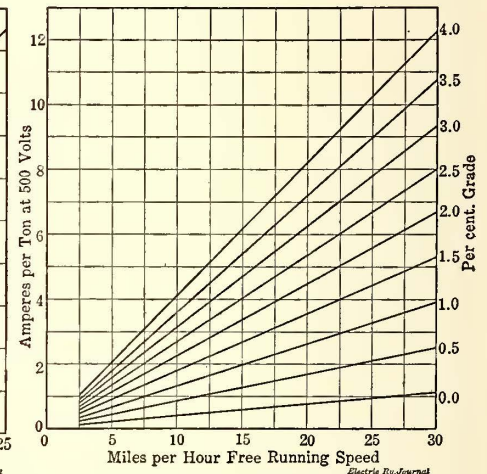


Fig. 5—Curves Showing Current Required by Locomotive for Any Free Running Speed on Various Grades

blowers are used. The curve on Fig. 2 for continuous natural ventilation shows that on a perfectly level grade the locomotive will haul eleven times its own weight, or 313 tons. Hence in this case the short 2 per cent grade is the feature limiting the tonnage. To find the speed running free on the level with the maximum tonnage use Fig. 3. This shows 17 m.p.h.

Case II. Suppose the road is not practically level but is in a rolling country, and that, in addition to the short 2 per cent grades, there are a number of grades of 1.25 per cent, each from 2 miles to 2.5 miles in length. Fig. 2 shows that the maximum trailing load on long grades, of 1.25 per cent is 7.7 times the locomotive weight, or 220 tons. If under these conditions the two ends of the road have nearly the same elevation, the equipment will probably haul the load of 220 tons continuously with natural ventilation. If, however, the ends of the line have considerably different elevations, forced ventilation may have to be applied or else the average load must be reduced below 220 tons.

Case III. Suppose a locomotive with a rated speed of 14 m.p.h. is desired, and that the construction of the roadway limits the weight to 47 tons. What is the minimum equipment for such a locomotive? Fig. 4 shows that at 14 m.p.h. the minimum rated horse-power per ton is 10.6. Hence the rating of this 47-ton locomotive should be not less than 500 hp and the equipment not less than four 125-hp motors. The performance of this equipment under

motors, geared for 10 m.p.h. rated speed and provided with forced ventilation.

USE OF CURVES

Numerous other cases varying the known quantities might be assumed, but the foregoing will sufficiently illustrate the method of using the curves. In making use of these curves it should be remembered that the results are only approximate and may be materially altered by other conditions in any particular case.

The current demand for a freight train depends primarily upon the speed, train weight and grades, and secondarily upon the alignment, average weight of car, frequency and duration of stops, etc. The size of locomotive, speed and train weight should be adjusted to the capacity of substations and line in so far as the demands of the traffic will permit.

The curves on Fig. 5 will be found useful in selecting the maximum weight of train to be handled within any fixed current limit. To illustrate its use, suppose the maximum grade on a road is 3 per cent for 1.5 miles, and it is so located that all the power for climbing must be taken from a 500-amp substation. A speed of 8 m.p.h. is desired on this grade. For such a grade the substation may work at 50 per cent overload; that is, it will deliver 750 amp. Fig. 5 shows that at 8 m.p.h. on a 3 per cent grade 2.5 amp per ton are required. Hence the maximum weight of train at this speed is $750 \div 2.5 = 300$ tons, including locomotive

weight. If 6 m.p.h. were sufficient speed 415-ton trains could be operated. If 12 m.p.h. were desired the train weight would be limited to 200 tons. So the effect of speed on power demand is apparent. On any specific road, therefore, the choice lies between speed and tonnage in a single train.

In making use of these curves it is necessary to remember that the gear ratio must be chosen so that the desired speeds will be obtained. In general, the lowest speed gear which an equipment will take is found most suitable for locomotives. The curves give approximately maximum locomotive weights and minimum capacities which may be used under various conditions. A careful and detailed study of service requirements will often show that the most suitable locomotive varies slightly in weight or capacity from that indicated by these curves.

PUBLICITY AS A FACTOR IN ELECTRIC RAIL-ROADING

BY J. J. ROCKWELL, SPECIAL SERVICE DEPARTMENT M'GRAW PUBLISHING COMPANY

The terms "publicity" and "advertising" are frequently, in fact almost generally, used synonymously. Yet in reality they have very different meanings. The publication of a statement of the earnings of a railway company is publicity, but it is not advertising. Likewise, a printed statement that a certain manufacturer makes certain motors is publicity, but it is not advertising. Here is the same peculiar difference and distinction which exists between taking orders and salesmanship. One is passive, the other is active. One is a follower and supplier of demand, the other is a creator and maker of demand.

I believe that the members of this association and of most other commercial bodies, when they are speaking and thinking of publicity, really mean advertising, because the commercial use of the printed page to-day, generally spoken of as "publicity," is really intended as a means of inducing people to think along certain lines and consequently to take certain action as a result of that line of thought.

No discussion of the term "publicity" can be adequate or instructive without consideration of the meaning of the term "advertising," because really publicity is contained in and is a part of advertising, as advertising is recognized in commerce to-day. To make this perfectly clear, let us refer again to my statement that the publication of a statement of the earnings of a railway company is publicity, not advertising. If the statement of earnings be coupled with certain arguments calling attention to certain points in the statement and showing what the figures indicate, what the success of the road actually and potentially is by reason of the conditions which have developed these figures, showing the effect of these figures on the stockholders' and bondholders' interests, and supplementing the statement by arguments as to the degree of service which is being rendered to the community by the road which is showing these earnings—in short, if the statement is a general argument with a view to making certain people, such as those in the community in which the road operates, think along certain lines and thereby creating a certain attitude toward the railway company which had not previously existed, then this statement becomes advertising.

Here again you see the analogy between publicity and advertising, and taking orders and salesmanship.

If I am a salesman of trolley wheels, and I call at the office of one of you gentlemen, present my card and say that I am selling trolley wheels and nothing more unless at the time of my call you are in the market for trolley wheels and unless you take the initiative and delve into my proposition, thus finding out what I can do for you in the way of quality and price, then I shall neither make a

great impression on you nor cause you in any way to change your methods or actions with regard to the purchase of trolley wheels.

You do not hold in high regard the salesman who calls at your office, presents his card and then quietly sits by waiting for you to buy the goods which he has for sale instead of proceeding to sell them to you. Yet that is precisely what a railway company does when it publishes certain dry facts relative to itself without utilizing the potentiality of those facts for argument, for logic, for persuading traffic to come into a given line and for making the community through which the line runs look upon the activities of the road with a favorable, rather than an unfavorable, eye. Yet such a railroad calls these bald and uninteresting statements advertising and charges them to its advertising account.

WHAT ADVERTISING CAN DO FOR A RAILWAY

Let us, then, consider what publicity, or rather advertising, which is the proper term, can do for a railway company. What is an electric railway? Does it differ essentially from a great manufacturing plant, designed and built to manufacture and sell a certain product that will provide a certain service?

Is it not, in fact, a plant built to manufacture a certain kind of service and to sell that service, at a profit, of course, to the community through which it operates?

Where, then, as a manufacturing and selling proposition, is there any fundamental difference between the railway company and the manufacturing company? And why, then, should not electric railways make use of the power of advertising as do other manufacturers? Recognize first, however, this peculiar difference, namely, that the customer of an electric railway, that is, the community which it serves, controls its destiny to a far greater extent than does the customer of a manufacturing establishment. This is only another way of saying that even to a greater extent than in the case of the manufacturing establishment the railway company must enlist and depend upon the goodwill of its customers, and this desired relation can be developed by the proper kind of advertising.

Think of the story which could be told for the electric railway company. The city road has tremendously increased the business efficiency of this country by its service in shortening the time of traveling between the business man's home and his office. It has made shopping for the women an easy, convenient and comfortable undertaking. It has made possible for city workers the comfort, health and delights of suburban residence. It has worked wonders in the development of cities. It has added to the commerce of cities. It has tremendously developed real estate values and has made possible the development of the city beautiful.

The interurban road, more than any other factor, except perhaps the telephone, has brought comfort, sociability and happiness into the life of the farmer. It has increased the value and productive capacity of his business. It has enabled his children regularly to attend better schools. It has made of him a business man instead of a mere digger of the soil. Yet, contrary to the facts in nearly every other development of this kind, the electric railway has accomplished these results at costs to the community so small that they have represented an actual reduction in the cost of living rather than an increase in it. And for all this wonderful improvement in the efficiency and comfort of life of the community the electric railway has asked only the reward of a fair return on its capital and the investment of sufficient capital to enable it to produce this service.

Moreover, the railway company has not rested on its laurels. It has done everything in its power, as human knowledge grew, to improve the conditions of travel by rebuilding its tracks, by providing greater safety, by installing fenders and wheel guards to protect the pedestrian on the streets, by heating and ventilating its cars, by providing

more substantial car construction and by introducing many other features in operation which increase the comfort of the passengers.

Yet, in spite of all these benefits, we find the people questioning the service, the methods and the ideals of the electric railway company. Instead of a sympathetic co-operation and assistance for the railway company, we find the people complaining and assaulting the methods of the company at every possible turn.

Now, why does this condition exist? In the opinion of this speaker it is simply for the same reason that people generally have an idea that in our modern life murders and outlawry of all kinds have increased and domestic happiness has decreased. They have not; but they seem to have increased because the incidents in which such characteristics have been shown have been given wide publicity for the sake of sensationalism, and the general improved condition of the people in these respects has not been given equal publicity.

THE RAILWAY STORY NOT TOLD

In other words, the story of the railway company has never been properly told. And in the few instances where railways have told their story they have not told it often enough and strongly enough to convince the people of the actual conditions as they exist. In other words, the railways have not efficiently and sufficiently used the modern weapon of advertising. A comparatively few cases of bad management, poor service and greedy methods in railway operation have been seized upon, magnified and given prominence in the eyes of the people to such an extent that some people have come to consider these things as typical of the business of electric railroading. To counteract this force, the electric railway fraternity has depended upon circumstances and the development of conditions, instead of making circumstances and developing conditions by interposing against this current of public thought the whole story, forcefully, strongly and efficiently told, of what electric railways mean to the people and of how many of them are being successfully and serviceably operated for the good of the community.

Advertising does not recognize conditions. It is creative. It makes conditions.

Thus, the electric railway is in the position of the manufacturer of a product (and this condition in the manufacturing field is not exceptional by any means) when the manufacturer says, "I have a better product, a better hat, or better socks, or better shoes, or a better motor, or a better trolley wheel, which I am selling at a price which will save the consumer money; yet the consumer does not buy this in quantities sufficient to make me a profit and he looks askance upon my product." When told that he has not properly informed his field of the advantages, economics and service of his product, he is surprised. He says, "Why, I have told people that I am here in this business, that I have this product and that I can serve them to advantage." Yet, in all these cases, analyses will show that he has not told his story strongly enough, efficiently enough, frankly enough, plainly enough or fully enough, and most of all he has not preached it in season and out of season until his public has come to believe.

Have you ever stopped to think that of all the great developments in civilization which have made for a better and higher human life each was, upon its first announcement and its first trial, and possibly for some long time thereafter, derided, ridiculed and scorned? The telegraph, the telephone, the automobile, the running of railway cars by steam and by electricity—all of these things in their inception and for some time thereafter were held as unbelievable and impossible accomplishments, were treated with laughter and derision, and came at last into their own only through the courage of some brave souls who stuck to the ship and forced the logic of the situation upon the community.

The average man is prone to look upon advertising questioningly, because it takes time to accomplish results, but what thing worth while in this world has ever been accomplished that has not taken time?

POWER OF REPETITION

Tell a man something once in the most convincing manner possible. Does he believe? No, he doubts. Tell him again. He still doubts and presents arguments to justify his doubts. Thereby he puts himself in a position of defense of his original opinion, and human nature is obstinate. But after he has been told long enough and forcefully enough and frequently enough, he must believe because, finding that there is no means of controverting the truth of what has been told him, it is a law of mentality that he must believe; for, as Plato says, "No soul is willingly deprived of the truth."

To produce the situation which he desires and which it is necessary for him to produce to sell his product to the best advantage, the seller must be absolutely honest, frank, open and above-board. He must conceal nothing. He must tell not only the truth, but he must tell the whole truth. So long as he evades or conceals or attempts to hide any one point, just so long will the doubt linger in the mind of the prospective buyer that his product is not all that is claimed for it.

Telling the truth, however, vital as it is to the success of any plan or campaign of advertising, is not the whole problem. I can send you two salesmen selling the same product, both of whom will tell you their story and tell you the actual truth. One of these men you will believe, the other you will not believe; yet both have told the truth. But one has done it in a way that has rung with conviction and brought that conviction to your mind, and after having once accepted his statements as truth you will act in accordance with that conviction.

And even telling the truth in a convincing way is not by any means the whole of advertising.

Commercially speaking, advertising, to be effective, must produce action. It must make persons think along the line that the advertiser desires them to think, and yet the appeal of that line of thought must be so powerful as to induce action in accordance with it.

For instance, the timetable of an interurban railway is generally a truthful statement. But there is nothing in it to produce action on the part of a man or woman who has not already thought of using the trains scheduled in that timetable. The thought, the suggestion of using the cars on that road must be brought to his or her mind in a powerful and appealing manner with good reasons why that kind of transportation should be used, and this, then, will lead to action based on the timetable of the road.

Without the influence, suggestion and inspiration of the thought which produces action advertising is merely publicity.

ADVERTISING AN ELECTRIC RAILWAY

Turn now to the practical application of these general truths for advertising an electric railway

First, of course, the advertising should be directed toward increasing the traffic of the road. Second, it should be directed to telling the people of the community the whole story of the road's operation, its methods, policies, ideals and service, as a means for obtaining and holding the goodwill of the community, a good-will which, as I have pointed out, is of greater moment to a railway company than is the good-will of customers to a manufacturing organization.

Undoubtedly, the most powerful and valuable mediums for the carrying of this kind of advertising are the newspapers published in the community which the road serves. But it seems to me that if I were personally directing the advertising and publicity policies of a railway company I would change some of the methods which now exist.

I would not pay for advertising carried as a concealed

weapon in the guise of news or editorial matter. I would ask the co-operation of the newspapers in that respect only in so far as they felt it to be to the interest and benefit of the community to give it, and in accordance with the exact and truthful conditions of the situation.

If a newspaper adopted an attitude prejudicial to the operation of my road, publishing discolored and essentially untruthful editorials and news items, I would take the attitude of one of the fathers of our country in another situation; that is, I would provide "millions for defense but not one cent for tribute," and I would then use that very newspaper in strong, forceful display advertising over the name of the general manager of the road to controvert the statements and implied untruths published in the reading and editorial columns of that paper. I would not temporize; I would fight.

If a newspaper published colored or essentially untruthful or distorted statements regarding an accident, for instance, I would come out in the advertising columns in that same paper and make a signed statement of the exact facts in the case and appeal to the fairmindedness and justice and sense of fair play of the people of the community.

If I were asking for a franchise or for the right to make certain changes in service, I would boldly come out and show not only where these things were of advantage to the community, but also where they were of advantage, financial or otherwise, to the road which I was serving. I would take the people of my community literally and fully into my confidence, putting myself in the position of a public servant who was serving them for their benefit, but who expected to be rewarded for his labors.

There are few selling organizations which have so much of news interest to their customers as has the electric railway. Every change in our construction, every change or improvement in track, every change or improvement in power, every change which, in any way, makes for efficiency and betterment of the road, is of interest to somebody who uses or should use the service of that road, and it should accordingly be used in the advertising of that road.

It has also been a matter of considerable astonishment to me, as an observer of electric railway promotion methods, that electric railway men seem to overlook that in their own cars they have one of the finest mediums for the distribution of advertising they can possibly secure. It seems to me that if I were operating an electric railway I would constantly have in a rack or racks in convenient places in the cars a supply of booklets or pamphlets dealing with new developments of the road, news items, arguments, ideas, pamphlets detailing the development of service and the work which the road was doing for the benefit of its patrons. And I would not rest at that. I would utilize the space immediately above this rack for an efficiency display card briefing the information that was contained in these pamphlets or booklets and suggesting that the passenger should take one and read it either on the car or at his home.

ASSOCIATED ADVERTISING

As another suggestion of practical value, I would lay before this association the question of the electric railways of a given district, a state, for instance, getting together and agreeing upon an associated plan of advertising the service and functions and possibilities of electric railways in that district or state; not with a view to promoting traffic for any particular road, but with a view to promoting traffic for all roads, and then each road would be in a position to back this up locally in its own community with its own advertising, availing itself of the thought and sentiment aroused by the general associated campaign.

In my opinion there is no greater problem confronting the electric railway officials of this country to-day than this problem of advertising which will properly tell their story to the people of the communities they serve, not only as a means of securing and holding the good-will of these com-

munities and their sympathetic co-operation with the activities of the road, but also as a means and a very definite means of promoting traffic and increasing the revenues of the road.

With campaigns of this kind properly carried on, with the right kind of thought and care and brains and inspiration put into them; with skilful, logical and efficient advertising methods used, using all of those mediums which have a valuable place in reaching the attention and consideration of the people, and with a sufficient allowance for time in which the thought and sentiment and opinions of the communities could be developed and molded, I am certain that the results would be such as tremendously to increase the revenues and advance the position of the electric railways of this country.

TRAFFIC

BY F. D. NORVIEL, GENERAL PASSENGER AND FREIGHT AGENT
INDIANA UNION TRACTION COMPANY

In 1903 when the writer became connected with one of the electric railways entering Indianapolis no electric line in Indiana had a well-defined traffic department; no tickets were sold and no baggage was handled except as freight. No well-defined system was in use for handling freight, although some freight was being carried by the lines entering Indianapolis. Freight traffic was considered more of an evil forced on the electric railways than a business to be solicited. There are some lines to-day that still view it in this light. At about this time the electric lines began to consolidate and construct connecting links. The whole plan for handling traffic then required reconstruction. First came the making of local division tariffs, both passenger and freight; then the combining of these into interdivision tariffs, and finally an interline passenger tariff covering a wide territory.

Nearly all of the early traction lines had no data for computing intelligently the cost of handling passengers, and assumed that a rate of 1 cent per mile would be adequate to pay operating expenses and provide for the upkeep of the lines as they were constructed. This low rate was very early found to be a mistake, and the companies were soon casting about for some means of increasing their revenues. There may have been an unseen wisdom in these low rates of fare, as they quickly promoted new business. The need of more revenue was imperative, and only very few inter-urban lines are operated to-day with such a low rate of fare. In most cases the increase in passenger rates has been from 75 per cent to 100 per cent, but even a rate of 2 cents is inadequate to maintain an hourly schedule in sparsely settled districts. With few exceptions the lines in what is now known as the Central Electric Traffic Association's territory are on a basis of 2 cents per mile, and the new interline passenger tariff which went into effect on Oct. 1, 1911, naming rates between cities and towns on more than 3000 miles of electric railway is compiled on the basis of 2 cents per mile, short-line mileage.

The mistake made on passenger business was not repeated in formulating freight tariffs. The traction lines have not advanced so far in the handling of freight as they have in the transportation of passengers. No attempt has been made by the traction lines to initiate rates, and for the most part steam road classifications and rates have been adopted. This would seem to be the logical method to follow, but the writer is of the opinion that the rates now in force for the transportation of freight commodities are not commensurate with the service rendered, and that the time is not far distant when the individual electric railways will see the necessity of advancing their rates and placing them on a uniform mileage basis. The rate scale which was submitted late in the fall of 1910 would increase existing freight earnings approximately 15 per cent and would give

a uniform rate as between all points the same as now obtains in passenger traffic. Some of the steam roads operate under what is known as the Ohio scale, which provides very low class rates for short distances. Others make rates apparently without any uniform basis, suiting special traffic conditions regardless of the distance. A uniform mileage basis would remedy these discrepancies, and the plan should be put into effect before the legislatures of the several states pass laws prohibiting an increase in this direction. The better delivery given by electric railways would hold a large part of the business now carried, and the revenue at the higher rates would equal that obtained at present, although the tonnage might be less.

In a general way the handling of traffic on a railroad is a matter of teamwork. The general manager has many fine questions to decide in the demands coming from the different heads. He must decide just how large an expense is justified to bring in the revenues which he has reason to believe will be produced for the ensuing year. Each head of a department must thoroughly understand the conditions under which he has to perform his duties. He must accept the equipment with which the road is supplied. The traffic man who secures the business must make the very best out of what he has to give to the patrons of the road. By teamwork much can be accomplished in keeping the public satisfied with what the company is able to give it.

Cars must be kept clean; this can be done even with poor equipment. They must be kept in as good running order as the condition of the machinery and equipment will permit, to the end that there shall be few delays. Every effort should be toward the maintenance of schedules. Above all else, courtesy, not only to the traveling public, but between individual employees, is one of the best possible means of retaining business once secured.

PASSENGER TRAFFIC

Regular passenger business comprises the approximately regular travel which has been built up between town and town, or between two business centers, or even from country stops to nearby cities. Little can be done to increase this traffic. Where competition exists a trivial cause may drive a greater or less number of these regular patrons away from one road to another. People are inclined to spend their money where they feel they are getting the greatest returns, which include comfort in traveling, promptness in arriving at destination and a feeling of safety while making the trip; and it seems to me that each and all of these weapons are in our hands if we see fit to use them.

The business of the commercial traveler is not wholly transient, but to a certain extent is different from the regular passenger traffic. The commercial traveler, as a rule, is burdened with more or less baggage in the way of samples. This may be hand baggage, sample cases or even large sample trunks. He sets out with the definite purpose of making certain towns or covering certain territory in a day. The possibility of accomplishing this depends largely upon the transportation lines over which he is to travel. There is no question that the interurban lines make it possible for the traveling man to cover a vastly larger field in the same length of time than he could possibly do by using the steam roads, but unless his samples are moved promptly and there is a reasonable promptness in all schedules the traveler's prearranged plans often may be interrupted. Should this be the fault of the electric line and there be a competing steam line on which he can make the longer trips of his journey he is very apt to take away from the electric line the most profitable part of his patronage. There is no more labor involved in the handling of baggage for a journey 100 miles long than there is for a journey of 2 miles, yet the passenger revenue in one case would approximate \$2 and in the other case 5 cents. To a certain extent securing long-haul business depends on the way the same passenger is treated for short hauls.

A class of business which has great opportunities for the electric lines is excursion business. Except for extremely long hauls the interurban lines afford ideal facilities for this class of business, the revenue from which may be considered practically all profit. Its volume depends largely on the attraction advertised at the end of the trip, the manner in which it is advertised and the manner in which the people are handled. Nearly all interurban roads have special-car tariffs and cater to a traffic practically unknown to the steam roads. The users of special cars are small parties traveling between two points, such as lodges, Sunday schools, teachers, etc. The rate for this class of travel has increased until few lines handle passengers on special cars for less than 1½ cents per mile, with a guarantee of fifty or more people. The ordinary excursion business is solicited at a low rate open to all and advertised by the interurban line as a means of promoting travel to a large city, an amusement or a summer resort. As these open excursion rates are rarely ever made except during the summer months, weather conditions have much to do with the patronage. It has become the general custom for all steam lines to operate such excursions to some point on their lines every Sunday, and the interurban lines are forced to run similar excursions in order to secure their share of this class of travel on a day when many people take a trip of some kind.

Commuter travel, which is sometimes handled at low rates of fare, may be included in the company's regular business. Another source of passenger revenue which is small in itself is handling school children during the school term. These rides, as a rule, are short and are furnished at a low rate of fare.

Advertising is the first essential in securing any class of traffic. A good railroad map is more highly prized by the traveling public, and will go further toward fixing a road in the minds of travelers, than any other one kind of advertising. Next follows a carefully prepared timetable folder giving all information which may be of value to the public, not only as to the time of trains, but other information in regard to the handling of baggage, stop-over privileges (if any) on tickets, conditions under which certain packages or bundles may be carried, etc. Timetables should show the trains on each division and the times of connecting trains. Special timetables should be prepared giving the running time of through trains as well as condensed timetables of all connecting lines which may in any way assist a traveler in planning routes. Timetables for individual divisions prepared in the form of cards showing the time of trains at country stops and the trains which make these stops are a good form of advertising for country patrons.

For reaching commercial travelers, recognized railroad guides are the best possible advertising medium. The Central Electric Traffic Association recently concluded arrangements with the *Central States Guide* to insert the timetables of all interurban lines in the territory covered by the *Guide*. Nearly every commercial traveler in Central Electric Traffic Association territory carries this guide with him on his trips.

Another source of revenue on passenger trains is package consignments. The interurban service in this respect seems to have fulfilled a long-felt want in the hourly service rendered, which makes possible the forwarding of small package freight between nearby points at any hour of the day. The usual compensation for such service is slightly lower than the old-line express companies charge for their pick-up and delivery service, but is higher than the common freight rates between the same two points. The facilities for handling this business are not the best and yet it is one that is being continually forced on the electric roads in increasing volume.

In the matter of passenger tariffs the interurban lines are as far advanced as their steam road competitors. The passenger tariffs, baggage tariffs, mileage tariffs and joint

interline passenger tariffs of the majority of interurban lines are as comprehensive as it is possible to construct, considering the class of agents employed by these roads. No provisions have as yet been made to meet the tourist, home-coming or home-seeker's rates put in effect by all steam lines, and an effort should be made by the Central Electric Traffic Association to give the interurban lines the same advantage in this respect as the steam roads enjoy.

FREIGHT TRAFFIC

The revenue derived from the freight traffic on interurban lines is only a small fraction of what it is possible to secure from this source. Almost without exception, however, the freight business handled by interurban lines is up to the limit of the equipment and terminal facilities. In many instances the roads are handling more freight than they are warranted in undertaking to handle, if they are to give service which is satisfactory to the consignor and consignee. The freight business requires warehouses, storage tracks and yards for handling teams and cars. Few of the interurban lines have ever provided these accommodations.

The small train units running hither and thither over the network of lines in the Central Electric Traffic Association's territory represent the most expeditious means of handling freight that has ever been conceived. A car is loaded and within thirty minutes after it is loaded it can be on its way to a destination 10, 50 or 100 miles distant. It runs at a high rate of speed, and makes a delivery 100 miles away in less time than it takes a steam road, with its cumbersome billing methods, to get the cars ready for the switching engine. Manufacturers and merchants of all classes are looking for the most rapid delivery of their goods and recognize in the electric railroad the solution of this problem. With adequate yard facilities, freight houses and equipment the interurban lines could increase their freight business to probably ten times the present volume within an inconceivably short period of time.

Most roads have prepared comprehensive local tariffs covering freight rates on their own lines, and probably 30 per cent of the roads have interline freight tariffs in conjunction with nearby connecting lines. Only a small part of the electric roads, however, have interline tariffs covering a wide territory. A few of the interurban lines have limited interchange contracts with the steam roads, on the basis of a switching charge and not a through traffic agreement. There are exceptions, however. The Grand Rapids, Holland & Chicago and the Illinois Traction System lines have consummated arrangements with some of the steam lines and have purchased a number of ordinary freight cars to be used in this class of service. Until the physical characteristics of interurban lines are greatly bettered, a general traffic arrangement would not be advisable with any steam road. As the needs arise the steam roads will be quick to see the advantage of interchange and will extend their service to the electric lines where the latter can be of any real benefit to both.

The same plan of courtesy and fair dealing with the public should be exercised in handling freight traffic as is done with passenger traffic. Never promise anything which cannot be accomplished. All of the attractive points of the service should be presented in attractive literature sent to prospective patrons. The best form of advertising for freight business is a shippers' guide, which may be prepared for each individual station giving the information most desired by the business men at that particular point.

Agents must be educated to treat the public in the same manner that the successful merchant treats the prospective buyer who comes into his store. Proper attention should be given to all claims and there should be no unnecessary delays in the settlement of claims. Nothing so irritates a shipper filing a claim as to have the matter drag along month after month with no apparent effort made toward settling it. A shipper will be better satisfied, if the claim lacks merit, to have it turned down without delay.

Another phase of the freight situation that should receive attention is the safeguarding against underweights and wrong classification, as is done by the steam railroads, which have a well-equipped freight-weighing and inspection bureau. This bureau has authority to look into and correct the evils which are constantly cropping out on consignments offered for shipment in the way of wrong weights and bad inspection. A box of groceries may be sent out as a box of "canned goods," taking a lower classification, and this same shipment may be shown on the shipping instructions as weighing 50 lb., whereas its true weight is 75 lb., representing a further loss of $33\frac{1}{3}$ per cent in revenue. While it may not be possible on account of the expense to go as far as the steam lines have done, it does seem that a bureau could be inaugurated through our Central Electric Railway Association, with a few inspectors who could vastly better these conditions.

More attention should be given to exceptions to the official classification. The interurban lines have only a few exceptions, while the steam lines have many. What may be easily handled by one road may in turn be difficult for another road. Interurban lines should get closer together in these matters than the steam railroads. The same argument applies to commodity rates. Conditions come up which sometimes seemingly make it imperative that a lower rate be placed on some commodity between certain points than is applied over the rest of the road. When the time comes for handling grain and grain products in car-load lots the question of seaboard rates, proportionals, percentage points, etc., must be adjusted.

In closing the discussion of freight traffic it will not be amiss to cite a few long freight runs on interurban lines. A freight train leaves Indianapolis six days a week at 6 p. m., making a delivery in Ft. Wayne at 11:30 p. m. and by connections laying down freight in Toledo, Ohio, at 9 a. m. the next day. Another train leaves Indianapolis at 7 p. m., making delivery at South Bend, Ind., at 7 a. m. the next morning, and at St. Joseph, Mich., before noon of the next day. For quick service the steam roads cannot approach this schedule.

Some mention should be made of the work of the Central Electric Traffic Association, which has been in existence for the past three years. To-day the Central Electric Traffic Association stands head and shoulders above all other traffic associations of electric railways in the United States. It is recognized by similar organizations of the steam roads, between which details of proceedings are exchanged, and is doing more than any other one thing to place the electric railways before the people in a proper light. That the managers of the railroads have loyally supported this organization goes without question, or it could not be where it is to-day. They should continue the same earnest co-operation in order that the greatest future good may be secured.

PLANS OF THE COMMITTEE ON EDUCATION

The committee on education of the American Electric Railway Association is planning to conduct an educational course somewhat similar to that conducted experimentally last summer, if it should receive sufficient encouragement financially from member companies. The committee estimates that the maximum expense of conducting such a course is \$40 per student per year, and that of this amount \$5 should be contributed by the student. It also believes that the maximum number of students which can properly be cared for during 1912, under its present plans, is 100. The committee was to hold a meeting in New York on Nov. 24 to discuss in detail its plans for the coming year.

An electric railway is to be built in Hungary which will operate on direct current at 1650 volts.

Meeting of Engineering Association Executive Committee

Several Questions of General Policy of the Association Were Discussed and Subjects Were Assigned to All the Standing and Special Committees for Investigation During the Coming Year

The executive committee of the American Electric Railway Engineering Association held a meeting at the association office in New York on Nov. 17 and 18, 1911. Those present were E. O. Ackerman, Columbus, Ohio; E. J. Burdick, Detroit, Mich.; B. F. Wood, Altoona, Pa.; L. P. Crecelius, Cleveland, Ohio; John Lindall, Boston, Mass.; J. H. Hanna, Washington, D. C.; Martin Schreiber, Newark, N. J.; H. H. Adams, New York City, and Norman Litchfield, New York City.

Secretary Litchfield read the minutes of the last meeting of the executive committee, which was held in Atlantic City, N. J., Oct. 9, 1911. These were approved. The secretary then read the minutes of the meeting of the committee on standards, held in New York Nov. 6 and 7, 1911. It was decided to consider the recommendations made by that committee to the executive committee when the selection of subjects was taken up.

DISCUSSION ON ASSOCIATION POLICY

E. O. Ackerman, the new president of the Engineering Association, stated that the meeting of the executive committee had been called to define the policy of the association for the coming year, to select subjects for committee work, to decide on the formation of special committees and to consider nominations for committee appointments.

Secretary Litchfield presented a number of questions of policy on which he requested the committee to take action. The most important question in his opinion was the necessity of having the Engineering Association keep closely in touch with the work of the state and sectional associations, which are obliged to act promptly to meet local conditions and whose work, therefore, is usually done ahead of that of the national association. He referred particularly to the work of the standardization committee of the Central Electric Railway Association, which had already adopted standards for interurban couplers. The action of the Street Railway Association of the State of New York in appointing a committee to draft specifications for the joint use of poles was another example of a step taken by a sectional association to meet an immediate necessity. As one solution of the problem, Mr. Litchfield thought that in making up the committee assignments some arrangement might possibly be made whereby the state and sectional associations would have representation on committees of the Engineering Association which were carrying on lines of work affecting the special conditions in any locality. He pointed out that this subject had been discussed at the meeting of the executive committee held in Atlantic City in October, at which time the consensus of opinion seemed to be that the American Association could bring about the desired co-operation with sectional associations more effectively than the Engineering Association could, as the former was a body of railway companies some of which were members of both the national and the sectional associations.

Mr. Ackerman called attention to the embarrassing position of companies which were members of two associations which had adopted different standards. He strongly urged harmonizing, as far as possible, the standards of all local associations with those of the Engineering Association.

Mr. Burdick said that the interurban roads operating in the territory of the Central Electric Railway Association were rapidly expanding their through routes and joint operation. This made immediate standardization of couplers and train connections imperative.

Mr. Wood suggested that the secretary should keep all other associations and societies which were working along the same or allied lines as the Engineering Association informed of the work which the Engineering Association was doing.

On motion the secretary was instructed to attend, as a representative of the Engineering Association, the meetings of such other associations as the president may designate, and in attending such meetings to endeavor to further the co-operation of the sectional associations in the work of the Engineering Association. The secretary was especially instructed to inform the secretary of the Central Electric Railway Association that he would be present at the annual meeting of that association to be held in January, 1912. The president was authorized to appoint a substitute representative in case the secretary could not attend this meeting.

The second question of policy presented by the secretary was the relations of the Engineering Association with the American Society for Testing Materials and the American Railway Engineering Association, particularly in the matter of representation on joint committees. He thought it was advisable, where a subject of committee investigation had been undertaken jointly with another association, to have the members of the committee continued in office until the work assigned had been completed. In this way it would not be necessary for new committee members to duplicate any part of the work which had already been done by their predecessors. A motion was made that the chairmen of all standing committees be requested to follow as far as practicable the policy of continuing in office a majority of the members of all sub-committees which were working in conjunction with committees of other associations. The motion was carried.

The third question of policy was future action in the adoption of standards. Mr. Litchfield pointed out that the new rules of procedure for the committee on standards had proved very satisfactory, but he thought that extreme caution was necessary in formulating proposed standards and recommended practices. He thought it would be desirable to incorporate in the instructions to chairmen of committees a warning against hasty and ill-advised proposals of standards. In his opinion one year's work by a committee was seldom sufficient to formulate a satisfactory standard or recommended practice. The chairman of each committee should be very sure that its recommendations as to standards are exactly right before presenting them.

Mr. Hanna called attention to the desirability of submitting all proposed standards to the committee on standards at its meeting before the convention, so that the committee would not be prejudiced in any way by the action of the convention in approving or disapproving such standards.

Mr. Ackerman next referred to the increasing volume of convention work. It was impossible to give all of the committee reports the consideration which they deserved owing to the limitations of time in the meetings. Several remedies had been suggested. One was to sectionalize the meetings so that two or more could be carried on simultaneously and those members of the association who were interested in only one or two reports could attend the meetings at which these reports were presented, while other reports in which they were not interested were being presented at an-

other meeting held at the same time. The possibility of holding evening sessions had also been suggested. It was particularly desirable that the report of the committee on standards receive careful consideration by the entire membership of the association present at the convention, and one plan which had been proposed was to have this report presented at an evening session which would be preceded by an informal dinner.

Mr. Schreiber was opposed to holding an evening session and suggested as an alternative the addition of one more afternoon session. He thought the best way to accelerate the work of the convention would be to prevent waste of time in the meetings. To this end he suggested that the committee reports be reduced to definite recommendations accompanied by descriptive appendices and that the discussions be confined to the recommendations.

Mr. Wood pointed out that the time of the convention was worth probably more than \$1,000 an hour, and he was strongly in favor of improving the character of the discussions and eliminating all superfluous remarks which were of little value to the members of the association. He thought that the best way to do this would be to invite certain members who were well qualified to discuss reports to prepare written discussions in advance of the meeting. In order to do this it would be necessary for the secretary to have some knowledge of the qualifications and experiences of individual members.

Mr. Litchfield thought that the most effective method of obtaining the names of members best qualified to discuss the committee reports would be to request the chairman of each committee to submit a list of names of members who should be invited to discuss the report. It would be desirable also to send out with the advance papers a letter requesting members to prepare any discussion of the reports in writing and to submit such discussion to the secretary in advance of the meeting at which the report was to be presented.

As it was considered impossible to reach a definite conclusion with regard to afternoon or evening sessions so far in advance of the next convention, no action was taken in this matter, but a motion was passed that the executive committee considered it advisable to set aside one entire session to consider the report of the committee on standards.

Mr. Schreiber proposed that the executive committee appoint sub-committees of subjects, publications and finance. A motion was passed that the president appoint three members of the executive committee as a committee on publications to advise with the secretary when requested by him on any matters relating to reports and other printed matter of the association about which the secretary was in doubt.

A motion was also passed authorizing the president to appoint immediately after the convention a committee of three members of the executive committee to select subjects for committee work during the following year, this committee to make its report at the first meeting of the executive committee following the convention.

The next subject considered was membership in the association. Several of the members of the executive committee stated that there were strong objections to the use of the term "associate member," as in nearly all other engineering societies the term "associate member" referred to an inferior class of membership. Mr. Schreiber pointed out in this connection that the present constitution and by-laws of the Engineering Association were unsatisfactory in many respects, and on motion the president was authorized to appoint three members of the executive committee as a special committee to investigate the present constitution and recommend such changes as were deemed advisable to the American Association. This committee will consider especially the question of classes and qualifications for membership.

SUBJECTS

The selection of subjects to be considered by the stand-

ing committees during the coming year was then begun. The following subjects were approved and assigned to the different committees:

Committee on Equipment.—Specifications for high-grade rubber insulating compound; to be considered by joint sub-committees of committees on equipment and power distribution. Heat-treated axles; revision of the specifications approved by the 1911 convention and consideration of the points raised in the discussion by the committee on standards; assigned to same sub-committee as last year. Standard dimensions of steel wheels of other sizes than those already adopted as standard. Specifications for wrought-iron bars. Self-propelled cars; résumé of experience with actual installation up to date. Couplers and end connections for interurban cars; the committee will confer with the committee on heavy electric traction and will also co-operate if possible with committees of the Central Electric Railway Association and the American Railway Association. Causes of squealing of steel wheels. Investigate end wear of journals. Heat-treated pinions and gears. Specifications for cold-rolled and forged carbon steel axles.

Committee on Way Matters.—Continue work on the design of sections for 9-in. grooved girder and guard rail and 7-in. grooved girder and guard rail; also the design of rail joints for these sections. Proper ballast for track and paved streets. Use of titanium, nickel and chromium alloys in steel for rails; referred to sub-committee on steel for rails. Rules for employees of way department; referred back by the committee on standards. (After considerable discussion a motion was passed that the executive committee instruct the committee on standards that rules of a general nature such as the rules for the government of employees of the way department and rules for fire protection will not be adopted as recommended practice or standard of the association, but that these rules be printed in the proceedings and the attention of the American Association called to them, as it is desirable that they be considered as a guide.)

Engineering Accounting.—This joint committee will be continued to carry on its work on the subject of inter-department charges.

Power Generation.—In addition to the topics recommended for further investigation by the 1911 committee on power generation, the 1912 committee will have the following subjects assigned to it for investigation: Chemical laboratory practice in connection with power-plant operation. Peak loads. Boiler settings and furnace design with special reference to power plants built on the common main or unit plan basis.

Committee on Power Distribution.—The following subjects were assigned to this committee for special investigation during the year: Concrete, latticed and tubular steel poles, including setting and iron poles with or without concrete basis. Specifications for joint use of poles. Revision of specifications for overhead crossings with special reference to objections raised to these specifications at the meeting of the committee on standards. Specifications for high-grade, rubber insulating compound; to be considered jointly with committee on equipment. In addition to these subjects the following alternative subjects were assigned: Standardization of overhead line material. Revision of copper wire table. Stranding table for cables. Specifications for crossings of foreign wires over electric railway wires. Specifications for trolley contact wire crossings over steam railroads.

Committee on Buildings and Structures.—General form of contracts and specifications for electric railway structures. Review of modern carhouse construction with recommendations. Waiting stations and shelters for electric railroads.

Committee on Heavy Electric Traction.—Permanent way construction lines with reference to third-rail clearances; to be considered in conjunction with committees of the

American Railway Association and the American Railway Engineering Association. Power consumption of trains drawn by electric locomotives.

Joint Committee on Block Signals.—This committee will continue the same subject as last year. The advisability of increasing the size of this committee by appointing not more than two new members from the Engineering and Transportation & Traffic associations will be taken up with the executive committee of the Transportation & Traffic Association, and, if approved, the enlargement of the committee will be left to the discretion of the chairman.

Committee on Education of Engineering Apprentices.—This committee will continue its consideration of the same subject assigned to it last year.

GENERAL BUSINESS

On motion it was decided to print the standards and recommended practices of the association in a separate pamphlet to be distributed to the members of the association.

Mr. Litchfield and Mr. Schreiber were appointed a committee of two to draw up a resolution suggesting ways and means of giving more publicity to the work of the Engineering Association and its value to member companies, this resolution to be submitted to the executive committee of the American Association at its next meeting.

There being no further business, the meeting then adjourned.

DECISION IN THIRD AVENUE REORGANIZATION CASE

A decision was rendered on Nov. 21 by the Court of Appeals at Albany in the case in which the New York Public Service Commission, First District, disapproved the plan of reorganization for the Third Avenue Railroad property. The court reverses the decision of the commission.

The committee of holders of bonds of the Third Avenue Railroad announces that it hopes to end the receivership and turn the property over to the new company by Jan. 1. Official notices have been issued by James N. Wallace, chairman of the committee of bondholders, stating that the Central Trust Company, as syndicate manager, has agreed to take the place of non-assenting stockholders and guarantees \$7,200,000 for reorganization purposes. Out of the total of \$37,560,000 consolidated mortgage bonds \$37,258,000 have been deposited. The other bondholders have until Dec. 23 to deposit their holdings under the plan. Stockholders may participate in the plan by depositing their certificates before Dec. 23 and paying in three instalments an assessment of \$45 per share.

Chief Judge Cullen, who wrote the opinion for the Court of Appeals, says that the statutory provisions for reorganization of corporations embodied in Sections 9 to 12 of the stock corporation law have not been repealed by implication as to railroad corporations by the provisions of the public service commissions law. The decision says:

"We think these statutes are not inconsistent; that on the one hand the enactment of the public service commissions law did not repeal the provisions of the stock corporation law for the reorganization of the property and franchises of corporations sold under foreclosure, and on the other hand that the provisions of the stock corporation law do not withdraw corporations formed on reorganizations from compliance with Section 55 of the public service commissions law. In other words, the two statutes must be construed together, though parts of the later statute may be inapplicable to cases arising under the earlier."

The court also holds that it is not necessary for the reorganized corporation first to obtain permission and approval of the commission under Section 53 of the public service commissions law before it may exercise and enjoy any of the rights, privileges and franchises of the predecessor railroad sold under foreclosure which at the time of such sale belonged to or were vested in the corporation

last owning the property sold, or its receiver. Nor is it necessary for such company first to obtain the approval of the commission under Section 54 of such law to enable lawful transfer to it of the franchises and of any right to or under any franchise to own or operate a railroad or street railroad sold under foreclosure which at the time of such sale belonged to or were vested in the corporation last owning the property or its receivers. Nor must it first obtain such consent to purchase, acquire, take or hold any part of the capital stock of any street railroad corporation organized or existing under or by virtue of the laws of this State, sold under foreclosure, which at the time of such sale belonged to or was duly vested in the corporation last owning the property sold, or its receiver.

It is further held by the court, as to the question arising under Section 55 of the public service commission law, and Sections 9 and 10 of the stock corporation law, relative to the reorganization of corporations, that the commission was not justified in refusing the consent applied for because the value of the mortgaged property and the amount of new capital to be invested were less than the amount of securities to be issued by the corporation.

The court adds: "The requirement of the statute is that the issue of the securities shall be necessary for the acquisition of the property, and although as a general rule under this requirement the securities should not be authorized except where the value of the property is equal to the amount of securities issued there may be exceptions to the rule. One is found in the statute itself.

"Thus, in the case of a merger the limit of the amount of stock of a corporation is dependent, not on the value of its property, but on the stock outstanding of the constituent corporations prior to the merger. We think the same rule is applicable to the case of a corporation formed on the reorganization of a foreclosed railroad.

"We do not say that in the reorganization of a railroad the new corporation is authorized to issue securities in excess of those of the company to whose property and franchises it has succeeded and the new money or property that may be put in the enterprise. Such a plan would be plainly inconsistent with the spirit of the public service commissions laws against the issue of 'watered' stock or bonds, but up to the limit we have named the new corporation has the right to issue securities. The determination of the commission to the contrary was therefore erroneous."

STATEMENT OF COMMISSIONER MALTBIE

Commissioner Maltbie made the following statement in reference to the decision:

"If I am correctly informed as to the decision, the Public Service Commission is stripped of all control over new companies growing out of reorganization. Every street railway corporation in Manhattan now in receivers' hands may reorganize and issue securities to the full amount of its present overcapitalization, thus perpetuating the financial conditions which have been the subject of so much consideration and to remedy which the public service commissions law was formulated. It also means that any corporation may waste its capital, may declare dividends out of earnings while allowing its plant to deteriorate, may go into receivers' hands, and after reorganization may issue new stock and new bonds running for a long period and with the par value of the old. Yet the Public Service Commission is helpless to prevent such a result."

MR. WHITRIDGE ON THE DECISION

F. N. Whitridge, receiver of the Third Avenue Railroad, said regarding the decision:

"I still concede to the Public Service Commission as much common sense as a hen. It is an extraordinary body of men. I would not have it inferred that I consider them dishonest. Every one of them is as honest as a man can be who keeps scrapbooks filled with newspaper clippings about himself.

"I consider the commission funny, but it has been a

serious concern to the security holders of the Third Avenue road. It has cost them approximately \$400,000, it has held up the reorganization of the company for two years and has put the property owners to a large and useless expenditure.

"As receiver I have been obliged to engage in nine suits with the commission. The commission has lost them all.

"I presume the reorganization plan will now soon be effected. In my opinion it is a conservative plan. It cuts down the fixed charges by \$1,000,000 a year, reduces the aggregate capitalization by \$6,000,000 and furnishes \$7,000,000 new money for working capital, maintenance and equipment.

"The Court of Appeals has not decided that the Public Service Commission should be deprived of any powers, but has prevented it from usurping powers it was not fit to use."

EFFECT ON METROPOLITAN REORGANIZATION

Regarding the effect of the decision Guy E. Tripp, chairman of the joint committee of bondholders of the Metropolitan Street Railway, said: "The Court of Appeals has pointed out a way by which the Metropolitan company can reorganize. Consequently we shall amend our plan to conform with the decision of the court and shall submit the amended reorganization plan to the Public Service Commission for its approval along the lines laid down by the Court of Appeals."

In a subsequent statement Mr. Tripp said that the reorganization committee had no intention of taking advantage of the recent decision in the Third Avenue case to increase its capitalization. He added that the committee intended to adhere strictly to its original plan for the distribution of the securities among bondholders, and that it would make only such changes as might be necessary to obtain new capital on the best terms.

OPERATION UNDER CLEVELAND ORDINANCE

At a recent convention of the League of American Municipalities, held at Atlanta, Ga., Leslie C. Smith, superintendent water department, city of Cleveland, referred to the operation of the Cleveland Railway under the existing franchise ordinance. He spoke of the condition of the ordinance which prevents any possible additional return for increased efficiency of management, saying, in part:

"It is quite evident that since the amount allowed by the city to the company for expenditures in operation is definitely fixed and the items to be included are enumerated, any excess in such operation expense must come from some other source. It is equally apparent that the first expenditure from the interest fund established will be the 6 per cent allowed the stockholders upon their investment. To maintain this latter amount intact it seems thoroughly axiomatic that the interest fund will not be depleted below an amount necessary to secure such dividends. The answer is then settled that if the return for operating expenses allowed is insufficient to guarantee necessary expenditures inferior service must of necessity arise.

"This brings us back to one of the original generalities that the end to be attained must be adequate service commensurate with reasonable cost. Such a condition places the people face to face with the choice between a minimum rate of fare with questionable service or a higher rate of fare with improved service. The investment of this company is entirely in its stockholders' hands. Naturally enough and rightly enough its management's first consideration will be the protection of the stockholders' interests. No one has a right to expect any company so owned to exert itself to meet a public demand in general service at a loss to itself, nor does this imply that the corporation will not act fairly. The ultimate condition of ownership by the city seems rather to be a forced conclusion than an optional one. It is the removal of the speculative possibility and in-

creased returns for ingenuity and achievement which will coerce the company into a willingness to sell. Few investors are willing to assume responsibility and thus face the possibility of loss when there is no commensurate possibility of gain.

"The weakness apparent in the franchise stipulation that the city may purchase the property at the expiration of the franchise upon the appraisal of its physical value rather than its capital value it is now sought to rectify by an amendment subject to popular approval. The capital value was fixed by arbitration and, since this cannot be increased except by the city's consent, it seems only just that at the expiration of the grant the city shall pay an equivalent amount therefor, if it chooses to assume the ownership of the system."

INCREASE IN FARES BY HUDSON & MANHATTAN RAILROAD

Formal notice has been issued by the Hudson & Manhattan Railroad that, beginning on Dec. 24, the rate of fare between points in New Jersey and uptown New York will be increased from 5 cents to 7 cents. The present rate of 5 cents will be continued between New Jersey points and downtown New York and for local trips in New Jersey and for local trips in New York. In his statement to the public W. G. McAdoo, the president, says that with the present uniform fare the company has not earned fixed charges and taxes. Mr. McAdoo says, in part:

"On Feb. 26, 1908, the first tunnels under the Hudson River were opened to public use. Twenty-six years had elapsed since the work was begun in 1882. Two disastrous failures had occurred and many lives had been lost in the attempt to master the extraordinary difficulties involved.

"Before the tunnels were opened the rate of fare was seriously discussed by the company's directors. They believed that at least the same fare as that charged by the ferry and the trolley, namely, 8 cents, should be paid for the superior tunnel service.

"After long consideration, however, it was determined to try a uniform rate of 5 cents (although the company had the right at that time to make it 8 cents) with the hope that sufficient traffic would be developed between New York and New Jersey to justify it. After almost four years of trial, it has been clearly demonstrated that the tunnel company is not justified in carrying passengers between New Jersey and Sixth Avenue points, or uptown New York, for a 5-cent fare.

"Since the uptown tunnels were opened, the company has extended its service to the Erie and Pennsylvania Railroad stations and to Grove Street, in Jersey City. From all of these points to Sixth Avenue, New York, the rate by ferry and trolley was previously, and is to-day, 8 cents, notwithstanding the tunnel company voluntarily made the rate 5 cents.

"In the near future the tunnel service will be extended to Summit Avenue (the Heights section) in Jersey City. Between this section and Sixth Avenue points the present combined rate by trolleys and ferry is 13 cents. It is the intention of the tunnel company to make the rate 7 cents between these points. The tunnel service has marked advantages over the ferry and trolley service. By ferry and trolley from Hoboken to Thirty-third Street the time is thirty minutes against fourteen minutes by tunnel; from the Erie station to Thirty-third Street it is thirty-nine minutes against thirteen.

"The tunnel system is now practically complete, with the exception of the extension from Thirty-third Street to the Grand Central Station. The entire interest on its bonded debt and all fixed charges must, within the near future, be charged against the earnings from the railroad and the terminal buildings.

"On the business thus far developed, and with a uniform 5-cent fare, the company has not earned interest on its bonds, taxes and other fixed charges.

"The burden of taxation alone (notwithstanding the particularly fair attitude of the New Jersey authorities) is enormous. For the fiscal year ended June 30, 1911, taxes aggregated \$414,588. For the present fiscal year, on the basis of assessments already made, they will be increased approximately \$478,281. If the company was exempt from taxation (like the New York subway) it could continue to carry passengers for a uniform 5-cent fare.

"The tunnel lines between Jersey City, Hoboken and Sixth Avenue involve an average longer haul and cost decidedly more to construct than the tunnel lines to downtown New York. It seems, therefore, reasonable and logical that, in a readjustment of rates, the fare to uptown New York should be more than the fare to downtown New York.

"For these reasons, it has been decided to increase (beginning Dec. 24, 1911) the rate between Jersey City, Hoboken and Sixth Avenue, or uptown New York, to 7 cents. This is 1 cent less than the existing rate by ferry and trolley. The rate from Summit Avenue station (when opened) to uptown New York will be 7 cents and to downtown New York 5 cents. This is 6 cents less than the existing rate by ferry and trolleys from Summit Avenue to uptown New York, and 3 cents less to downtown New York.

"The present rate of 5 cents between local stations in New Jersey and between local stations in New York will be maintained.

"With this increase in the uptown rate to 7 cents, and with the new service put into operation between Newark and New York, and with a reasonable growth in traffic over the system, the company will earn its fixed charges with a reasonable surplus for equipment, renewals and contingencies.

"It is needless to comment on the fact that the earning of fixed charges is absolutely essential to the company's integrity. The company is certainly entitled to and must have a living rate of fare.

"It should be remembered that the New York City subway, a far less costly and difficult undertaking, was financed terest, and is exempt from taxation. The Hudson tunnels, with the credit of the city of New York, at low rates of interest, on the other hand, have been financed by private capital, at higher rates of interest, and with no exemption from taxation. This great system, with all of its hazards and risks, has received no financial aid from the state or municipal governments on either side of the Hudson River.

"We submit the facts with the hope that the justness of the company's position will be recognized, and with the belief that the public is willing to support an enterprise that has been consistently managed, from the beginning, in the public interest.

"The Hudson & Manhattan Railroad is now, and has always been, independent. No railroad company in New Jersey or elsewhere has ever had any financial interest in this company or any voice in its management."

Officials of the company have several plans under consideration for the collection of the increased fares. It is probable that 7-cent, 5-cent and 2-cent tickets will be issued. The 5-cent ticket will be used for trips between downtown New York and New Jersey. For trips between uptown New York and New Jersey 7-cent tickets will be used and will be punched as passengers enter the train platform. When passengers reach their destination, they will deposit the tickets in boxes. The plan for collection of tickets for passengers traveling between local points on the uptown New York line has not yet been arranged. If passengers purchase the 5-cent tickets by mistake for the 7-cent trips, they will purchase 2-cent tickets at special booths before they leave the station platform at their destination.

CONY ISLAND FARE HEARING

At a hearing on Nov. 16, 1911, before the Public Service Commission, First District, New York, Commissioner McCarrall explained that the hearing was an adjourned session of an inquiry on the part of the commission into certain matters connected with the affairs and operations of the companies of the Brooklyn Rapid Transit System in the Coney Island service. At the previous hearing it was proposed that the company should put into operation at certain hours of the day a 10-cent round-trip fare between Coney Island and Manhattan, and an adjournment was taken to afford the company an opportunity to present to the commission at the end of the summer season the results during the trial period.

C. D. Meneely, vice-president and treasurer of the Brooklyn Rapid Transit System, was the first witness. During August, 1911, between 6 and 9 a. m. on trains going to Coney Island, and between 2 p. m. and 4:30 p. m. on trains returning from Coney Island, there were sold and used 12,895 round-trip tickets. During September, 1911, 1712 round-trip tickets were used on these trains during these hours. The arrangement ended on Oct. 1. The special fare was confined to the elevated lines of the company during the hours previously mentioned. The company could not supply an exact estimate or count of the passengers who went to Coney Island at other times of the day at a round-trip fare of 20 cents. As it did not have a similar record during August and September, 1910, no comparison could be made between 1910 and 1911 for these periods at the hours mentioned. Mr. Meneely felt that all the 10-cent round-trip tickets which were sold represented induced business. The company was willing to continue the fare in force or to restore it next summer if requested to do so by the commission.

The hearing was adjourned until Dec. 1, 1911.

THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

The organization of the Panama-Pacific International Exposition, which will be held in San Francisco, Cal., in 1915 to celebrate the opening of the Panama Canal, is now well under way. The management of the exposition has been vested in a board of directors composed of thirty representative business and professional men and capitalists of San Francisco. A preliminary bulletin outlining the reasons for holding the exposition and the policy which will govern the selection and installation of exhibits is soon to be distributed broadcast over the United States, with the request that local boards of trade, chambers of commerce and other business and civic organizations take steps immediately to indorse the exposition and urge the support of the enterprise.

San Francisco has the advantage of excellent transit facilities by rail and sea to all parts of the world, and the management is desirous of having unusual and extraordinary exhibits rather than those which have the sole merit of quantity and bulk. It will insist on economy of space, not because of a desire to limit the number and size of the buildings, but because it believes that the public should have an opportunity of seeing all the exhibits without undue expenditure of time and physical effort. The management thus early sounds a warning against procrastination on the part of exhibitors in preparing their exhibits, and promises to have the buildings and grounds in readiness in ample time before the date of opening.

Full information regarding the rules and regulations affecting exhibits, facilities for and cost of transportation, rates for water, gas, electricity, etc., can be obtained from the department of participation and exhibits, whose headquarters are in the Merchants' Exchange Building, San Francisco, Cal.

Going Value of Public Utilities*

A Discussion of the Various Methods Advanced for Determination of This Element of Value of the Property of Public Service Corporations

BY FRANK F. FOWLE, CONSULTING ENGINEER, CHICAGO, ILL.

Going value is important in both its legal and its economic aspects, but particularly the latter, because it is one form of value and is thus property as much as though it had physical existence. We are probably accustomed to think of going value primarily in connection with appraisals of public utilities, but in order to maintain our ideas in proper balance we ought to recognize that going value may exist in a business of any kind, irrespective of tangible or physical property.

THE NATURE OF GOING VALUE

In general going value has been taken to mean that element of value which is created by an active or going business, in addition to the tangible investment for property and working capital. It exists by reason of the fact that there is a live, productive business, and it would cease when the business ceased, even though the property could retain at the same time a value equal to its structural cost. The differences of opinion arise when we come to measure the amount of going value or attempt to formulate a rule for determining it.

Some students of the problem have gone so far as to imply that going value is really inherent in the plant. This view of the matter is difficult to accept because it sets aside the question of earnings.

THE METHODS OF DETERMINING GOING VALUE

Regardless of the kind of business to which they apply, the principal methods may be set down as follows:

1. Capitalizing the net earnings.
2. Finding the cost of reproducing the net earnings.
3. Capitalizing the early losses.
4. Capitalizing the cost of securing business.
5. Over-capitalization of consolidated companies.
6. Miscellaneous.

All of these methods but the first have been proposed mainly in reference to public utilities, where the problem of going value has raised so much discussion. Some of the difficulties surrounding the subject are probably due to the ingenious arguments put forward by those who have sought to maintain values or earnings which were threatened with reduction under the cost of service theory. Perhaps the sanest point of view can be maintained by discussing first the natural method of finding the going value in a private business, from the standpoint of the owner or investor.

THE CAPITALIZED NET EARNINGS METHOD

This method applies to all kinds of private business, and in one sense it applies to public utilities also, but under the cost of service theory it excludes any going value which can be capitalized for the purpose of earning a return.

This is the common-sense definition of going value in general business; it rests absolutely on earnings in excess of the expected or usual return on the tangible property. Where such a return does not exist there can be no going value in the sense here defined, and if the net earnings do not equal the expected rate of return the going value will be negative; that is to say, the investment value will be less than the cost of the tangible property. Value is here established and measured entirely by net earnings, without regard to cost of the tangible property.

The rate of return which is regarded as reasonable depends upon local circumstances, but in the main it covers both the ordinary interest rate on secure investments and a

margin of speculative profit; this is necessary to attract capital and stimulate development. The total return generally allowed is 7 per cent to 8 per cent. This makes it possible, with certain forms of financing, to show a margin of going value. Under the rule that a property should not be bonded beyond the point where the interest exceeds one-half of the net earnings, the stock can be made to show more than the rate of return allowed on the whole property.

THE REPRODUCTION OF NET EARNINGS METHOD

The general supposition is that on the date of appraisal the existing plant and all of its business will be suddenly wiped out, and then, under the reproduction theory, work will be commenced at once to reproduce the physical property just as it was before, and the business which the old plant had will be acquired by the new one as fast as possible. The community served, however, is not presumed to change in any way from its present size and character, except through natural growth. Obviously some time will elapse before the revenues of the new plant will catch up with the probable revenues of the old one, and thus the act of reproducing the going business will entail some loss during the first few years. This method aims to determine the probable extent of that loss and then reduces the total amount by discounting it at compound interest to its present value, and calls that the present worth of the going value.

The general procedure is to plot the total revenue, the commercial revenue and the operating expenses from the inception of the business to date, or else far enough into the past to establish a safe guide for the future. The revenues from public service, such as fire hydrants or street lighting, are not taken into consideration, because it is assumed that these can be reproduced as soon as the new plant is ready for operation, thus entailing little or no loss. The commercial revenues and the operating expenses of the present plant are projected into the future, and by means of curves showing the established revenues and the expenses of the new plant the date is found on which the revenues of the two plants will become equal.

This reproduction of net earnings method has never, so far as the author is informed, received the sanction or indorsement of the Wisconsin commission. But the fact that it has been accepted in other cases entitles it to our serious consideration.

It can be said in the first place that it measures no element of direct cost in building up a going business, and it bears no relation to the past profits or the losses; and in fact there may be a going value, under this theory, in an unprofitable business. What the method really does determine seems to be this: It estimates the loss of income which would result if the present service contracts and connections were suddenly wiped out, along with the physical plant, and then re-established as fast as possible after the completion of the duplicate plant, assuming that the public appreciation of and demand for the service proceeds as though there had been no change. But such a loss of income tells us neither the actual outlay or investment for building up the original business or the reproduced business, and hence it seems to be not in keeping with the cost of service theory.

It is always a safe test of any theory of going value to inquire whether a prospective investor would recognize it and put his money into the value thus determined. If an engineer were asked by an investor to make a private report on some utility property it is extremely improbable that he would apply this method of going value and submit it along with the estimated tangible value to his client. The

*Abstract of a paper read before a joint session of the Electrical Section of the Western Society of Engineers and the Chicago Section of the American Institute of Electrical Engineers, at Chicago, Ill., on Nov. 22, 1911.

measure of going value from the investor's viewpoint is earning value, present or future, and nothing else.

The author's conclusion in regard to this method, after much study of it, is that it measures no element of value which can be considered under the cost of service theory of rates. It might be admissible, however, under the value of service theory, where cost is not a primary consideration.

THE CAPITALIZED LOSSES METHOD

It is well known that many public service companies failed to earn a reasonable return during their early existence, particularly those which commenced business many years ago. These companies are now reaching the period when their present and future returns will be regulated in accordance with the cost of service theory. This raises a question of equity, because the pioneers who have failed up to this time to recoup their early losses from later profits are now denied the opportunity to recoup themselves in the future. On the face of it this would seem to be unjust, and consequently there has been a tendency to hold that a public utility is rightly entitled to a fair return on its tangible property from the day it commenced operation down to the present moment. If in fact there were such early losses they would now be capitalized, with interest, under this policy and included in the value upon which reasonable returns ought now to be computed.

This in short is the plan which has been approved by the Wisconsin commission, under the name of going value. The selection of the name for this increment of value is not a particularly happy one, because it is not going value in the usual sense, but rather the capitalized value of deferred profits.

There can be no question that the requital of early losses by later profits is entirely equitable, but in case these profits should be so large as entirely to wipe out the losses and furthermore reduce the earning value to a point below the reproduction cost of the tangible property, the matter of equity needs further consideration. Under the Constitution private property may not be taken for public use without adequate compensation, and the question here is whether previous returns in excess of a reasonable rate may be construed as lawful compensation for now fixing a value which is less than the reproduction cost of the property. It is difficult to see why such a construction would not amount to confiscation and thus be unlawful, especially where the present owners or investors did not realize the extra profits. But, even granting that it is not confiscation, as much care should be exercised to make sure that the present owners were the recipients of unreasonable profits in the past as would be expended in the opposite case in making sure that the present owners sustained the early losses.

Early losses and profits may be wholly disregarded, from a new point of view, on the grounds that former times constituted a speculative period, and those who embarked in public utility enterprises expected no more than the usual fortunes of business, pocketing their losses along with the profits as part of the game. Of course the underlying motive in capitalizing deferred profits at the present time is the desire to do justice to the pioneers who invested their money in public utilities and have never had a reasonable return. This is simply the spirit of the square deal, but we should proceed with caution in order to make sure that justice and equity are truly served.

THE MERGED SECURITIES METHOD

It is sometimes the case that two or more utilities are merged and capitalized for more than the cost of the tangible property. This may be a case of necessity owing to over-capitalization of the merged companies, or it may be deliberately planned by the promoters of the merger.

Under the principle that a public utility ought to be a local monopoly, it is the duty of the public not to force competition unless the company which occupies the field is failing in its public obligations; otherwise the company is entitled to protection. If, nevertheless, a competing and un-

necessary franchise is granted and a substantial property is built thereunder there is very likely to be a duplication of property and investment by the two companies. A subsequent merger will then result in all probability in a capitalization in excess of the cost of the tangible property which the consolidated company finds it necessary to retain and operate.

Sooner or later the time will arrive when the consolidated company comes under regulation. Then it becomes necessary to pass on the validity of any intangible capital which came into existence with the merger.

On the ground that the public is responsible for the duplicating of property in mergers of competing utilities, it seems just and equitable to allow a going value to the extent of the unavoidable duplication at the time of consolidation.

THE COST OF DEVELOPMENT METHOD

The development and upbuilding of any business commonly calls for expenditures beyond those which represent tangible property. Thus there is the matter of advertising and display to educate the public. Special inducements to try the service are quite common, such as free house piping, or the installation of piping or wiring at the cost of labor and materials, or less than cost, with a long period in which to pay on the instalment plan; also the sale at less than cost of various household utilities which consume water, gas or electric energy; and sometimes the use of free water, gas or electricity is offered for a limited period. There is also the matter of canvassing to obtain business, and to show consumers how to utilize the service economically and at the same time effectively.

Such costs may have been charged to capital or to operating expense, but in either case it seems necessary to consider them as one of the legitimate elements of cost, under the cost of service theory. The Wisconsin commission has expressed substantially this view of the matter, in connection with discussions of going value.

As regards latter day practices, it may be observed that the cost of getting business is divisible, at least for discussion, into two parts; one covers the expense for holding the present volume of business and the other covers the expense of securing an added volume of business. It has been proposed that the first part should be charged to operating expense and the second part to construction or capital account. Such a division seems to be equitable enough, but there is some doubt as to whether it is altogether conservative. The creation of intangible values, or the addition to physical values of expenditures which do not represent physical property, ought to be restrained rather than encouraged. In other words, it cannot be regarded as conservative to attempt to build up values which do not represent tangible property. Therefore, there is good reason for charging the cost of securing business to operating expense.

Whichever way we conclude in the matter, selling cost, or the cost of building up and holding a going concern, is a legitimate outlay which we must recognize under the cost of service theory. In the case of an adjustment of rates at this time, the form or manner in which we recognize it is not so essential as the fact. Again we may observe that this is not going value in the broad sense, but simply an element of cost which demands recognition.

MISCELLANEOUS METHODS

A variety of miscellaneous methods of arriving at the going value have been proposed from time to time.

A going value was claimed, in one instance, equal to one-half of one year's gross receipts.

Another method proposes to fix the going value arbitrarily at one-third of the value of the physical property. This leaves out of consideration the net earnings and the cost of developing the business.

It has also been proposed to assign a going value on the basis of so much per connected customer.

Another proposal was made to fix the going value at an amount anywhere from one-half up to the full sum of one year's gross receipts, on the ground that utility managers would be willing, ordinarily, to spend as much as that to secure the business.

These several methods can perhaps be classified in a general way by saying that they would be admissible under the value of service theory of rates, but not under the cost of service theory, except in so far as they reveal, if at all, any legitimate elements of cost in building the properties and developing the business.

CONCLUSIONS

1. Under the cost of service theory we seem bound to recognize every element of actual cost, for both tangible and intangible property, which is legitimate, reasonable and necessary.

2. Going value, under the cost of service theory, cannot be supported by capitalized net earnings in excess of a fair return on the cost value of the property.

3. Rigid rules of measuring the legitimate going value, if any, under the cost of service theory, cannot safely be laid down, because the local circumstances in each case are different and each issue should be treated on its merits.

4. The general test for value of any kind, under the cost of service theory, is always the cost, but this may be tempered by the great desirability of distributing justice and equity to both the public and the utility companies, in equal measure.

REQUEST FOR LOWER FARES DENIED BY NEW JERSEY COMMISSION

A decision has been rendered by the Board of Public Utility Commissioners of New Jersey denying a plea for lower fares on certain lines of the Trenton & Mercer County Traction Corporation. It is admitted by the company that longer rides are given for one fare on one line than on other lines. The properties of the company, however, are undergoing physical betterment, and the commission concludes that it is too soon after the installation of the additional facilities and equipment provided recently to determine whether the company is making an undue return upon the actual investment when proper allowance is made for maintenance and depreciation. An abstract of the decision follows:

"Common to both complaints is the fact that two fares are required from points within the city of Trenton to reach the plant or property of the complainants. Both complainants cite the fact that the Trenton & Mercer County Traction Corporation upon some or on all of its other lines carries passengers a considerably longer distance for a single fare than said corporation does upon the line reaching Cochran, Drugan & Company's plant, or upon the line affording access to the property of F. C. Leaming et al. Both complainants cite in particular the fact that from the corner of Broad and State Streets the company, for a single fare, transports passengers upon the Yardville line as far as White Horse. It is alleged that upon this particular line, and upon other lines where corresponding conditions prevail, passengers are carried a much longer distance for a single fare than upon the line to the properties of the complainants.

"The allegation of longer rides for a single fare upon other lines branching out from the corner of Broad and State Streets is not denied by the company.

"This board, before it could properly issue an order such as that desired by the complainants, must be satisfied:

"(1) That there are no circumstances to warrant the disparity in charges complained of; and

"(2) That the loss in revenue to the company will not tend to deprive it of a fair return for its services and upon its investment.

SHORT AND LONG HAULS

"When different lines radiate from a common center and traverse districts differently circumstanced as to population it does not necessarily follow that the same maximum length of trip ought to be afforded for a single fare. In addition to distance, the density of traffic afforded by the various districts must also be taken into consideration. In a populous district, like that of a compact city, the carrier can afford to provide a comparatively long ride for a single fare. The reason is because relatively few in such a district will ordinarily ride the maximum distance and because for every one who does so ride the maximum distance there will be very many more who ride only a few blocks. With relatively little riding over the entire length of the fare zone, and with relatively many riding but a short distance, the average rate per car mile may prove remunerative.

"On the other hand, if the region which a traction company penetrates is one sparsely settled and thinly built up there is no large number of short riders whose patronage can be counted on; and if, in such a district, the ordinary passenger is one who is carried for a considerable distance, the average amount received per car mile will be less than in a compactly built district, unless the average charge per mile is greater than in the district of compact population.

"To a certain degree it is true of the Hamilton Square line and of the Pennington line that the density of traffic is less than on the Yardville line and on most of the other lines. The average revenue for the whole system ranges between 20 and 22 cents per car mile. A week's observations, from Sept. 10 to Sept. 16, showed the average receipts per car mile to be as follows:

"Hutchinson's Mills and Pennington Avenue line, 17.8 cents.

"Hamilton Square and Pennington Avenue line, 16.7 cents.

"White Horse and Yardville line, 20.9 cents.

"Despite the longer maximum ride given for a single fare upon the Yardville line, it appears that the revenue per car mile on the Yardville line is greater than on either of the other two lines. So long, therefore, as the present system of a uniform fare per car zone prevails, instead of a mileage charge, it does not appear that the present practice complained of is discriminatory.

"In effect, the complainants are interested in having as low a mileage charge on lines affording comparatively slight revenue as on lines affording comparatively heavier revenue. But it does not appear that they are unjustly discriminated against in not obtaining equally low rates per mile.

"While the comparative charges for distances traveled on the various lines may not be discriminatory when compared with each other, it remains to inquire whether a longer ride upon all of the lines ought to be furnished for a single fare. This raises the question whether the receipts now obtained by the company generally are excessive, as affording more than a fair return upon the cost of services rendered and upon the investment in the property.

COST OF SERVICE AND PROFIT

"To this inquiry the answer is that it cannot, with reasonable certainty, be said that the receipts will prove more than sufficient to cover cost of service and afford a reasonable profit on the investment. Until some further experience is had of the earnings of the lines only recently rehabilitated and still undergoing rehabilitation and of the new cars only recently installed, it will not be possible to answer this query. The fact that various lines of the system have shown a paper profit in past years and that dividends in recent years have been paid on outstanding securities, some of which represent no corresponding assets, is unfortunately no evidence that such profits were really earned or that such dividends were really derived from net profits.

"The board is disposed to think that such dividends were, in large part, paid only by reason of a shortsighted and unjustifiable policy on the part of the company, and that, if the various lines and the property used in connection therewith had been maintained in proper physical condition, the aforesaid dividends, or the greater part thereof, could never have been declared or paid. In reality they were paid, in large part at least, not out of income, but out of what should have been regarded as capital. As the result of this policy the properties ran down; their physical efficiency was impaired, and their capacity to render adequate service to the public was reduced below a tolerable standard. The record of dividend payments, therefore, in our judgment is no evidence that high profits were really earned, but that maintenance and repairs were unduly neglected, that depreciation funds were not properly provided, obsolescence was not guarded against and many of the essentials of judicious and conservative management were long and unreasonably neglected.

LEASE OF PROPERTIES

"In this posture of affairs the Trenton Street Railway, the Trenton, Hamilton & Ewing Traction Company, the Trenton, Pennington & Hopewell Street Railway and the Mercer County Traction Company in the latter part of last year applied for this board's approval of the terms of leases of certain lines now operated by the Trenton & Mercer County Traction Corporation, and the Trenton Street Railway proposed at the same time to issue \$500,000 bonds, a great part of which was requisite to provide for rehabilitation, the installation of new apparatus and the acquisition of new rolling stock. At this time the board was not possessed of certain powers since conferred by statute, such as make necessary the board's approval of the purpose for which securities are proposed to be issued. The board was apprised by its chief inspector of utilities that the reproduction value of the physical properties involved was about \$2,600,000.

"The chief inspector's valuation of the four constituent concerns follows: Trenton Street Railway, \$1,820,320; Trenton, Hamilton & Ewing Traction Company, \$180,000; Mercer County Traction Company, \$348,500; Trenton, Pennington & Hopewell Street Railway, \$255,650; total, \$2,504,470.

"Of the principal concern, the Trenton Street Railway proper, the chief inspector remarked that the cost to reproduce it 'is about 61 per cent of the total amount of securities issued against it'; and that 'the actual value of the system ought to be restored to a figure very close to the outstanding bond issue, if such a plan is feasible, which is very doubtful.'

"Under these circumstances, with the public suffering from lack of adequate service, the approval of the lease seemed the 'shortest way through' to secure anything that looked like speedy improvement in transportation facilities. The leases were accordingly approved, not that it was regarded as a normal and typical arrangement, but because nothing else was in reasonable expectation. The Trenton & Mercer County Traction Corporation agreed, however, that 5 per cent of its gross receipts should be set aside annually for depreciation. Even this is a wholly inadequate provision, in the long run, to take care of depreciation, not less than 15 per cent of the gross receipts being necessary, according to the chief inspector, for permanently assuring the integrity of the plant from the standpoint of efficiency. At the same time the 5 per cent provision, while the road-bed, cars and other parts of the plant are new, will be some security against the rapid deterioration of the physical property.

BETTERMENTS TO PROPERTY

"From the proceeds of the bond sale certain essential betterments ordered by the commission have been made, and others are in progress, while still others have been promised by the company. Twenty new cars, we are ad-

vised, have been put in commission; others have been ordered, and receipts have shown some considerable tendency to increase in correspondence with the additional facilities and equipment. It is, however, in our judgment, too soon to determine whether even now the net earnings will prove that the company is making an undue return upon the actual investment, when proper allowance is made for maintenance and depreciation.

"The terms of the leases impose upon the lessee a growing annual payment, rising by degrees annually from \$157,450 in 1911 to \$204,750 in 1930, and it is by no means certain that the earnings will properly provide money sufficient to pay the sums aforesaid. It is true that the company is justly entitled to earn only a fair return upon a fair valuation of the property and not upon the capitalization, which is very considerably in excess of the actual property. But until further experience has demonstrated that the earnings suffice to afford more than the company is fairly entitled to this board regards as premature any decision that the rates, as a whole, are excessive or unjust, or that longer rides, generally, should be given for a single fare.

"The community is as vitally interested in adequate and efficient service as in the matter of rates or in the maximum length of rides, and a reduction in rates, if not justified by experience, would not prove to be in the interest either of the patrons of the company or of the company itself.

"The complaints are dismissed, therefore, but without prejudice to reopening the questions involved should further experience demonstrate that the rates charged are either exorbitant or discriminatory."

COMMUNICATION

BRAKE TESTS IN NEW YORK

STERLING-MEAKER COMPANY,

NEWARK, N. J., Nov. 18, 1911.

To the Editors:

This company has been asked by a customer how its brakes performed in the recent test described in the *ELECTRIC RAILWAY JOURNAL* for Sept. 30, 1911, on page 543. This test was said to have been made at the request of the Public Service Commission of New York, First District, and from this railway officers and the public naturally would infer that the test was a public one and that all geared hand brakes had been given an opportunity to compete therein. We are convinced that no one connected with the Public Service Commission intended to convey this impression. It is proper for this company to state that no invitation or opportunity to compete with its Sterling safety brake or Giant brake was given, and no one connected with this company knew that such a test was to be or had been held until long after the test had been made. This company would have been glad to have entered either or both of its brakes in a competitive trial.

J. A. STOWE, President.

[We are glad to publish the above letter if it will serve to correct a false impression in the minds of any of our readers. We do not see how any one could read into the description of the tests in the issue of Sept. 30 any inference that these tests were of a competitive nature between devices of the same class. They were made by the Third Avenue Railroad at the suggestion of the engineering department of the Public Service Commission and their object was simply to determine the relative efficiency of the type of hand brake and the type of air brake with which the greater number of the cars of the Third Avenue Railroad are equipped. As such the report of the test was considered by the editors of this paper to be of interest to its readers.—EDS.]

Meeting of Central Electric Railway Association

This Is a Telegraphic Report of the Discussions on Standardization of Car Equipment, Publicity, Freight Weighing, Operation of Electric Freight Locomotives, Maintenance of High-Tension Lines, Etc.

The Central Electric Railway Association held a regular bi-monthly meeting at Louisville, Ky., on Nov. 23, 1911. The first session was held in the morning and was called to order by President Peck. There were present about seventy-five delegates. Two special-car parties were brought to the meeting by Alexander Shane, general manager Indianapolis, Columbus & Southern Traction Company, and one special-car party by F. D. Carpenter, general manager Western Ohio Railway.

The first order of business was the report of the standardization committee, which was presented by H. H. Buckman. This report recommended a standard design of anti-climber, using a corrugated section 8 in. high and having four ribs. Blueprints of the proposed design were distributed to the members present. H. A. Nicholl, general manager Indiana Union Traction Company, said that action on the approval of this design should be deferred until the prints had been distributed and carefully considered by all member companies.

Upon motion of C. L. Henry, president Indianapolis & Cincinnati Traction Company, it was moved and carried that the action of the Central Electric Association's standardization committee should be considered in conjunction or conference with the American Electric Railway Engineering Association. In this connection Secretary Neereamer read a letter from Norman Litchfield, secretary of the American Electric Railway Engineering Association, requesting a conference between the officers of the associations in order to take steps to co-operate in engineering matters. Copies of this letter will be sent to all members of the Central Electric Railway Association.

Progress was reported by the committee on lightning arresters. The report of this committee was read by Secretary Neereamer. Eleven railways operating 943 miles of track were of opinion that a satisfactory arrester for trolley wire should have the following features: An air-gap which breaks down on a voltage low enough to protect the apparatus connected on the line; a resistance which is sufficiently high to prevent the grounding of the line, but not high enough to impede free passage of the heavy lightning discharge; positive and automatic means of interrupting a relatively small flow of normal current following a discharge; and a properly installed ground. The committee was of the opinion that half of the responsibility for good results depended upon the manufacturer and half upon the manner in which the arresters were installed and maintained by the railway. Lightning protection for alternating-current circuits appeared to be well standardized. In conclusion, the committee requested that more attention be given to answering the data blanks on the subject of lightning.

Upon motion the members present instructed the standardization committee to report at the next meeting on rules of procedure for the adoption of standards. The secretary then read resolutions authorizing the merger of the Central Electric Accounting Conference with the Central Electric Railway Association. These resolutions were approved.

J. J. Rockwell, McGraw Publishing Company, then read his paper on "Publicity," which is published elsewhere in this issue. President Peck spoke of the increased attention which electric railways were now giving to this subject. Arthur W. Brady, president Indiana Union Traction Company, discussed at length the practical value of publicity and of advertising generally. He said that the most noteworthy point brought out in the discussions during the

1911 convention of the American Electric Railway Association at Atlantic City was that the interurban railways had become good advertisers for the purpose of gaining a share of freight traffic. He hoped to see the advertising campaigns of these companies continued with ever better results. Another phase of the advertising of both street and interurban railways was that of keeping the public informed of the difficulties which are encountered in giving it good service. This kind of advertising was being forced upon the railways and they were obliged to resort to it in self-defense. To-day the interurban railways led in traffic advertising and the street railways led in advertising intended to create favorable public sentiment. In their earlier days the interurban railways were considered great benefactors and had therefore received many corporate favors. The present tendency was to place them on more or less the same basis as steam railroads, so that they too would find it necessary to do more advertising to mold public opinion in their favor. The public was now in a state of unrest on account of the many fallacies which had been spread throughout the country by demagogues and agitators against corporations. Mr. Brady hoped that the electric railways would be broad-minded enough to realize that some of this criticism was well founded, but on the whole it appeared to him that the grounds for such criticisms were largely exaggerated. Publicity would do much to counteract this harassing activity of the agitators. Much attention should be given to publicity because the public did not realize the expenses of operation and the need for earning a net revenue which would permit the maintenance of good service and improvements. In conclusion, Mr. Brady complimented Mr. Rockwell for the many excellent features of his paper.

J. F. Starkey, traffic manager Lake Shore Electric Railway, said that publicity was closely related to such problems as keeping the trains on time and to the cleanliness of cars.

President Peck said that the Central Traffic Association had requested the Central Electric Railway Association to give attention to the subject of freight weighing and inspection. One member stated that he knew of a case where a carload was 13,000 lb. overweight. Mr. Carpenter said that platform and track scales quickly paid for themselves many times over. Upon motion of Mr. Henry a resolution was passed instructing the Central Electric Traffic Association to formulate plans and report the details of operating a weighing and inspection bureau.

F. D. Norviel, general passenger and freight agent Indiana Union Traction Company, read his paper on "Traffic," which is published elsewhere in this issue, and described the distribution of the Indiana Union Traction Company's magazine.

The next order of business was F. E. Wynne's paper on "Electric Locomotives for Interurban Freight Hauling," which is published elsewhere in this issue. There was a general discussion following the reading of this paper on the most desirable speeds for freight trains and whether such trains should be operated at night or in the daytime between passenger trains. G. H. Kelsay, superintendent of power Indiana Union Traction Company, favored night operation of freight trains, when almost all of the power equipment of a road was idle.

E. J. Burdick, superintendent of power Detroit United Railway, then read his paper on "Lightning Protection," which is published elsewhere in this issue. There was no discussion.

President Peck introduced General George H. Harries, who said that all of the topics that had been brought up for discussion at the meeting were of interest and value. The most important question, however, was that of public relations. This was an essential part of the operating existence of a corporation. The official of a public utility company could not rest upon his efficiency as a technical man. If he did he was not the kind of a man that the stockholders of a public service corporation wanted. There was a time when such a man was useful, but that time has passed. He must be endeavoring constantly to bring the public into proper relation with the service. The so-called practical man was not a success when he was merely practical and nothing more. He must be able to deal fairly and squarely with the public, telling it what it wanted to know and maintaining harmonious relations. There were serious problems to be considered in the management of electric railways. The operating costs were increasing as well as taxes, while physical renewals had to be provided for. When a complaint was made about the service the manager should tell the complainants frankly why this or that improvement could or could not be accomplished. In short, it was necessary for the manager of a railway to inject the human element into his business. If the official had the capacity, he could take on this additional burden without particular effort. It also behooved the electric railway officials as a class to see that the public received the same courteous and considerate treatment from every one in their entire organization.

J. E. Cochran, superintendent of lines and substations Ohio Electric Railway, then read his paper on "Substation Operation." This paper is printed in another column in this issue.

G. H. Kelsay, Indiana Union Traction Company, spoke of the need for more definite rules for the guidance of linemen making repairs on high-tension wires. A desirable organization of substation forces and a method of promoting substation operators would be to have three grades of substations classified according to the electrical equipment installed and the amount of business handled if the operator also acted as ticket agent. The men should be paid according to their length of service and should be promoted from the lowest grade substations to higher grade substations. Mr. Carpenter described how the West Penn Railways repaired 33,000-volt transmission lines with the current on. A general discussion followed on the method of instructing substation and power station operators over the telephone to cut power off the line when making repairs and also on the use of chains and ground wires for protecting linemen making repairs to high-tension circuits. Mr. Kelsay said that he had investigated the cost of repairing high-tension lines with the current on and had found that the cost was too high to be practicable for general use.

Upon motion of G. K. Jeffries, superintendent Brazil and Danville lines, Terre Haute, Indianapolis & Eastern Traction Company, it was voted that a committee should be appointed to draft standard rules for making repairs on high-tension lines.

In the afternoon the members of the association were the guests of the Louisville Railway. The next meeting, which will be the annual meeting of the association, will be held on Jan. 25, 1912.

The Public Service Commission, of the First District of New York has decided to hold a hearing on an order to require the Interborough Rapid Transit Company, New York, N. Y., to post news of traffic stoppage on bulletin boards at all stations in the subway, the bulletin to be posted after a blockade has continued for ten minutes and to state the cause of the delay. No date has been fixed for the hearing.

AUTOMATIC REACTANCE FOR TRACK CIRCUIT

The General Railway Signal Company, Rochester, N. Y., has recently perfected a device known as an automatic reactance, which is especially adapted to alternating-current signaling. The device has a variety of uses, the most im-



Automatic Reactance Unit

portant of which is as a substitute for the fixed resistance or reactance ordinarily inserted between the transformer and the rails to limit the flow of current when a train is in a block. This device when so used offers practically no resistance to the flow of current normally, yet when a train is present it prevents the current from increasing above a predetermined value, thus resulting in minimum energy consumption and permitting the use of minimum sizes of transformers and wires. The device has no contacting parts or moving wires and is simple and rugged in construction. On account of its very low ohmic resistance there is practically no heat developed.

NEW PATENTS ON SINGLE-PHASE APPARATUS

Five patents recently issued to H. Ward Leonard relate to electric-motor control and are notable for the early date of application and the breadth of claims. The principal patent of the group is based on an application filed in 1901. The other applications were filed in 1905 and 1906. There are eighty-eight claims in the patent based on the earliest application, and 62, 30, 88 and 111 claims respectively in the other four.

The patents include broad claims on regenerative methods, especially for alternating currents, on single-phase traction and on multiple locomotive control; also on various systems of voltage speed control. One claim, in patent No. 1,003,923, for which the original application was filed Jan. 24, 1901, reads as follows:

"The method of operating a train, which consists in generating electric energy at a stationary source, transmitting electric energy to the train, leading electric energy upon the train by means of moving contacts, transforming the energy into a plurality of divisions on different locomotive units of the train, supplying said divisions of the energy to at least one element of the motors of the respective locomotive units, and simultaneously controlling the transformed energy to control the train."

COASTING CLOCK ORDER IN CHICAGO.

Announcement was made in Chicago on Nov. 24 that the Chicago Railways Company has just placed an order for 1569 coasting clocks with the Railway Improvement Company of New York. It is well known that the Chicago Railways Company has been conducting quite an elaborate test with coasting clocks and has had on its cars fifty of these coasting clocks which it purchased some time ago. The result of this test has evidently been satisfactory to the company. Before the order is legally binding it must be confirmed by the Board of Supervising Engineers, Chicago Traction. This announcement confirms the advance notice of the order which was mentioned on page 858 in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 14, 1911. Up to that time the company had actually ordered only fifty clocks.

ELECTRIC RAILWAY LEGAL DECISIONS

CHARTERS, ORDINANCES AND FRANCHISES

California.—Railway Right-of-Way Notes—Liability.

If notes given to procure a right-of-way for an electric road required the road to be built by a particular company, the condition was met by construction by a company whose stock was owned by the other company. (*First Nat. Bank of Covina et al. v. Ruddock Co. et al.*, L. A. 2430, 111 Pac. Rep., 86.)

Kentucky.—Transfers—Ejection of Passengers.

A rule of defendant street car company provided that conductor should issue transfer tickets when fares were paid. Plaintiff demanded a transfer without paying his fare, but offered to pay the fare only upon condition that the conductor would simultaneously give him a transfer. After some altercation the conductor ejected him, using no more force than was reasonably necessary. Held, that plaintiff was not entitled to recover for the ejection. (*Louisville Ry. Co. v. Hutti*, 133 S. W. Rep., 200.)

Texas.—Meaning of the Word "Switch."

An ordinance granting a street railroad company the right to lay its tracks required the single tracks to be laid in the center of the streets and authorized double tracks on a certain street to be laid on either side of the center of the street. The company sought to construct in a certain block of such street two tracks which continued parallel for a short distance on each side of the center line, when they reunited with the single track. Held that the word "switch" has a meaning in addition to its technical meaning, depending upon its character, the word ordinarily meaning a side track constructed to permit the passage of cars from and to the main track, and the track which the company sought to construct was a switch and not a double track within the meaning of the ordinance. (*City of Denison v. Denison & S. Ry. Co.*, 127 S. W. Rep., 804.)

Washington.—Municipal Regulations Regarding Fenders.

Under a municipal ordinance requiring each street car to be equipped with a fender as near to the roadbed as shall be practicable, the question as to the height of a street car fender above the road and as to whether it is carried as near the roadbed as is consistent with the practical operation of the car are for the jury, and the court can only determine that the ordinance is a reasonable exercise of the police power. (*Tecker et ux. v. Seattle, R. & S. Ry. Co.*, 111 Pac. Rep., 791.)

Washington.—Agreement with Municipality—Obligations.

A contract between a city and a street railway operating its lines in the city which binds the company to carry passengers within the city for a single fare not exceeding 5 cents and to issue transfers to all passengers for a continuous trip one way to and from all lines in the city is binding on the company operating a line in territory outside of the city under a county franchise on the territory being subsequently annexed to the city.

A contract between a city and a street railway company granting a franchise must in case of doubt be liberally construed in favor of the public.

The right of a county which grants a franchise to a street railway company to operate a line in certain territory is terminated on the territory being annexed to a city, and the right of the company is after annexation amenable to the proper authorities of the city. (*Peterson v. Tacoma Ry. & Power Co.*, 111 Pac. Rep., 338.)

LIABILITY FOR NEGLIGENCE

Missouri.—Duty in Setting Down Passengers—Sudden Start.

Where a street car on the signal of a passenger slows down at a customary stopping place, and the passenger prepares to alight, it is negligence for those in charge of the car to suddenly start it just before making the stop. (*Musick v. United Rys. Co. of St. Louis*, 134 S. W. Rep., 32.)

Missouri.—Setting Down Passengers.

Where the conductor and motorman had stopped the car to permit a passenger to alight, and knew or were bound to know that she was in the very act of alighting, they should not only hold the car stationary a reasonable length of time

for her to alight, but should exercise a high degree of care to ascertain whether she had reached a place of safety before putting the car in motion. (*Jerome v. United Rys. Co. of St. Louis*, 134 S. W. Rep., 107.)

Missouri.—Injuries to Passenger Alighting at Point Not a Regular Stop.

Notwithstanding that the usual stopping place of a street car may be on the further side of a street intersection, yet if it stops before crossing the street and a passenger is led to believe that it is in obedience to her signal to give her an opportunity to alight, it would be negligence of the carrier's servants in charge knowingly to allow the car to start while the passenger is alighting so as to throw her to the ground. (*Monroe v. United Rys. Co.*, 133 S. W. Rep., 645.)

Missouri.—Injuries—Excessive Speed.

It was a question for the jury whether it was negligence to operate street cars at the intersection of two avenues which many people were accustomed to use at a speed of 12 m. p. h., even though the maximum speed limit fixed by ordinance was 15 m. p. h. (*Brandt v. United Rys. Co. of St. Louis*, 93 S. W. Rep., 39.)

Missouri.—Maximum Speed—Negligence.

The operation of a street car in excess of the maximum speed fixed by a municipal ordinance, and thereby injuring a pedestrian attempting to cross the track in front of the approaching car, is negligence per se. (*Strauchon v. Metropolitan St. Ry. Co.*, 135 S. W. Rep., 14.)

Missouri.—Care Required on Streets.

A motorman may presume that an adult will not undertake to cross the track in front of his approaching car where by the exercise of ordinary care he may see the car approaching and must know that if he proceeds there is danger of serious injury, and the motorman need not, under the humanitarian doctrine, stop his car merely because he sees an adult approaching the track and some feet away, but he must make an effort to stop his car when he discovers that the adult is in a perilous position and will not stop and let the car pass. (*Semple v. United Rys. Co. of St. Louis*, 133 S. W. Rep., 114.)

Missouri.—Railroad Crossings—Care Required.

A motorman operating a car across a railroad crossing must hold his car in a place of safety until the crossing is clear and until it is beyond the action of a train resulting either from its recoil or the reversing of its engine, and for him to run his car in immediately behind a slowly receding string of cars that may stop and return is negligence, notwithstanding any signal from the flagman.

A flagman stationed at a railroad crossing used by a street railway company is the agent of the latter, and it is liable for his negligence in signaling a motorman to cross. (*Augustus et al. v. Chicago, R. I. & P. Ry. Co. et al.*, 134 S. W. Rep., 22.)

Missouri.—Persons Crossing Tracks—Reliance on Speed Ordinance

Where a person alighted from a northbound car and looked north, while still behind the car, to see whether any south-bound car was approaching, being able to see for 40 ft., and then crossed over to the south-bound track, about 5 ft., and did not look again until he was upon the south-bound track and an approaching car was so near that a collision was unavoidable, he was guilty of contributory negligence.

Where the plaintiff in an action for personal injuries did not show that he was familiar with the provisions of a speed ordinance or that he relied on it, it will not be presumed, in excuse of contributory negligence, that the plaintiff relied on its observance. (*Paul v. United Rys. Co. of St. Louis*, 134 S. W. Rep., 3.)

Wisconsin.—Dogs on Track—Rights of Street Car Company.

A street car company is not required to stop its cars, when running at a legal or reasonable rate of speed, to avoid collision with dogs. A motorman operating a car is entitled to act on the presumption that ordinarily a dog on a street car track will get out of the way. (*Smith v. Railroad Co.*, 79 Minn. 254, 82 N. W. 577, followed and applied. *Henry v. St. Paul City Ry. Co.*, 124 N. W. Rep., 245.)

News of Electric Railways

Progress in Subway Matters in New York

W. R. Willcox, chairman of the Public Service Commission of the First District of New York, said recently regarding the conferences which are now being held with reference to the subway situation:

"We are moving right along in carrying out the program laid down last summer by the unanimous vote of the Board of Estimate and of the commission. I believe that the plan which was approved providing for a dual system so that certain lines should go to the Brooklyn Rapid Transit Company and other lines to the Interborough Rapid Transit Company was the best possible plan. It was a mistake that the extension down Seventh Avenue was not approved, but I believe that the alternative plan, which was finally approved when the Interborough Rapid Transit Company refused to accept the terms offered, was the next best solution."

He is in favor of a west side extension of the Interborough Rapid Transit Company's line if the money needed for construction can be made available. As an alternative, he suggested, however, that a moving platform be built in Thirty-fourth Street which would carry passengers from the Pennsylvania Railroad terminal and make connections with the subways in Broadway and in Lexington Avenue as well as with the present subway in Fourth Avenue.

The commission has approved bonds for two sections of the Broadway and Lexington Avenue subway, and contracts were signed. One of these sections was No. 13, just south of the Harlem River, which was awarded to the Bradley Contracting Company for \$4,071,410. The company gave bonds in the sum of \$400,000. The other section was No. 15, just north of the Harlem River, which includes the portion where the route divides into two branches, one going to Pelham Bay Park and the other up Jerome Avenue to Woodlawn. This went to the Hagerty-Dumond Company for \$3,820,129. The amount of the bond was \$500,000.

Opposition to Retrenchment in Lincoln, Neb.

The Lincoln (Neb.) Traction Company as part of a general plan of retrenchment recently modified its schedules and rerouted several lines on the recommendation of J. H. Humpe, general manager, and independent engineers retained to advise the company. An injunction was sought following the announcement of the plans made by the company to restrain it from putting the proposed changes into effect. The conditions in Lincoln are in a way peculiar to that city, and are set forth in part as follows in the affidavit of C. S. Allen, counsel for the company, opposing the application for an injunction:

"The rate of six tickets for 25 cents was imposed by ordinance of the City Council on or about April 1, 1906, at which time the lines of the Citizens' Railway were not constructed and there was no street railway service in Lincoln other than that furnished by the former Lincoln Traction Company. Subsequent to the passage of the ordinance, the lines of the Citizens' Railway were constructed and operated and the lines of the Lincoln Traction Company were extended. At the time of the consolidation the street railway track mileage exceeded the track mileage in any of the cities of the class of Lincoln, and the amount of service greatly exceeded the amount of service given in any other city in its class.

"The problem that confronted the management of the consolidated company was the maintaining of more track and service than any other company in cities of the class of Lincoln for a fare less than usual in such cities, and at the same time to respond to the public demand to build lines and provide cars and equipment equal to the best in cities where the straight 5-cent fare prevails. Finding no solution of this problem, the defendant company requested the Nebraska State Railway Commission to restore the usual and customary fare so as to enable the company to operate under equal conditions with other companies of its class. The commission not only denied the request of the com-

pany, but impaired its existing revenues by reducing the fare to Havelock from 10 cents to six tickets for 25 cents. The distance from Havelock to the business center of Lincoln is 7.04 miles.

"Obtaining no relief from the commission, the defendant was forced to economize on service. The changes that had been made were based wholly on operation considerations. The number of cars was reduced and the remaining cars placed where there was the greatest service demand. I was in nowise influenced by real estate or business considerations, or any considerations other than street railway operation. Cars operated around the loop which was built by the Citizens' Railway were reduced in number because the cars in operation on the whole system were reduced and the service demand was less on the lines connected with the Citizens' loop than on the lines connected with the old Traction Company's loop. R. W. Harris, of the engineering staff of the Railroad Commission of Wisconsin, recommended that the Citizens' loop should be enlarged by an extension connecting the track on P Street with the track on Thirteenth and O Streets, permitting the operation of cars from Thirteenth and O Streets around said loop. It is the opinion of the directors that this recommendation is based on substantial grounds and that the connection should be made and the cars operated over the South Fourteenth Street line should connect with this loop in place of the old loop. The proposed change would give the plaintiff the benefit of the College View high line."

Argument in Toledo Rental Suit

The motion of the Toledo Railways & Light Company to strike out of City Solicitor Schreiber's petition all reference to Nov. 11, 1910, was argued before Judge Chittenden on Nov. 13. This suit was brought to enforce the ordinance which provides for the payment of a rental of \$50 a day for the use of streets on which the franchises are said to have expired and for the collection of \$70,000 for the use of the streets from Nov. 10, 1910, to the time the new ordinance went into effect. Barton Smith, attorney for the company, argued that the ordinance could not fix a rental for the time, prior to its passage. The amount which the company owes the city, if anything, must be fixed by a court and not by ordinance.

City Solicitor Schreiber contended that the city was not praying for a money judgment. The ordinance provided terms under which the tenant might remain. The ordinance requires the company to pay \$70,000 cash in back rentals claimed to be due and \$250 a day rental from the time the ordinance went into effect. The ordinance stipulates that if the company does not pay these amounts, it shall cease to operate over the streets in question.

The city has announced that its committee is ready to resume the franchise negotiations with the company. It is reported that Frank R. Coates will succeed Albion E. Lang as president of the company, but that Mr. Lang will continue as a director.

Grade Crossing Order on the Long Island Railroad

The Public Service Commission of the First District of New York has served an order on the Long Island Railroad requiring it to erect, maintain and operate during the entire year protecting gates at twenty-one grade crossings on various divisions; to erect, maintain and operate from May 16 to Oct. 16 each year protecting gates at ten other grade crossings on the Rockaway and Far Rockaway divisions, and also requiring visual and audible signals at the Smith Street and Locust Avenue crossing of the Old Southern division. The gates for the first group mentioned are to be installed and ready for operation by Feb. 1, 1912; for the second group by May 16, 1912.

The ordering of these protections finishes the grade-crossing work on the Long Island Railroad which has occupied the attention of the commission for the last three years. After these gates are installed all the most dan-

gerous crossings of that railroad will have been protected by proper devices or eliminated or be in process of elimination. The commission has ordered the elimination of grade crossings to cost \$2,000,000, most of which are crossings on the Long Island Railroad. It has now under consideration the issuance of orders for elimination work the cost of which will be about \$4,000,000, and most of this work is on the Long Island Railroad. These orders will be issued as soon as the Legislature appropriates the State's one-fourth of elimination expense. The commission has already notified the State Comptroller that it wants an appropriation by the State of \$1,000,000 for this work.

Cleveland Street Railway Commissioner Appointed

Mayor-elect Newton D. Baker of Cleveland announced the selection of Peter Witt as street railway commissioner on Nov. 18, 1911, at a salary of \$7,500 a year, or \$4,500 less than G. M. Dahl, his predecessor, received. Mr. Witt was born in 1868. When he was seventeen years old he left school and became an apprentice in the moulding room of an iron foundry. In 1896 Mr. Witt stumped Minnesota, Wisconsin and Michigan for the Democratic candidate for President. Mr. Witt made the acquaintance of the late Tom L. Johnson in 1901, and was finally placed in charge of the tax school which Mayor Johnson formed to spread his ideas. In 1903 he was elected city clerk, a position which he held continuously for seven years. T. L. Sidio, a senior of the law school of the Western Reserve University, will be Mr. Witt's secretary at a salary of \$2,500.

It is believed that Joseph H. Alexander, of the engineering department of the Pittsburgh (Pa.) Railways, will be the engineer in the commissioner's office. He was assistant superintendent of the Municipal Traction Company, Cleveland, which operated the street railways for a short time.

The statement of operation of the Cleveland Railway for October shows a deficit in ordinance allowances of \$42,890 and a deficit on actual expenditures of \$29,232. The interest fund shows a deficit of \$134,000 under the original \$500,000. The number of passengers per car mile for the month was 9.68 in comparison with 9.13 a year ago. The detailed statement under ordinance allowances is as follows:

Gross earnings	\$534,824
Operating expenses	434,697
Net earnings	100,127
Other income	3,311
Gross income	103,438
Taxes	28,872
Net income	74,566
Interest	17,456
Deficit	\$42,890

The ordinance allowance for maintenance was \$140,982, while the actual disbursements were \$138,267, leaving a surplus of \$2,715. Ordinance allowances for operating expenses were \$293,714, and the expenditures were \$282,771, or a saving of \$10,942. The two together amount to \$13,658.02 and reduce the actual deficit from \$42,890.29 to \$29,232.27.

At the meeting of the directors of the Cleveland Railway on Nov. 18, 1911, plans for improvements and financing were discussed. The regular quarterly dividend of 1½ per cent was declared, payable on Jan. 1, 1912.

Electric Zone Extended by New York Central Railroad.—The New York Central & Hudson River Railroad has extended the electric zone on its Hudson River division out of New York City from Hastings to Tarrytown.

Strike in Cleburne.—The employees of the Cleburne (Tex.) Street Railway went on strike on Nov. 17, 1911, to compel the company to comply with certain demands which they had made in regard to the modification of the operating rules. The question of wages is not involved.

Chicago Companies Not Liable for Bridge Reconstruction.—William H. Sexton, corporation counsel of Chicago, has informed the department of public works of that city that in his opinion the city cannot compel the street railways to pay part of the cost of constructing new bridges to replace those over which their cars are now operated.

Fender Test in Montreal.—About a year ago the Public Utilities Commission of the Province of Quebec ordered the Montreal Street Railway to equip its cars with the H.-B. wheel-guards or some other device equally satisfactory.

About a dozen fenders were tested recently under the direction of the commission, but the results of this test have not yet been announced.

New Jersey Franchise Tax Assessments.—The State Board of Assessors of New Jersey has completed the assessment against street railway and other public utility companies. The total assessment is \$1,112,743.41, an increase of \$155,735 over the valuation for 1910. The aggregate assessment is divided as follows: Thirty street railways, \$610,199; 113 gas and electric light companies, \$333,468; 106 water companies, \$63,785.85; thirty-eight telephone and telegraph companies, \$100,430.66; four district telegraph messenger companies, \$1,223.11; seventeen sewer companies, \$3,430.75; one oil or pipe line, \$210.18.

One Thousand-Volt D. C. Line for Mexico.—The Mexican house of the Siemens-Schuckertwerke has closed a contract for the construction of a short railway for the city of Pachuca in the State of Hidalgo, Mexico. The first installation will consist of four 34-ton electric locomotives, two substations and overhead equipment. The line will be 17.4 miles long, and operate on 500 volts and 1000 volts d.c. The equipment of the locomotives will be arranged for operation on either voltage. The necessary energy will be transmitted by the Mexican Light & Power Company at 6000 volts, 50 cycles, three phase. The road will be used for city and suburban passenger traffic and for hauling ore from silver mines.

Rights of Stockholders.—Hugh McCloskey, president of the New Orleans (La.) Railway & Light Company, in discussing the rights of stockholders in an interview in the New Orleans State recently, said: "A man with money invested in this company is entitled to as much security as if it were his own private business. After he is assured of a reasonable return for his money, I feel that our next duty is toward the public. That it is our intention to fulfill this duty is shown by the fact that we voluntarily reduced the gas rates. Our franchise would allow us to charge \$4 per 1000 cu. ft. for gas, but we have reduced the charge to a graduated scale of 75 cents to \$1.15 per 1000 cu. ft. according to the amount consumed. The same policy will govern the electric light rates."

Advertising Campaign of the Virginia Railway & Power Company.—The Virginia Railway & Power Company, operating in Richmond, Norfolk, Petersburg, Portsmouth and Suffolk, Va., began the publication of a series of page advertisements in the issue of the *Manufacturers' Record* for Nov. 16, 1911. The advertisements will be published every other week for a year and will outline to business men the advantages of the territory served by the company. In the first advertisement, headed "The Gateway to the South," the company said: "Virginia Railway & Power Company is a firm believer in the territory occupied by these cities. It has expended large sums of money in order to enable it to give to these communities the unexcelled facilities they now enjoy of a cheap and comprehensive transportation system and low rates for lighting and electric power for large and small consumers. Norfolk and Portsmouth with their superb harbor and unlimited water front property for manufacturing and mercantile businesses and rail and water lines in every direction. Richmond and Petersburg, the open highway through which pass all of the large trunk lines between the South and the Northern markets, together make a superb gateway to a section of country abounding in natural resources, of inestimable wealth and overflowing with opportunities for the profitable use of money and energy. This will be a great center of manufacturing and commercial enterprises because the port at Norfolk and Portsmouth is the nearest port to a larger area of the United States than any other port on the Atlantic coast. The harbor is open all the year. An unlimited supply of deep water-front property available for business and manufacturing sites. Water power and cheap electric power. Nearness to the markets of the North and West and the raw materials of the South for manufacturing. Rich agricultural territory insures a source of permanent wealth. The richest coal fields of America are brought in direct touch by three great competing railway systems. Healthy climate and many other reasons combine to make this a territory rich in industrial and commercial opportunities."

Financial and Corporate

ANNUAL REPORT

Fonda, Johnstown & Gloversville Railroad

New York Stock and Money Markets

Nov. 22, 1911.

Trading on the New York Exchange has been very light the last week. The most encouraging recent sign in the industrial world has been the activity in the railroad equipment field. The decision of the Court of Appeals on Nov. 21 in the reorganization case of the Third Avenue Railroad, although favorable to the bondholders, had a decided effect on the stock of the company, which declined five points in two days. Quotations in the money market to-day were: Call, 2 3/8 @ 2 1/2 per cent; thirty days, 3 1/4 @ 3 1/2 per cent; sixty days, 3 1/2 @ 3 3/4 per cent.

Other Markets

In Chicago bonds were in demand. Sales were recorded to-day of 15,000 Commonwealth-Edison 4s, 14,000 City Railway 5s, 5000 Chicago Railways 5s, and 6000 Chicago Railways 4s, Series B.

In the Philadelphia market Union Traction has weakened with the last sale recorded at 51 3/8. Philadelphia Rapid Transit voting trust certificates hold at 23 5/8.

The trading in Boston has been very limited and the changes in prices over a week ago are fractional.

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

	Nov. 15.	Nov. 22
American Brake Shoe & Foundry (common).....	a89	a89
American Brake Shoe & Foundry (preferred).....	127	127
American Light & Traction Company (common)....	a295	a295
American Light & Traction Company (preferred)....	a107	a107
American Railways Company.....	a45 1/2	a45 3/4
Aurora, Elgin & Chicago Railroad (common).....	a40	a39 1/2
Aurora, Elgin & Chicago Railroad (preferred).....	83 1/2	a86 1/4
Boston Elevated Railway.....	a128 1/2	a129 1/2
Boston Suburban Electric Companies (common)....	a15	a15
Boston Suburban Electric Companies (preferred)....	a75	a75
Boston & Worcester Electric Companies (common)....	a13	a12
Boston & Worcester Electric Companies (preferred)....	a58	a58
Brooklyn Rapid Transit Company.....	77 3/4	77 3/4
Capital Traction Company, Washington.....	a127	a127
Chicago City Railway.....	a180	a180
Chicago Elevated Railways (common).....	a30	a30
Chicago Elevated Railways (preferred).....	a94 1/2	a94 1/2
Chicago Railways, ptptg., ctf. 1.....	a98	a95 3/4
Chicago Railways, ptptg., ctf. 2.....	a33 1/2	a33
Chicago Railways, ptptg., ctf. 3.....	a11 1/2	a11
Chicago Railways, ptptg., ctf. 4.....	a7	a7
Cincinnati Street Railway.....	a131	a129 1/2
Cleveland Railway.....	a103 1/4	a105
Cleveland, Southwestern & Columbus Ry. (common)...	a4 3/4	a4 3/4
Cleveland, Southwestern & Columbus Ry. (preferred)...	a33 3/4	a33 3/4
Columbus Railway & Light Company.....	a37 1/2	a37 1/2
Columbus Railway (common).....	83	83
Columbus Railway (preferred).....	90 1/2	90 1/2
Consolidated Traction of New Jersey.....	a75 1/2	a75 1/2
Consolidated Traction of N. J., 5 per cent bonds.....	a104 1/2	a105
Dayton Street Railway (common).....	a25	a25
Dayton Street Railway (preferred).....	a101	a101
Denver & Northwestern Railway.....	145	145
Detroit United Railway.....	a85	a80
General Electric Company.....	152 1/2	154 1/4
Georgia Railway & Electric Company (common).....	a159	a159
Georgia Railway & Electric Company (preferred).....	a93	a92
Interborough Metropolitan Company (common).....	14 3/4	*14 3/4
Interborough Metropolitan Company (preferred).....	46	47 3/4
International Traction Company, 4% notes, rets.	70	70
Indiana Union Traction Company.....	12	12
Kansas City Railway & Light Company (common).....	*16 1/4	a21
Kansas City Railway & Light Company (preferred)....	*44	48
Lake Shore Electric Railway (common).....	a7	a7
Lake Shore Electric Railway (1st preferred).....	81 1/2	a81 1/2
Lake Shore Electric Railway (preferred).....	a25	a25
Manhattan Railway.....	a138	134 3/4
Massachusetts Electric Companies (common).....	a21 1/2	a23
Massachusetts Electric Companies (preferred).....	a94	a95 1/2
Metropolitan Street Railway, New York.....	*8	*8
Milwaukee Electric Railway & Light (preferred)....	*110	105
Northern American Company.....	a73	a74 1/4
Northern Ohio Light & Traction Company (common)...	a58	a58
Northern Ohio Light & Traction Company (preferred)....	a105	a105
Philadelphia Company, Pittsburgh (common).....	a53 1/2	a53 1/2
Philadelphia Company, Pittsburgh (preferred).....	43	a43 3/4
Philadelphia Rapid Transit Company.....	a23	a23 1/2
Portland Railway, Light & Power Company.....	99 1/2	99 1/2
Public Service Corporation.....	108	a110
Public Service Corporation, ctf.	a112	a106
Seattle Electric Company (common).....	a108	a108
Seattle Electric Company (preferred).....	a101 1/2	101 1/2
Third Avenue Railroad, New York.....	11 1/2	7 3/4
Toledo Railway & Light Company.....	a7	a8
Twin City Rapid Transit, Minneapolis (common)....	a106	106
United Ry. & Electric Company (Baltimore).....	18 1/2	*18 1/2
United Rys. Inv. Co. (common).....	35	35
United Rys. Inv. Co. (preferred).....	61 1/2	63
Washington Ry. & Electric Company (common).....	a44	a46 1/4
Washington Ry. & Electric Company (preferred)....	a89 1/2	a88
West End Street Railway, Boston (common).....	a87	a88
West End Street Railway, Boston (preferred)....	a103 1/2	a103 1/2
Westinghouse Elec. & Mfg. Co.....	65	65 3/4
Westinghouse Elec. & Mfg. Co. (1st pref.).....	a118	a117

*Asked. *Last sale.

The annual report of the Fonda, Johnstown & Gloversville Railroad for the fiscal year ended June 30, 1911, with a comparison with two preceding years, shows the following:

	1911	1910	1909
Railway operating revenue:			
Freight revenue.....	\$261,180	\$247,364	\$223,752
Passenger revenue, steam division.....	71,462	68,653	64,165
Passenger revenue, electric division.....	560,881	534,665	474,720
Mail revenue.....	3,151	3,149	3,286
Express revenue.....	17,553	17,950	15,403
All other revenues from transportation.....	6,540	7,088	5,453
Revenue from operation other than transportation	25,599	25,882	5,880
Total operating revenue.....	\$946,366	\$904,751	\$792,659
Railway operating expenses:			
Per cent.....	46.75	46.59	46.86
Maintenance of way and structures.....	\$80,077	\$80,991	\$63,426
Maintenance of equipment.....	49,101	49,284	43,931
Traffic expenses.....	8,099	7,330	5,772
Transportation expenses.....	246,112	227,926	222,991
General expenses.....	59,077	55,991	37,197
Total operating expenses.....	\$442,466	\$421,522	\$373,317
Net operating revenue.....	\$503,900	\$483,229	\$419,342
Outside operations (Sacandaga Park)—deficit.....	3,989	6,266	4,716
Total net revenue.....	\$499,911	\$476,963	\$414,626
Taxes accrued.....	39,016	36,491	34,341
Operating income.....	\$460,895	\$440,472	\$380,285
Other income.....	35,203	30,352	30,526
Gross corporate income.....	\$495,918	\$470,824	\$410,811
Deductions from gross corporate income.....	361,614	353,650	369,607
Net income (available for dividends).....	\$134,304	\$117,174	\$41,204
Surplus accident fund charged operating expenses during year.....	7,793	7,904	.....
Total net income earned.....	\$142,097	\$125,078	.....
Dividends on preferred stock.....	\$30,000	\$30,000	\$3,750
Dividends on common stock.....	50,000	50,000	.....
Total dividends for year.....	\$80,000	\$80,000	\$3,750
Balance to profit and loss.....	\$54,304	\$37,174	\$37,454
Miles operated.....	84.36	84.36	84.36

J. Ledlie Hees, the president, says in the report in part: "The company's pay rolls for the year amounted to \$295,899, equal to 31.27 per cent of its gross revenue from operation and an increase over its pay-roll expense of the previous year of \$23,723.

"The popularity of Sacandaga Park, which is owned by the company, is increasing each year, as may be seen from the statement given below, showing number of passengers carried to the resort during the summer season. During the season of 1910, 91,635 persons visited the park, which resulted in a total revenue of \$51,773. This was the record season in its history. Ninety-five excursions were run during the season, an increase of twenty-three excursions over the season of 1909. Of these ninety-five excursions, twenty-eight came from the New York Central, carrying 12,202 passengers.

Year.	Passengers Carried.	Revenue.	Year.	Passengers Carried.	Revenue.
1897.....	17,299	\$8,646	1904.....	61,879	\$33,579
1898.....	25,660	12,199	1905.....	67,451	39,022
1899.....	44,345	19,911	1906.....	73,809	42,039
1900.....	57,718	27,859	1907.....	85,003	47,311
1901.....	55,891	26,543	1908.....	74,194	43,066
1902.....	61,666	29,571	1909.....	86,585	48,147
1903.....	60,886	32,824	1910.....	91,635	51,773

"There has been no change in outstanding capital stock during the year.

"For future improvements and additions to the property, the company has available the unissued \$500,000 of preferred stock.

"The \$463,000 of first consolidated general refunding mortgage bonds, which were held in the treasury, were, with the permission of the Public Service Commission, sold during the year and the proceeds used for the following purposes: Payment of the floating indebtedness incurred for construction; double-tracking East Main Street, Amsterdam; building a single-track extension from the intersection of East Main Street and Vrooman Avenue to Rockton; forming a belt line in the city of Amsterdam; purchase of new cars and electrical equipment for same; installation of a new rotary converter in the substation at Amsterdam, and the building of a shop at Gloversville.

"The new line and the new double track in Amsterdam should result in quite a substantial increase in earnings."

Among the statistical tables submitted by George A. Harris, the general auditor, is the following:

	Per Cent		1911	1910
	1911	1910		
Maintenance of way and structures.....	8.46	8.95	\$80,077	\$80,991
Maintenance of equipment.....	5.19	5.45	49,101	49,284
Traffic expenses.....	.85	.81	8,099	7,330
Transportation expenses.....	26.01	25.19	246,112	227,926
General expenses.....	6.24	6.19	59,077	55,991
Totals.....	46.75	46.59	\$442,466	\$421,527

The number of passengers carried on the electric division in the 1911 fiscal year was 5,827,561, as compared with 5,536,312 in the preceding year and 4,893,647 in 1909. The total mileage in 1911 was 29,137,805, as compared with 27,681,560 in the previous year and 24,468,235 in the year ended June 30, 1909. The total number of passengers carried on the steam division in 1911 was 276,069, as compared with 256,242 in 1910 and 237,142 in 1909. The mileage on this division was 3,846,209 last year, 3,884,238 in 1910 and 3,486,712 in 1909.

The profit and loss account shows that \$22,000 was charged off by order of the Public Service Commission "for depreciation to cover original cost of single track taken out of East Main Street, Amsterdam, prior to laying of new double track."

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The Milwaukee Electric Railway & Light Company has formulated plans to secure not exceeding \$90,000,000 of bonds, of which \$20,000,000 will be reserved to retire the underlying bonds as they become due and the remainder will be available for additions and improvements made and to be made during a long term of years. The authorized underlying bond issues total \$20,000,000, of which \$14,228,000 bonds are outstanding. An official statement says: "This issue has no relation to any company other than the Milwaukee Electric Railway & Light Company, and it is not the intention to effect the consolidation of the Milwaukee Electric Railway & Light Company with the other Wisconsin properties in which the North American Company is interested. The issue of bonds under the proposed mortgage is subject to the approval of the Railroad Commission of Wisconsin."

Ohio Electric Railway, Cincinnati, Ohio.—The Ohio Electric Railway, which in 1902 absorbed the Miamisburg & Germantown Traction Company, has arranged with W. E. Hutton & Company, New York and Cincinnati, to purchase the \$50,000 of first mortgage ten-year 5 per cent bonds of the Miamisburg & Germantown Traction Company, due Dec. 1, 1911, with coupon of Dec. 1, 1911, attached, at their face value, with interest to date of maturity. An arrangement has been made to extend these bonds for ten years.

Pacific Electric Railway, Los Angeles, Cal.—On Nov. 16, 1911, the stockholders of the Pacific Electric Railway authorized an issue of \$100,000,000 of bonds to retire outstanding issues and provide funds to carry out the important extensions and developments which the company has in contemplation.

Pittsburgh, McKeesport & Westmoreland Railway, McKeesport, Pa.—James B. Secrist has been appointed receiver of the Pittsburgh, McKeesport & Westmoreland Railway on the application of the Traction Materials Company. I. I. Robertson, vice-president of the company, joined in the application for a receiver.

Public Service Company of Northern Illinois, Chicago, Ill.—The Public Service Company of Northern Illinois has taken over the properties of the North Shore Electric Company, Chicago Suburban Light & Power Company, Economy Light & Power Company, Illinois Valley Gas & Electric Company and Kankakee Gas & Electric Company, which constitute the group of utility companies near Chicago controlled by Samuel Insull and his associates in the Commonwealth Edison Company, Chicago. The total capital stock of the constituent companies is \$15,313,000. The stockholders of the companies entering into the merger receive \$763,000 of 6 per cent preferred stock and \$9,062,500 of common stock of the Public Service Company of Northern Illinois. In addition \$500,000 of preferred stock and \$1,000,000 of common stock are retained to finance developments. It is

understood that a new first and refunding mortgage to secure an issue of 5 per cent bonds will be placed upon the merged properties to retire \$1,250,000 of bonds of the Illinois Valley Gas & Electric Company, \$2,000,000 of short-term notes of the Chicago Suburban Light & Power Company and \$1,250,000 of the bonds of the North Shore Electric Company. The officers and directors of the Public Service Company follow: Samuel Insull, president; Frank J. Baker and Charles A. Munroe, vice-presidents; John F. Gilchrist, assistant to the president; John H. Gulick, secretary and treasurer; E. D. Alexander, assistant secretary, and assistant treasurer; A. S. Scott, auditor; George H. Lukes, general superintendent; Frank J. Baker, Henry A. Blair, H. M. Byllesby, Louis A. Ferguson, William A. Fox, John F. Gilchrist, Samuel Insull, Frank G. Logan, Charles A. Munroe, John L. Norton, Charles H. Randle, Edward P. Russell, Solomon A. Smith, directors.

San Francisco, Napa & Calistoga Railway, Napa, Cal.—The San Francisco, Napa & Calistoga Railway has been incorporated by Alfred Sutro, T. V. Maxwell, Charles C. Sullivan, Guy C. Earl and W. H. Spaulding with a capital stock of \$2,000,000 to succeed the San Francisco, Vallejo & Napa Valley Railway, the sale of which under foreclosure was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 11, 1911, page 1042.

Syracuse (N. Y.) Rapid Transit Railway.—It is reported that the New York State Railways has offered to purchase the preferred stock of the Syracuse Rapid Transit Railway at 110 and accrued dividend at the rate of 6 per cent, and also the common stock at 80 and accrued dividends at the rate of 4 per cent, subject to acceptance by all the stockholders and the approval of the Public Service Commission of the Second District of New York.

ELECTRIC RAILWAY MONTHLY EARNINGS

AURORA, ELGIN & CHICAGO RAILROAD.						
Period		Gross Earnings.	Operating Expenses.	Net Earnings.	Fixed Charges.	Net Income
1 m.,	Sept.,	'11..... \$156,742	\$85,489	\$71,253	\$36,438	\$34,815
1 "	"	'10..... 154,359	85,783	68,576	33,779	34,797
4 "	"	'11..... 699,717	354,182	345,535	145,728	199,808
4 "	"	'10..... 677,074	344,049	333,026	132,441	200,585
BROCKTON & PLYMOUTH STREET RAILWAY.						
1 m.,	Sept.,	'11..... \$12,119	\$7,710	\$4,410	\$1,417	\$2,992
1 "	"	'10..... 11,976	7,529	4,447	1,359	3,088
12 "	"	'11..... 119,204	85,120	34,084	18,553	15,531
12 "	"	'10..... 121,012	85,186	35,826	20,756	15,070
EL PASO ELECTRIC COMPANY.						
1 m.,	Sept.,	'11..... \$56,962	\$31,514	\$25,448	\$8,341	\$17,108
1 "	"	'10..... 54,846	31,384	23,463	8,215	15,247
12 "	"	'11..... 673,745	387,223	286,522	98,642	187,881
12 "	"	'10..... 634,416	365,320	269,096	101,287	167,809
HOUGHTON COUNTY TRACTION COMPANY.						
1 m.,	Sept.,	'11..... \$25,675	\$12,146	\$13,529	\$7,756	\$5,773
1 "	"	'10..... 26,710	12,653	14,057	6,638	7,419
12 "	"	'11..... 303,921	159,182	144,739	82,104	5,774
12 "	"	'10..... 314,992	166,411	148,582	77,400	7,419
JACKSONVILLE TRACTION COMPANY.						
1 m.,	Sept.,	'11..... \$45,099	\$24,052	\$21,047	\$12,387	\$8,659
1 "	"	'10..... 45,995	27,156	18,839	9,451	9,388
12 "	"	'11..... 575,456	314,219	261,237	129,257	8,659
12 "	"	'10..... 559,603	297,076	262,527	112,401	9,388
PADUCAH TRACTION & LIGHT COMPANY.						
1 m.,	Sept.,	'11..... \$22,801	\$12,133	\$10,668	\$7,959	\$2,709
1 "	"	'10..... 21,251	11,264	9,988	7,126	2,862
12 "	"	'11..... 259,999	142,613	117,387	93,112	24,275
12 "	"	'10..... 243,496	144,300	99,197	83,377	15,820
PENSACOLA ELECTRIC COMPANY.						
1 m.,	Sept.,	'11..... \$24,667	\$14,148	\$10,519	\$5,863	\$4,656
1 "	"	'10..... 23,265	13,960	9,305	5,207	4,098
12 "	"	'11..... 286,029	167,553	118,476	68,480	49,996
12 "	"	'10..... 262,078	154,288	107,790	58,820	48,970
PUGET SOUND ELECTRIC RAILWAY.						
1 m.,	Sept.,	'11..... \$152,034	\$91,218	\$60,816	\$51,643	\$9,173
1 "	"	'10..... 160,545	98,608	61,937	51,974	9,964
12 "	"	'11..... 1,801,361	1,219,432	581,929	602,223	20,294
12 "	"	'10..... 1,903,484	1,258,100	645,384	606,082	39,302
SAVANNAH ELECTRIC COMPANY.						
1 m.,	Sept.,	'11..... \$58,429	\$40,119	\$18,310	\$18,307	\$2
1 "	"	'10..... 51,599	32,606	18,993	18,158	835
12 "	"	'11..... 675,586	456,287	219,299	218,755	544
12 "	"	'10..... 620,179	404,526	215,654	214,652	1,001
SEATTLE ELECTRIC COMPANY.						
1 m.,	Sept.,	'11..... \$443,640	\$241,132	\$202,507	\$115,627	\$86,880
1 "	"	'10..... 481,158	274,705	206,453	110,933	95,520
12 "	"	'11..... 5,492,194	3,038,399	2,453,795	1,349,865	1,103,930
12 "	"	'10..... 5,633,484	3,336,055	2,297,429	1,294,000	1,003,460
TAMPA ELECTRIC COMPANY.						
1 m.,	Sept.,	'11..... \$56,840	\$30,182	\$26,659	\$6,385	\$20,274
1 "	"	'10..... 44,969	23,910	21,060	6,019	15,041
9 "	"	'11..... 639,043	338,941	300,102	77,838	222,264
9 "	"	'10..... 619,255	342,639	276,616	60,077	216,539

Traffic and Transportation

Fare Decision Affecting Portland Railway, Light & Power Company

The Railroad Commission of Oregon has ordered the Portland Railway, Light & Power Company, Portland, Ore., to reduce the rate between its Portland terminals at First and Alder Streets and Oregon City, from 25 cents to 20 cents and has prescribed rates for the sale of commutation tickets between Portland and Oregon City. The commission has also ordered the company to grant a 5-cent fair to passengers from Ardour and Hendee, stations just outside Portland, to Portland, with transfer privileges. The company is also directed to grant the same transfer privileges to all patrons on the Oregon City and Springwater divisions as are now granted to passengers on the Mount Scott line. The commission says in part:

"For many years one-way commutation rates have been charged by the Portland Railway, Light & Power Company and its predecessors to points on the Springwater division as set out in its tariffs. . . . By reason of the existence of such fare, a large number of persons have been induced to settle upon and along the said Springwater division. Such persons principally work in Portland as clerks, mechanics, artisans or laborers, and they have occasion to travel daily between their homes along the line of the Springwater division and points within Portland, and the fare paid by them for their transportation is an important element in their expenditures. . . .

"The effect of any substantial increase in fare such as proposed . . . will be to compel them to give up their homes and move closer to Portland or into the city itself in order to procure the same or a lower rate of fare than they are now paying. Many such persons are now paying for their homes in instalments. . . . From the evidence, the commission finds that such persons cannot stand, and the traffic will not bear, any substantial increase in the rates of fare charged upon the Springwater division.

"The commission has not considered the testimony to this effect as in any way operating as an estoppel upon the said company, but has considered the same solely with reference to its bearing on the question as to what a reasonable rate would be for the transportation of the passenger traffic . . . and what the passengers can afford to pay and what the service is worth to them.

"The commission finds that the cost to the said company incurred in the transportation of a passenger 1 mile (i. e., per passenger mile), including all operating expenses, movement, maintenance and administration costs, but not including depreciation, interest on the bonds or investments, or taxes, is the sum of 6.15 mills."

Pennsylvania Railroad First Aid Pamphlet

To protect passengers and employees from needless fatalities, the Pennsylvania Railroad instructs its men in the practice of first aid to the injured. Lectures are given by the medical examiner of the relief department with demonstrations of the proper way to treat all common accidents, such as breaks, cuts, burns and electric shock. To supplement these a concise pamphlet covering all the important points has been issued.

The first statement in the pamphlet is that it is always essential that one person should take charge of proceedings in order to avoid confusion. The next thing is to send for a physician. Then comes an explanation of how to use the stretcher, which is always kept where it is readily accessible. Then follows this advice: "Keep the crowd away to insure plenty of fresh air. Examine the injuries carefully before doing anything. Don't touch open wounds with the hands; don't attempt to remove dirt, or apply unclean dressings of any kind, as infection may be introduced by so doing."

Following these precautionary directions comes a description of the contents and use of the various articles in the first aid packet furnished by the Pennsylvania Railroad. After this the specific injuries are taken up separately. Hemorrhage, fracture, burn, shock, unconsciousness, fits, heat exhaustion and sunstroke are discussed and the proper

treatment explained. In the system developed by the relief department it is recognized that in many cases there will be very few facilities at hand for caring for the injured and directions are given for making use of such things as are always readily to be had.

At the lectures the men are shown how to make use of a newspaper, a piece of scantling or even a cushion from a car for splints. A safe way to disentangle a man from a live wire by slipping a coat under it is shown. Employees are taught the proper way to lift an injured person to a stretcher; the way to adjust a sling with a triangular bandage from the first aid packet; emergency treatment of injuries to the scalp and methods of bandaging.

Special attention is given to electric shock. The timetables issued to employees of the New York terminal division, where all the equipment is electrical, contain detailed explanations for the treatment for electric shock accompanied by photographs.

Live Stock Transported Successfully.—A car filled with horses was shipped over the electric railways between Indianapolis and South Bend on Nov. 13, 1911.

Seats for Employees in San Francisco.—An ordinance has been passed to print by the Board of Supervisors of San Francisco, Cal., requiring all street railways which operate in San Francisco to provide seats to be used by platform men outside of certain limits.

Indictment for Alleged Violation of Indiana Two-Cent Fare Law.—The Grand Jury of Noble County, Ind., has returned an indictment in eight counts against James D. Mortimer as receiver of the Toledo & Chicago Interurban Railway, Kendallville, Ind., for alleged violation of the 2-cent fare law of Indiana.

Inquiry Into Discontinuance of Interstate Service.—John G. Park, city counselor of Kansas City, Mo., has asked the Interstate Commerce Commission to inquire into the discontinuance by the Metropolitan Street Railway, Kansas City, Mo., of its service over the intercity viaduct which connects Kansas City, Mo., and Kansas City, Kan.

Minneapolis Car Capacity Ordinance Modified.—The City Council of Minneapolis, Minn., has modified the ordinance limiting the capacity of street cars in service in that city by increasing the legal capacity from seventy-two persons to eighty-four persons. The ordinance has been in force several months and has been unpopular with the public ever since it went into effect.

"Shop Early" Signs at Boston.—Through the co-operation of the Boston (Mass.) Elevated Railway "Shop Early" posters have been placed upon the dashboards of all electric cars operating in Boston, the sponsors for the work being the Boston Chamber of Commerce and the Boston Retail Trade Board. The signs are about 12 in. x 18 in. and each displays the above admonition with the traditional holly wreath in red and green.

Service Order in Washington, D. C.—The District Electric Railway Commission, with the consent of the Interstate Commerce Commission, has issued an order requiring more frequent service on the Brightwood line of the Washington Railway & Electric Company, Washington, D. C. This line is 12.5 miles long, and the order of the commission requires the company to maintain a headway of ninety seconds on the line during rush hours.

Steam-Electric Connection in Michigan.—The Supreme Court of Michigan has issued a mandamus compelling the Michigan Central Railroad to make a physical connection at Oxford with the Flint division of the Detroit (Mich.) United Railway. The connection was asked for some months ago by the State Railroad Commission and the Detroit United Railway agreed to make the connection, but objections were raised by the steam roads.

Milwaukee Street Railway Problems.—R. B. Stearns, assistant general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., in charge of the railway department, is contributing to the *Milwaukee Journal* a series of articles entitled "Milwaukee Street Railway Problems." Problems peculiar to Milwaukee are discussed, as are also economic subjects such as the return on the investment, wages, etc. Each article is less than a column in length.

Decision on Car Step Advertisements.—Justice Henry Bischoff, Jr., of the appellate division of the Supreme Court of New York, has ruled that a street car is a wagon under the legal description which covers any vehicle that runs on wheels and that the cars of the Second Avenue Railroad must not carry advertising signs on the outside. For some time the company has been carrying advertising signs on the risers of its car steps. The city has applied to have the agreement between the receiver of the company and the advertising company modified so as to bring it within the law.

Traffic Ordinance in Chattanooga.—J. H. Warner has presented an ordinance to the Chattanooga Board of Commissioners to provide for more stringent traffic rules at street intersections. It is ordained that railroad trains at grade crossings within the city limits shall not stand on street crossings and in switching shall clear the street at each operation and stop long enough to allow traffic to pass. It is further provided that street cars must not pass each other at intersections, and that automobiles, motorcycles and other vehicles must come to a full stop before passing street cars which are unloading or taking on passengers.

Complaint Against New York & Long Island Traction Company.—The Public Service Commission of the Second District of New York has received a complaint against the New York & Long Island Traction Company, alleging that under its franchise the company is not permitted to charge more than 5 cents for a continuous ride of 5 miles or less; that the company is now charging 15 cents to carry a passenger from Rockville Centre to the New York City line, a distance of not more than 5 miles, and 10 cents from Rockville Centre to Valley Stream, a distance of less than 3 miles. The complaint has been served upon the company.

Buffalo Rerouting Results in Complaint.—The Public Service Commission of the Second District of New York has received a complaint against the change in route of the cars of the Elmwood and Hoyt Street lines of the International Railway, Buffalo. The complaint states that prior to August, 1911, operation over the Elmwood and Hoyt Street lines made their property easily accessible to the residents of the Elmwood district, and that the abandonment of this route has resulted in great financial loss and damage to real estate owners in Main Street. The complaint has been formally served upon the company by the commission.

Street Railway Passes Illegal in Kansas.—The attorney for the Public Utilities Commission of Kansas has expressed the opinion that street railways are not permitted to issue passes under the law which created the commission. E. H. Hoqueland, secretary of the commission, says: "The commission is of the opinion that there is no question that the issuance of passes by street railways is in violation of the law. The law provides that it shall be illegal for a public utility to grant free or reduced rates to favored classes except in certain specified cases. The commission does not understand that the passes granted by street railway companies come within the exceptions which are made by the law."

Conference in Indiana on Block Signals.—A. W. Brady, C. D. Emmons, W. G. Irwin and R. I. Todd, members of the committee of officials of the electric railways of Indiana appointed to meet with the members of the Indiana Railroad Commission in regard to the installation of block signals on the electric railways in Indiana, conferred again with the members of the commission on Nov. 14, 1911, but as experiments with signals being carried on in the vicinity of Indianapolis have not been concluded another meeting will be held on Dec. 4, 1911. According to an order of the commission, all of the interurban railways in Indiana were to install block signals before Jan. 1, 1912, but the time has been extended, pending the result of the tests now being conducted.

Increase in Fare on Syracuse, Lake Shore & Northern Railroad Protested.—The Public Service Commission of the Second District of New York has received a complaint from employees of the Halcomb Steel Company protesting against the proposed increase of fare from Syracuse to Stop

4 on the Syracuse, Lake Shore & Northern Railroad, and against the service which is furnished by the railroad to and from such stop. The complaints state that the Halcomb Steel Company is located in Geddes at Stop 4 on the line of this railroad; that the plant employs about 700 men; that the company has for several years issued trip tickets at 5 cents each, and now proposes to increase the rate to 15 cents for a round trip, and that this increase in fare is unreasonable and out of proportion to the rate which is charged by the Syracuse, Lake Shore & Northern Railroad for other distances.

Joint Freight Rate Question in California.—Officials of the Northern Electric Railway, Chico, Cal., and the Western Pacific Railway conferred recently with the members of the Railroad Commission of California in an effort to adjust a joint freight rate from points north of Marysville and beyond Sacramento to San Francisco which would enable the two lines to compete with the Southern Pacific Railroad. H. M. Adams, freight traffic manager of the Western Pacific Railway, and A. D. Schindler, general manager of the Northern Electric Railway, were willing to arrange a rate between the points equal to the rate of the Southern Pacific Railroad, but they differed as to the proportions in which the freight charges should be divided between their respective roads. It is probable that a formal hearing will be ordered by the commission to secure data to enable it to adjust the division of the rates by order.

Presentation of Flag to Trainmen of Public Service Railway.—On the evening of Nov. 17, 1911, the West Hoboken & West New York Social Club, composed of motormen and conductors of the Public Service Railway of New Jersey, was presented with a handsome silk American flag, the gift of Mrs. Viola Bolen Widlake, daughter of N. W. Bolen, superintendent of transportation of the Public Service Railway. This flag was given as a token of appreciation of the many kindnesses of members of the club during a recent illness of Mrs. Widlake. It was presented to the club at its first smoker of the winter season, which was attended by more than 300 members and guests from other divisions of the railway. John F. O'Toole, publicity agent of the Public Service Railway, made a brief presentation speech in which he impressed upon the members of the club the loyalty, purity and courage symbolized in the flag.

I. C. C. Fare Decision Suspended by United States Supreme Court.—The Supreme Court of the United States has suspended, pending appeal, the order of the Interstate Commerce Commission reducing the fare over the line of the Omaha & Council Bluffs Railway & Bridge Company between Council Bluffs, Ia., and Omaha, Neb., from 15 cents to 10 cents. The company has been required to file a bond for \$10,000 to compensate passengers in case the order of the commission is upheld. The decision of the Commerce Court at Washington sustaining the ruling of the Interstate Commerce Commission that the commission has authority over electric railways doing an interstate commerce business was referred to in the *ELECTRIC RAILWAY JOURNAL* of Oct. 11, 1911, page 751. The case in which this decision was rendered was brought to the Commerce Court on appeal from the United States Circuit Court of Appeals by the Omaha & Council Bluffs Railway & Bridge Company.

Three-Cent Fare Ordinance in Portland, Ore.—An ordinance has been prepared for introduction in the Council of Portland, Ore., to require the Portland Railway, Light & Power Company to reduce the fare over its lines from 5 cents to 3 cents. B. S. Josselyn, president of the company, says that the measure if passed would violate the terms of the franchises under which the company now operates. He concluded a recent statement in regard to the matter as follows: "The present franchise of the company expires in 1932, having some twenty years to run, and if the city grows in the next twenty years as it has in the past twenty it will require all the revenue of the company, and more too, to keep abreast with the growth of the city. A reduction in the fare, even if possible, would not only cripple the company, but the city, materially. The proposed ordinance would work serious harm to all parties concerned and cannot be desired by the community at large."

Personal Mention

Mr. Charles P. Garland, master mechanic of the Portland (Maine) Railroad, has retired after thirty years of service with the company.

Mr. Malory McDonald has been appointed city passenger and ticket agent of the Galveston-Houston Electric Railway, with offices in Galveston, Tex.

Mr. Louis F. Reed has been appointed general counsel of the Otsego & Herkimer Railroad, Oneonta, N. Y., to succeed Mr. George H. Taylor.

Mr. H. S. Dickey has been appointed general manager of the electric railways at Boise, Idaho, which are being consolidated. He will take office on Dec. 1, 1911.

Mr. W. P. Ballard, electrical engineer and master mechanic of the Visalia Electric Railroad, Exeter, Cal., has been appointed general manager of the company to succeed James H. Crosett, resigned.

Mr. Albert H. Stanley, managing director and general manager Underground Electric Railways Company, Ltd., London, is on a short visit to this country. He expects to remain about three weeks.

Mr. J. D. Maynes has resigned as auditor of receipts of the Illinois Traction System, Champaign, Ill., to become connected with the American Surety Company, Washington, D. C.

Mr. M. H. Hendee has been appointed manager of the commercial and contract departments of the Augusta-Aiken Railway & Electric Company, Augusta, Ga. Mr. Hendee was formerly chief clerk to Mr. E. C. Deal, general manager of the company.

Mr. F. C. Chambers has resigned as engineer of the power station of the Springfield (Ill.) Consolidated Railway to become connected with the County Traction Company, Chicago, Ill., under Mr. Emil G. Schmidt, president, who was formerly general manager of the Springfield Consolidated Railway.

Mr. S. G. McMeen has been elected president of the Mt. Hood Railway & Power Company, Portland Ore., to succeed Mr. E. P. Clark, Los Angeles, Cal. Mr. McMeen is consulting engineer for the Empire Construction Company, New York, and is connected with the National Board of Fire Underwriters. He was at one time advisory engineer with the Oakland Gas & Electric Company, and also was with the Western Electric Company. More recently he was consulting engineer of the Home Telephone Company, Chicago, Ill.

Mr. H. W. Fuller has resigned as general manager of the Washington Railway & Electric Company, Washington, D. C., to become connected with H. M. Bylesby & Company, Chicago, Ill., with whom Gen. George H. Harries, formerly vice-president of the Washington Railway & Electric Company, is now associated. Mr. Fuller was graduated from Rutgers College in 1891. He worked with the C. J. Field Company on the electrification of the horse car lines of Paterson, N. J., during the fall of 1891 and the year 1892. In January, 1893, he entered the employ of the General Electric Company, with which he continued until September, 1893. A few months later Mr. Fuller became connected with the Consolidated Traction Company, Newark, N. J., and remained with this company and with its successor, the North New Jersey Street Railway, as assistant general manager, until February, 1901. In that year he accepted the position of general manager of the Washington Railway & Electric Company. Mr. Fuller has always taken an active interest in association affairs and for the past two years has been



H. W. Fuller

chairman of the committee on city rules of the American Electric Railway Transportation & Traffic Association.

OBITUARY

George W. Hebard, acting vice-president of the Westinghouse Electric & Manufacturing Company, died at his home in New York on Nov. 17, 1911. Mr. Hebard was born in Barre Center, N. Y., in 1845 and was identified in the early history of the manufacture of electrical apparatus as president of the United States Electric Lighting Company, of Newark, in 1882, and was also connected with the early history of the generation and distribution of electricity for lighting in New York City as a director and stockholder of the United States Illuminating Company. Later, as president of the United Electric Light & Power Company, he was affiliated with the introduction of the Westinghouse alternating-current system in New York City. At the time the United States Electric Lighting Company was taken over by the Westinghouse Electric & Manufacturing Company Mr. Hebard was president of the United company, and in the reorganization was made vice-president of the Westinghouse Company. In 1888, when the Westinghouse Company took over the Sawyer-Mann Company, Mr. Hebard was given charge of the newly acquired organization.

Caryl D. Haskins, manager of the lighting department of the General Electric Company, died in Salt Lake City on Nov. 18, 1911, after an attack of pneumonia lasting only two days. Mr. Haskins was born in Waltham, Mass., in 1867, but passed a considerable part of his early life in England, and in 1888 he was foreman of the meter department of S. Z. de Ferranti. Returning to the United States in 1889, Mr. Haskins entered the employ of the Thomson Electric Welding Company, at Lynn, Mass., but was almost immediately transferred to the Thomson-Houston Electric Company. After the General Electric Company was formed Mr. Haskins was appointed to be the head of the meter interests of the consolidated company. In 1893 he was also put in charge of the company's instrument department. In 1900 his responsibilities were again enlarged by including the switchboard department. Later he was appointed manager of the lighting department. While Mr. Haskins is best known professionally as a meter expert, he was an inventor of note. He also found time to do a great deal of literary work as a contributor to the technical press and to the transactions of engineering societies, and even in the realm of fiction. During the Spanish War he raised a battalion of electricians, numbering 160 men, who under his direction took an active part in the work of coast defence. Mr. Haskins was a member of many scientific and social organizations.

The annual banquet of the Railway Business Association was held on the evening of Nov. 22, 1911, at the Waldorf-Astoria, New York. There was an attendance of more than 800. Membership in this association, as is generally known, is made up of companies engaged in the manufacture of apparatus for steam and electric railways, and the purpose of the association is to influence popular opinion in favor of railways and thus promote the interest of the roads. Among those in attendance at the banquet were railroad officials, manufacturers and men prominent in financial and other lines of business. The toastmaster was George A. Post, president of the association. The speakers were: Governor O'Neal, of Alabama; Walker D. Hines, chairman executive committee Atchison, Topeka & Santa Fé Railway; A. C. Rulofson, president California Home Industry League, and H. J. Pettengill, member executive committee Texas Commercial Secretaries' Association. The guests of honor were for the most part presidents of boards of trade in different cities. Of these some twenty-five were present, representing all parts of the country.

The Rochester, Syracuse & Eastern Railroad has issued a traffic folder, "America's Fastest Electric Limiteds," giving facts about the service of the company between the Four Corners, Rochester, and Clinton Square, Syracuse, and a timetable of limited trains between the cities. The company gives reasons why its service is safe, clean, fast, comfortable and convenient.

Construction News

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

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

RECENT INCORPORATIONS

***San Francisco, Napa & Calistoga Railway, San Francisco, Cal.**—Application for a charter has been made in California by this company as the successor to the San Francisco, Vallejo & Napa Valley Railroad, the property of which was sold under foreclosure recently. Capital stock, \$2,000,000. Incorporators: Alfred Suto, T. V. Maxwell, Charles C. Sullivan, Guy C. Earl and W. H. Spaulding.

***Flathead Interurban Railway, Kalispell, Mont.**—Application for a charter has been made in Montana by this company to build an electric railway from Kalispell to Whitefish, Stillwater and Spring Creek. The line will ultimately be extended southward to Flathead Lake and Big Fork and east of the Flathead River. Capital stock, \$50,000. Officers: David R. McGinnis, president; W. H. Griffin, vice-president; R. P. Austin, treasurer, and C. H. Foote, secretary.

***Chattanooga, Rome & Atlanta Railway, Chattanooga, Tenn.**—Application for a charter has been made in Tennessee by this company to build an electric railway from Chattanooga to Ft. Oglethorpe, Rome and other points in Georgia to Atlanta, a distance of about 135 miles. This new company will have the franchise through Chickamauga Park granted several years ago to S. W. Divine, Chattanooga, and two distinct lines are to run to Atlanta. One of these will go through Chickamauga Park to Ft. Oglethorpe. The other will run through Highland Park and Chickamauga Park into Georgia. Capital stock, \$100,000. A charter will also have to be obtained in Georgia, the capitalization there to be \$2,000,000. Incorporators: John H. Hill, Charles Reif, Michael O'Grady, John O. Hibbets and Samuel W. Divine, all of Chattanooga.

***Beaumont, Waco & Northern Railway, Beaumont, Tex.**—Chartered in Texas to build a 75-mile steam or electric railway between Beaumont and Livingston. Capital stock, \$75,000. Incorporators: J. F. Keith, C. S. Vidor, J. G. Reaves, E. S. Woodhead, W. P. Hobby, W. B. Dunlap, B. R. Norvell, John L. Keith and B. Deutscher, of Jefferson County, and Kilburn Moore, Galveston.

***Ft. Worth & Southwestern Railway, Ft. Worth, Tex.**—Chartered in Texas to build an 18-mile interurban railway between Glen Rose and Walnut Springs and Ft. Worth. Capital stock, \$400,000. Incorporators: W. D. Morton, Glen Rose, W. B. Harrison, Ft. Worth, and D. C. Morris, Walnut Springs.

FRANCHISES

Montgomery, Ala.—The Alabama Traction Company will ask the City Council for a new franchise in Montgomery on the extension of South Decatur Street and along Carter Hill Road to the city limits.

Tuscaloosa, Ala.—F. G. Blair and Henry B. Foster have received a franchise from the City Commissioners to build an electric railway and power plant in Tuscaloosa. [E. R. J., July 8, '11.]

***Phoenix, Ariz.**—Allyn Lewis, Phoenix, has asked the City Council for a franchise in Phoenix. This line is to be operated with storage battery cars.

Los Angeles, Cal.—The Board of Public Utilities has recommended that the Los Angeles Railway be granted permits to install connecting curves at six different locations in Los Angeles.

Long Beach, Cal.—The Pacific Electric Railway has received a twenty-one-year franchise from the City Council in Long Beach. The company has also asked for a thirty-year franchise out Washington Street in Pasadena.

Willows, Cal.—The Sacramento Valley West Side Electric Railway has asked the County Supervisors for a franchise through Glenn County. It will connect Woodland, Colusa, Willows, Orland, Corning, Redding and Red Bluff. C. L. Donohoe, Willows, is the president of the company. [E. R. J., Oct. 14, '11.]

***Caldwell, Idaho.**—O. G. F. Markhus has asked the City Council for a franchise for an electric railway over the Boulevard from the City limits to Tenth Street, thence to Seventh Street in Caldwell.

Long Branch, N. J.—The Jersey Central Traction Company has asked the Board of Trade for permission to build a line from Myrtle Avenue to the tracks of the New Jersey Southern Railroad on South Broadway, Long Branch.

Ridgefield Park, N. J.—The Public Service Railway has received a fifty-year franchise from the Village Trustees to extend its Bergen Turnpike line north from the Little Ferry station through Ridgefield Park to the Queen Anne Road, Bogota. The plan is to extend the line also through Queen Anne Road to connect with the Hudson River Traction Company's line at Bogota.

Trenton, N. J.—The Board of Public Utility Commissioners have approved an ordinance of the City of Trenton granting permission to the Trenton & Mercer County Traction Company to construct a double-track line on Hamilton Avenue in Trenton.

Belle Harbor, N. Y.—The Ocean Electric Railway, New York, has asked the Public Service Commission, First District, to approve its plans for the construction of an extension from Belle Harbor to Neponsit.

New Rochelle, N. Y.—The Public Service Commission of the Second District has received a petition from the Westchester Street Railroad asking for permission to exercise a franchise granted by New Rochelle allowing the construction of tracks in extension of the present Fifth Avenue line to reach the new public park and playgrounds of New Rochelle, and an extension of the present Webster Avenue line through streets near the present line giving a loop or second track for operation at a place where the present single track is said to be somewhat dangerous because of curves.

Rome, N. Y.—The Rome & Oneida Electric Railway has received a three-year extension of its franchise in which to complete its line in Rome. This 13-mile railway will connect Rome and Oneida. [E. R. J., Oct. 1, '10.]

East Youngstown, Ohio.—The Mahoning & Shenango Railway & Light has received a franchise from the Village Council to double track its line through East Youngstown to the village limits.

***Poland, Ohio.**—George E. Rose and John Harrington have asked the Village Council for a franchise to build an electric railway in Poland.

***Sudbury, Ont.**—Louis La Forest has received a franchise to build an electric railway to Copper Cliff.

Portland, Ore.—The Portland Railway, Light & Power Company has received a franchise from the City Council to extend its line on Sandy Boulevard from East Seventy-second Street to the city limits.

Allentown, Pa.—The Lehigh Valley Transit Company has received a franchise from the Council to build a double track line from Eighth Street and Hamilton Street across the Eighth Street Bridge to Ninth Street, thence to the city limits.

Greenville, Tex.—Joseph F. Nichols, Greenville, has asked the City Council for a franchise in Greenville. This proposed line will connect Greenville, Clarksville, Cooper, Depert, Rockwell and Dallas. [E. R. J., Nov. 11, '11.]

Salt Lake City, Utah.—The Utah Light & Railway Company has asked the City Council for a franchise on Main Street and Second North Street to West Capital Street and the Capital grounds. The company has withdrawn its application for a franchise on State Street in Salt Lake City.

Richmond, Va.—The Virginia Railway & Power Company will ask the City Council for a franchise to extend its Halifax Street line and its Sycamore Street line in Richmond.

Bellingham, Wash.—The Nooksack Valley Traction Company has received from the City Council an extension of time on its franchise in which to begin the construction of its line on Grand Avenue in Bellingham. This is part of a plan to build an electric railway to connect Bellingham, Sumas, Ferndale, Lynden and Blaine. [E. R. J., Oct. 7, '11.]

*Edmonds, Wash.—John Appleton and George Walsh, Seattle, have asked the Chamber of Commerce for a franchise to build an electric railway from the center of Edmonds to a station north of Seattle Heights, a distance of 3 miles.

TRACK AND ROADWAY

Mobile (Ala.) West Shore Traction Company.—This company has completed the survey for the first 7 miles of its line south from Mobile. H. Austell, Mobile, president. [E. R. J., Nov. 11, '11.]

*Lethbridge (Alta.) Municipal Tramway.—Contracts will be awarded at once by the City Commissioners for track and overhead material for the completion of this electric railway in Lethbridge.

Bakersfield & Kern Electric Railway, Bakersfield, Cal.—Work has been begun by this company double-tracking its lines in Bakersfield.

Pacific Electric Railway, Los Angeles, Cal.—This company is rebuilding its Sixteenth Street line within the city limits of Los Angeles as far as Rosedale cemetery. All the track has been laid on the Lankershim extension of the Hollywood division and it is expected to have this line in operation by Dec. 15. This extension will then be continued to Van Nuys.

Modesto & Empire Traction Company, Modesto, Cal.—This company has placed in operation its line between Hughson, Denair, Riverbank, Oakdale and Modesto. T. K. Beard is interested. [E. R. J., Oct. 28, '11.]

Sacramento & Woodland Railway, Sacramento, Cal.—Bids are asked by this company to construct a 10,000-ft. trestle to carry rails across the Yolo Tule basin. With the completion of this line work will be begun on a line to Winters, thence through Solano County to Vallejo by way of Vacaville, Elmira, Fairfield, Suisun and Cordelia. Another branch is to be built from Elmira to Dixon and Davis to connect with the line now under construction.

Pacific Coast Railway, San Luis Obispo, Cal.—This company plans to complete its 3-mile extension to Canon Branch within the next two weeks.

Boulder Electric Light & Power Company, Boulder, Col.—This company is building about 2½ miles of new track in Boulder. The company is doing its own work and has ordered all necessary material.

*Pike's Peak Aerial Railway, Manitou, Col.—Preliminary arrangements have been completed and construction will be begun at once on an aerial passenger railway from Manitou to the summit of Pike's Peak. E. A. Norton, First National Bank Building, Manitou; F. R. Coffman and H. A. Lindsay are interested.

Connecticut Company, New Haven, Conn.—This company has completed its double-track line between New Haven and Mount Carmel.

Augusta-Aiken Railway & Electric Company, Augusta, Ga.—Work has been begun by this company on the extension of its tracks in Augusta.

Madison County Interurban Railway, Highland, Ill.—This company, which was incorporated in March, 1909, to build an electric railway in the vicinity of Highland, has just been dissolved. [E. R. J., March 21, '09.]

Pekin (Ill.) City Railway.—Plans are being made by this company to build an extension to Tremont, Delavan, Hope-dale, Boynton and Hittle, and to extend its line in Pekin.

Alton, Jacksonville & Peoria Railway, Whitehall, Ill.—Plans are being considered by this company to complete its extension from Godfrey to Jerseyville.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—An extension of the East Michigan Street line to Emerson Avenue is being constructed by this company.

Vincennes (Ind.) Traction Company.—Plans are being made by this company to make extensive improvements to its lines in Vincennes.

Louisville & Interurban Railway, Louisville, Ky.—T. J. Minary, president of this company, has announced that the directors will consider the construction of an extension to Mt. Washington. B. C. Milner, Louisville, consulting engineer, estimates that the extension could be constructed

at a cost of \$380,000 for the 10 miles between Mt. Washington and Louisville.

Rockland, South Thomaston & St. George Railway, Rockland, Maine.—This company will award contracts early next spring to build about 3 miles of new track.

Hagerstown & Clear Spring Railway, Hagerstown, Md.—Construction was begun Nov. 16 on Salem Avenue in Hagerstown to build this 25-mile electric railway between Hagerstown and Clear Spring. The line will eventually be extended to Mercersburg, Pa. This company has filed a \$250,000 mortgage with the Hagerstown Trust Company as trustee, for the construction and equipment of this line. L. N. Downs, Hagerstown, president. [E. R. J., May 20, '11.]

Omaha, Lincoln & Beatrice Railway, Lincoln, Neb.—During the next four weeks this company will award contracts to the summit of Pike's Peak. E. A. Norton, First National for about ½ mile of new track in Lincoln.

Tidewater Power Company, Wilmington, N. C.—This company is now building about 3 miles of new double track to replace the single track in Wilmington.

Cleveland, Barberton, Coshocton & Zanesville Railway, Cleveland, Ohio.—Right-of-way for the entire line has been secured by this company and about 1 mile of track has been built out of Cleveland. This line will connect Cleveland and Zanesville, via Elyria, Barberton, Oreville, Millersburg and Coshocton. J. J. Breiting, president. [E. R. J., Sept. 2, '11.]

Tri-State Traction Company, Steubenville, Ohio.—This company has placed in operation its Weirton branch between Weirton and Steubenville. It is expected to extend this line to East Liverpool.

*Ridgeway, Ont.—George Pettit, E. W. Near and W. G. Athol are making preliminary arrangements and have raised about \$12,000 to carry on the preliminary work looking to the construction of an electric railway from Ridgeway to Crystal Beach.

Oregon Electric Railway, Portland, Ore.—The entire right-of-way has been obtained by this company for the extension between Salem and Albany, a distance of 26 miles.

Southern Pennsylvania Traction Company, Chester, Pa.—This company will pay one-third of the cost of a new \$14,000 bridge to be constructed over Seventh Street at Broomall.

Ephrata & Lebanon Street Railway, Lebanon, Pa.—This company has voted to begin the construction on the section between Hopeland and Lebanon. The track on the Ephrata-Hopeland section has been laid from Ephrata to one mile beyond Weidmansville and the grading on the remaining portion is nearly completed.

Scranton & Binghamton Railroad, Scranton, Pa.—During the next three weeks this company will award contracts for the construction of two new bridges, one at Factoryville and the other at Nicholson.

Valley Street Railway, Sharon, Pa.—Arrangements are being made by this company to begin a survey for an extension through the eastern part of Sharon, thence to South Sharon, making a loop.

Titusville (Pa.) Electric Traction Company.—It is reported that this company's extension to Cambridge Springs along Muddy Creek will not be constructed until the spring.

Greenville (S. C.) Traction Company.—This company has completed the double-tracking of its line from the Ottaray Hotel in Greenville through North and South Main Streets and up Pendleton Street to Greene Avenue.

Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.—During the next two weeks this company will award contracts to build 2 miles of new track in Corpus Christi. The company expects to build 1½ miles of track southeast and it will build a cut-off to shorten its principal line between South Bluff and the Union Depot. It will also build a loop in the business section of Corpus Christi.

Dallas (Tex.) Interurban Electric Railway.—This company is in the market for material, including 60 to 70-lb. rails, ties, bridges, culverts, piling for trestling, etc., necessary for the construction of 15 miles of track out from Dallas. J. M. Carter, 906½ Main Street, Dallas, manager.

***El Paso, Tex.**—It is reported that surveys are being made and right-of-way obtained for an electric line between El Paso and Clint. W. E. Anderson and R. L. Dorbant are interested.

Ft. Worth Southern Traction Company, Ft. Worth, Tex.—This company has arranged with the Stone & Webster Engineering Corporation, Boston, Mass., for the engineering and construction of a complete interurban railway between the city limits of Ft. Worth and Cleburne, a distance of about 30 miles. The track will be laid with 70-lb. A. S. C. E. rails. The main pole line will carry, in addition to the trolley wire and the direct-current feeders, about 24 miles of 15,000-volt overhead transmission line connecting the Northern Texas Traction Company's power system with two substations to be built on the new line. [E. R. J., Oct. 14, '11.]

Gainesville, Whitesboro & Sherman Railway, Gainesville, Tex.—This company, which has projected a line between Gainesville and Sherman, has completed 11 miles of grading. Work is to be resumed as soon as the reorganization of the company has been perfected. Thomas M. Bosson, secretary.

Greenville Railway & Light Company, Greenville, Tex.—Work has been begun by this company on an extension from Greenville to Mineral Heights.

Utah Light & Railway Company, Salt Lake City, Utah.—This company will place in operation Dec. 1 two extensions and one new line in Salt Lake City. The new line will extend west on Fourth South to Rio Grande Avenue. The two extensions are from Fifth South and Eleventh East. In addition to these improvements the company will complete work on the new steel bridge over the Jordan River on the Poplar Grove line within the next few weeks.

Brattleboro (Vt.) Street Railway.—This company has awarded a contract for the construction of ½ mile of new track on South Main Street to Crosby & Parker, Brattleboro.

Washington & Old Dominion Railroad, Rosslyn, Va.—Grading has been begun by this company, near Cherrydale, to connect the Great Falls & Old Dominion Railway with the Bluemont branch of the Southern Railway. Charles M. Henckley, 1517 H Street N. W., Washington, president. [E. R. J., Sept. 30, '11.]

Fairmont & Clarksburg Traction Company, Fairmont, W. Va.—Surveys are being made by this company over three different routes for an extension from Clarksburg to Northview.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—Plans are being made by this company to construct a combined passenger and freight station at Sierra Madre.

Ontario & San Antonio Heights Railroad, Ontario, Cal.—This company has begun the installation of a new machine shop at Claremont.

Geary Street Municipal Railway, San Francisco, Cal.—Work will be begun at once by this company on its new carhouse at Geary Street and Presidio Street in San Francisco.

Macon Railway & Light Company, Macon, Ga.—This company has recently issued a statement outlining its plans for improvements in connection with the refinancing of the company. Among other things, the construction of a new carhouse is contemplated.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.—Plans are being considered by this company for a new passenger and freight depot in South Bend.

Tri-City Railway, Davenport, Ia.—Plans are being made by this company and construction will be begun in the spring on a new carhouse and repair shops on Fifth Avenue, in Rock Island. The company's old shops at Second Street and Rock Island Street, in Davenport, will be abandoned entirely as repair shops, and the building will be used for an interurban carhouse, freight house, freight storage and offices.

Des Moines (Ia.) City Railway.—This company will soon build a new carhouse in Des Moines. The cost is estimated to be about \$40,000.

Boston (Mass.) Elevated Railway.—This company will build a new elevated terminal at the corner of Main Street and Center Street in Malden.

Worcester (Mass.) Consolidated Street Railway.—This company will place in operation on Dec. 1 the addition to its Gates Lane carhouse in Worcester. [E. R. J., Sept. 30, '11.]

POWER HOUSES AND SUBSTATIONS

Lethbridge (Alta.) Municipal Tramway.—Bids are asked by the City Commissioners for additional equipment for the power house in Lethbridge.

Geary Street Municipal Railroad, San Francisco, Cal.—This company has nearly completed plans for the construction of its new power house on Geary Street and Presidio Street in San Francisco. Work will be begun within the next few months.

Hartford, Manchester & Rockville Tramway, Hartford, Conn.—The operation of this company's power station, just north of West Center Street in Manchester, which with the other equipment of the company was taken over by the Connecticut Company, is to be discontinued.

Connecticut Company, New Haven, Conn.—An addition to cost \$25,000 will be made at this company's power station on Grand Avenue in New Haven. Additional equipment will be installed.

Alton, Jacksonville & Peoria Railway, Whitehall, Ill.—Frank L. Butler, receiver for this railway, has filed a report in the Madison County Circuit Court recommending that the line to Jerseyville be finished, the power plant equipment sold and that a contract be made with the Alton Gas & Electric Company to furnish power, a plan which would necessitate the erection of a substation 16 miles north of Alton.

Ft. Wayne & Springfield Railway, Decatur, Ind.—Plans are being considered by this company to build a new power house in Decatur. The structure will be one story and of cement block.

Rockland, South Thomaston & St. George Railway, Rockland, Maine.—This company is considering the purchase of new storage batteries.

Boston (Mass.) Elevated Railway.—This company's new South Boston power station will be placed in operation on Dec. 1. Three of the company's substations, those at Coolidge corner, Kendall Square, Cambridge and Egleston Square, are completed.

Berkshire Street Railway, Pittsfield, Mass.—Extensive additions and improvements are being made by this company at its East Street power station at Pittsfield. The company has placed an order for two 750-kw low-pressure steam turbines driving three-phase, 25-cycle, 575-volt, a.c. generators, with the Westinghouse Machine Company. The turbines operate at a pressure of 15 lb., at full load, and under a vacuum of 28 in. The voltage is stepped up to 33,000, at which potential the current is distributed across the western portion of the States of Massachusetts and Vermont.

Chautauqua Traction Company, Jamestown, N. Y.—This company has completed the remodeling of its power station No. 1 in Jamestown. It has placed orders for four new additional boilers.

Wilkes-Barre (Pa.) Railways.—Work will be begun at once by this company on a new substation to take the place of the storage battery plant located on South Main Street, Wilkes-Barre. The structure will be 36 ft. x 51 ft., and 24 ft. high, of brick construction. Two 500-kw rotary converters will be installed in this new station.

Montreal & Southern Counties Railway, Montreal, Que.—This company plans to build a new substation at St. Lambert.

Ft. Worth (Tex.) Southern Traction Company.—This company will build three brick substations, to be equipped with rotary converters, step-down transformers, a.c. and d.c., switchboards, etc.

Laredo (Tex.) Electric Railway.—This company will purchase a gas engine and direct-connected 400-hp, 2300-volt generator.

Manufactures & Supplies

ROLLING STOCK

Oregon Electric Railway, Portland, Ore., is in the market for four 50-ton electric locomotives.

Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., is in the market for twenty-two closed cars.

Knoxville Railway & Light Company, Knoxville, Tenn., is remodeling several of its cars for prepayment operation.

Tidewater Power Company, Wilmington, N. C., expects to build three closed 20-ft. 6-in. car bodies in its own shops.

United Railroads, San Francisco, Cal., it is understood, will order 100 new cars through Ford, Bacon & Davis, New York, N. Y.

Geary Street Municipal Railroad, San Francisco, Cal., has ordered forty-three closed cars from the Jewett Car Company.

Lethbridge (Alta.) Municipal Tramway is said to be asking for bids for ten new cars for use on its line which is nearing completion.

Spokane & Inland Empire Railroad, Spokane, Wash., has ordered one 50-ton electric switching locomotive from the General Electric Company.

Valdosta (Ga.) Street Railway expects to purchase a second-hand eight or ten-bench open car equipped with two West-12-A 30-hp motors and K-10 controllers.

Shore Line Electric Railway, New Haven, Conn., has ordered three 45-ft. combination interurban cars mounted on Baldwin trucks from the Jewett Car Company.

Isthmian Canal Commission, Washington, D. C., has ordered forty electric locomotives from the General Electric Company. They will be used to tow ships through the locks of the Panama Canal.

Dallas (Tex.) Interurban Railway is considering the purchase of several gasoline motor and trail cars for use on a 15-mile interurban line which is being built out of Dallas. J. M. Carter, Dallas, manager.

Peninsular Railway, San José, Cal., noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 16, 1911, as having ordered seven California type combination motor cars from the American Car Company, has specified the following details for this equipment:

Bolster centers, length,	21 ft. 6 in.	Underframe	.....semi-steel
Length of body.....	28 ft. 3 in.	Bumpers	.....American Car
Over vestibule.....	41 ft. 2 in.	Cables	.....GE
Width over sills.....	8 ft. 2 in.	Curtain fixtures..	Cur. S. Co.
Over all.....	8 ft. 5 in.	Curtain material...	pantasote
Height, rail to sills...	33 $\frac{1}{8}$ in.	Headlights	....Crouse-Hinds
Sill to trolley base,	8 ft. 11 13/16 in.	Journal boxes.....	Brill
Body	.....wood	Sash fixtures...	American Car
Interior trim.....	mahogany	Seats	.....Brill
Headlining	.....Agasote	Step treads.....	QMS
Roof	.....monitor	Trucks.....	Brill 27-G
		Varnish	.....Valentine
		Ventilators....	American Car

TRADE NOTES

Cambria Steel Company, Johnstown, Pa., has appointed W. Beverly Robinson & Company, Montreal, Que., as its Canadian agents for the sale of rails, billets, cars, wire products, etc.

Perry Ventilator Corporation, New Bedford, Mass., has received an order for ventilators for the six new cars being built by The J. G. Brill Company for the Augusta-Aiken Railway & Electric Company.

Pennsylvania Street Railway Tie Company, Dover, Del., has been chartered to manufacture and distribute iron and steel and metal products. The incorporators are F. R. Hansel, Philadelphia, Pa.; George H. Martin and S. G. Seymour, Camden, N. J.

United States Electric Signal Company, West Newton, Mass., on Nov. 15 conducted a test of the new interurban type signal, which has been installed on the northwestern division of the Terre Haute, Indianapolis & Eastern Traction Company between County Line and Zionsville.

Duplex Metals Company, Chester, Pa., is making several additions and improvements to its plant at Chester. A

structural steel, galvanized-sheathed building is being erected to replace the old wooden frame building. A new and larger coating department is now practically finished.

More-Jones Brass & Metal Company, St. Louis, Mo., has elected new officers as follows: Edward A. More, president and treasurer; John B. Strauch, vice-president and general manager; Samuel W. Crawford and Thomas W. Wright, vice-presidents; Thomas L. Hamilton, secretary; Albert Y. Evins, manager electric railway department. This company has recently built an addition 80 ft. x 236 ft. to its foundry, and has more than doubled the capacity of its plant by the installation of new equipment.

Valentine-Clark Company, Minneapolis, Minn., dealer in Northern and Western cedar poles, has opened a sales office at St. Marie's, Idaho, and is now in position to quote prices on Western cedar poles from that office to all points west of the Dakota-Montana line and points in the State of Colorado and west thereof and into Texas. Neil Burrell, formerly identified with this company in the East, has charge of the St. Marie's office in connection with L. H. Clark, son of E. L. Clark, president of the company.

International Pay-As-You-Enter Tramcar Company, Ltd., New York, N. Y., was incorporated under the laws of Canada on Nov. 15, 1911, to exploit the pay-as-you-enter system in Europe. The company has established an office at 6 Broad Street Place, London, E. C., and is already negotiating with several of the leading lines to adopt the prepayment devices. Frank Paul, one of the engineers of the Pay-As-You-Enter Car Corporation, left for London last week to supervise the remodeling of cars for pay-as-you-enter operation on the lines of the British Electric Traction Company.

L. R. Pomeroy, New York, N. Y., has resigned as chief engineer of the railway and industrial division of J. G. White & Company, Inc., New York, to open an office as a consulting engineer in New York. Mr. Pomeroy will make a specialty of the design of railway and industrial plants, the rehabilitation of shops, the analysis of machine-tool operation with relation to electric drive and effective operation, and reports and appraisals of railway and manufacturing properties. In this line of work Mr. Pomeroy has had a long experience and has become an authority. He was assistant general manager of the Schenectady Locomotive Works from 1899 to 1901. From 1901 to 1908 Mr. Pomeroy was special representative of the railway department of the General Electric Company, where he specialized on the electrification of steam roads, railway shop applications, etc. For the two years following he was assistant to the president of the Safety Car Heating & Lighting Company and in 1910 he resigned from that company to join J. G. White & Company, Inc. Mr. Pomeroy will have his office at 50 Church Street, New York.

ADVERTISING LITERATURE

Ingersoll-Rand Company, New York, N. Y., has issued a bulletin which describes and illustrates its "Little Giant" rock drills.

Ohmer Fare Register Company, Dayton, Ohio, has issued a 28-page catalog which describes and illustrates ten types of the company's recording registers and its Ohmergraph.

Greenlee Brothers & Company, Chicago, Ill., have issued a 40-page catalog which treats of the adz and boring of railway ties and of driving screw pikes by power or hand. The company's various machines and devices used in this work are described and illustrated.

Indianapolis Brass Company, Indianapolis, Ind., is mailing to the trade a blotter calling attention to its overhead line material and car equipment specialties. A piece of string to be tied to the finger has been attached to the blotter to remind the company's customers of these products.

The J. G. Brill Company, Philadelphia, Pa., prints in the October issue of the *Brill Magazine* a biographical sketch of William Alexander House, president of the United Railways & Electric Company, Baltimore, Md. Lima, Peru, is the subject of the thirty-fourth article of the series describing the conditions which govern the type of car for city service. The magazine also contains other articles on Brill equipment and a description and illustrations of the Brill exhibit at the 1911 convention of the American Electric Railway Association held at Atlantic City.