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The Cleveland Election

Whether or not the defeat of Mayor Tom L. Johnson has an important bearing on the present negotiations for settlement of the Cleveland traction situation, it accentuates the public dissatisfaction with the course which he followed respecting the street railway property. Mayor Johnson started out, in his experiment with the Cleveland lines, under conditions that were almost entirely of his own selection; his failure to give the public adequate service

at the rates of fare that had been promised was a complete failure not only of administration, but also of the fanciful ideas on which the campaign against the street railway had been founded. That Mayor Johnson has been able to continue for so long a time a steady onslaught upon the property of the Cleveland company is one of the extraordinary developments of American politics, based on the easy acceptance by the public of attacks on corporate operation and enterprise. The public tires, however, of continued agitation, and repeated demonstration of the fact that settlement appeared doubtful while Mayor Johnson remained in office undoubtedly produced the change in sentiment that led to the election of a new Mayor.

Moving Platforms

The serious consideration by the Public Service Commission of New York, First District, of the plan to install a moving platform in a subway under Broadway, between Fourteenth Street and Forty-second Street, calls renewed attention to this system of transportation. Although recognized as the most efficient means of transporting passengers, it has been employed only at expositions, such as that at Chicago in 1893 and at Paris in 1900, and possibly for this reason has often been considered somewhat in the light of a freak. Nevertheless, as shown by the report of Mr. Seaman, engineer for the commission, a moving platform of the type proposed for New York has not only a capacity very much in excess of that of the combined rush hour service of the local and express trains of the present subway, but for distances of 4 miles gives more rapid service than the present local service on the subway, and even the local and express service combined. The two principal objections from a transportation standpoint which have been raised against the moving platform are (1) that it requires a certain amount of agility to pass from the slow-speed platforms to the high-speed platform, and that this is not possessed by everybody, and (2) that the carrying capacity of the moving platform is constant, so that the same service must be run at non-rush hours as at rush-hour periods. There are also some objections from an engineering standpoint, and perhaps the principal one, based on the experience at Chicago and Paris, is noise. For these reasons there has been considerable reluctance to install the system in any place other than at a fair ground or similar locality, where the patrons need not ride unless they wish to do so. In many respects the proposed location in New York is especially well suited for a moving platform, if, as we believe, it is a transportation agent which is worthy of serious consideration. The route comprises a very large part of the retail shop, hotel and theater dis-

tricts on Broadway, and traffic should be fairly constant throughout a considerable part of the day. Again, there are other means of transportation, such as the surface cars, for feeble persons and others who do not wish to use the moving platforms and to transport passengers in hours of light traffic if the platform is not run 24 hours a day. It is doubtless true that for some time, at any event, a considerable number of guards would have to be provided to assist people in boarding and leaving the moving platform, but the experience with escalators in the subway stations and in department stores indicates that the public will soon become versed in using transportation means of this kind, and the number of guards required for this purpose could soon be reduced. Certainly the installation of a moving platform in New York under the circumstances suggested would form a very interesting contribution to the art of urban transportation.

Courtesy and Accident Liability

The reasonableness of a rule promulgated by a street railway company that "persons riding on the platforms do so at their own risk," was affirmed by the Supreme Judicial Court of Massachusetts in a recent case involving circumstances which are common in the operation of cars in very congested districts. (*Tompkins vs. Boston Elevated Railway Company.*)

The plaintiff boarded a surface car which was so crowded with passengers that he could not stand or sit inside. He knew the rule of the company, which was prominently printed on the car. Yet he assumed the incidental risks of his position. Before reaching his destination he temporarily alighted from the car in order to permit some ladies who were inside to leave the car. In trying to board the car again the plaintiff was injured by its sudden start.

It was argued in the plaintiff's behalf that when he left the car, even though temporarily, his status as a passenger ceased and that he was injured in attempting to re-establish his relation as a passenger by boarding the car a second time. The court was not impressed with this novel contention, and held that even if this claim proved to be law, then the relationship had not been re-established, for from the evidence it was not shown that the plaintiff gave any notice of his intention to again board the car, that those in charge of the car knew of any such intention, or that he was again accepted as a passenger.

The court expressed the following opinion:

The plaintiff did not cease to be a passenger by leaving the car momentarily for this cause. He could not have been required to pay another fare. The necessity or courtesy which prompted his action did not terminate his status as a passenger. It is notorious that this is one of the common incidents of travel during the rush hours. The acceptance of passengers on cars already so crowded created an implication on the part of the defendant railway company that, although some passengers might be obliged for an instant to slip to the street for the accommodation of their fellows, the contract for carriage should not thereby be terminated. The plaintiff by taking his position on the front platform of such a car also impliedly contracted with reference to the same obligation resting on him. But he contracted subject to the rule of the defendant company that he took all risks from riding on the front platform. The defendant was, in any event apart from the rule, responsible for no other risks than those arising from its own failure, or that of its agents, to exercise the highest degree

of care as to passengers consistent with the reasonable conduct of its business.

The court held that a verdict for the defendant should have been directed by the trial judge, instead of leaving the question of liability for the jury to determine. This decision, we believe, is the first of its kind, and is one which the courts of other States will doubtless follow.

The Design of Car Repair Shops

The design of the car repair shops of the Oneida Railway Company at Syracuse, N. Y., described in our last issue, will undoubtedly attract a great deal of attention from those responsible for the maintenance of the rolling stock on electric railway properties. The conditions at Syracuse, so far as concerned the location of the shops, area available, etc., fortunately gave very wide latitude in the design so that the engineers in charge had a very free hand in working out their ideas of what a model car repair shop should be. The structure possesses additional interest from the fact that W. J. Harvie, who was largely responsible for the design, was one of the committee which presented the paper on the "Model Car Repair Shop" at the 1908 annual convention of the New York State Street Railway Association. In this report several of the main features of the Syracuse shops were suggested, but in other respects the design has been greatly modified, particularly by the introduction of two transfer tables, one at each end of the building, instead of entrance tracks. The reasons for the adoption of these transfer tables were mentioned briefly last week and are discussed below. There are other features of the shop, however, which are also worthy of comment.

Following the latest ideas on shop design, all tracks are carried through from the front to the rear of the building and extend across its shorter dimension, so that the number of cars to be moved to permit the exit of any car in the shops is a minimum. This plan also simplifies the work of adding extensions to the building.

Probably the most striking feature of the shops is the almost complete segregation of the different departments by walls with very few entrances. In fact there are practically no direct means of intercommunication between the different departments except on the outside of the building. Such a plan is, of course, very desirable from a fire prevention standpoint, but this was not the only reason for its adoption. It was employed largely on the theory that each department was complete in itself and that better work could be done if the attention of those at work was not distracted by visits of employees from other departments. Thus an examination of the plan of the shops will show that a painter, to get to the carpenter shop, must walk across the building through a narrow passage way to the rear unless he goes outside of the building, which under ordinary conditions he will not be permitted to do. Similarly the carpenter shop and the machine shop are widely separated for intercommunication, although actually contiguous, and the same is true of the other departments. The theory of this plan is that the foremen of the various shops are the only ones who ought to go back and forth in the general course of the day's work and that the other em-

ployees have no business to move around from one department to another unless for some special and specific reason and in this case the foreman should know what is being done.

In the general arrangement of the departments there is also followed a logical order. The storeroom is in the center, where it can supply all of the departments of the shop, and is connected with them by a track located in the basement of the building. The paint shop is at one extreme end of the building, the carpenter shop is next, and these two departments are kept away as far as possible from the general repair shop, truck shop and machine shop, which are at the other end of the building. It is possible that the blacksmith shop could with advantage have been placed nearer machine and carpenter shops, but it did not seem possible to accomplish this result and still keep the storeroom in the center. It is believed that the system of continuous overhead carrier trolleys will prevent any serious difficulty in moving material between the departments. The course of the work through the shops is also such as ordinarily to require a minimum of shifting and delay. In the regular routine the cars would first go to one of the two inspection tracks in the general repair shop, then to the next two tracks for general repairs. In the meantime the car bodies would be put on dummy trucks and shifted to a definite track in the carpenter shop for stripping and trimming, and finally to the paint shop.

One other feature of special interest in the general design should be mentioned. This is the small space given over to storage tracks. The layout at Syracuse was influenced to a great extent by the fact that the shops adjoin one of the main car houses of the company, but it was also considered desirable to define clearly between the transportation and the mechanical departments the responsibility for holding cars in storage. Some storage at the shop is necessary and it has been provided on stub tracks, but as these tracks are limited in capacity there will be no tendency to store good cars on them or to delay the work of repairs. In other words, all of the cars in the car house are, at least presumably, available for transportation service, and those at the shop are under repair or awaiting immediate attention. This arrangement should result in reducing the time often lost by cars waiting in the car house for repairs or overhauling and in the repair shop, and thus should more closely define the relative responsibilities of the two departments.

Transfer Tables or Track Entrances

The use in the Syracuse shops of transfer tables instead of entrance tracks is worthy of further comment than was possible to publish in the description of the shops which appeared in last week's issue. In that number some of the advantages which seemed to be possessed by transfer tables were mentioned, but the idea is so radical as to attract immediate attention in the published plan of the shops. Under all ordinary conditions, with a 14-track shop, such as that of Syracuse, either transfer tables or entrance tracks are adequate to handle all of the cars which have to be taken to and from the shop, so that an analysis of the respective merits of the two plans can be reduced to that of their relative cost and of their operation under

extraordinary conditions, such as during and after a heavy snow storm and at the time of a fire. Considering the question of snow first, it might be assumed at first thought that a transfer table would be more apt to become clogged by snow and ice during the winter than tracks. Testimony on the efficiency of open transfer tables was taken, however, from points as far north as Minneapolis and seemed to show that there was no more danger on this score and no more liability of blockade than when tracks are used. But as a precaution the pits in which the transfer tables move were made 2 ft. deeper than the rails upon which the tables run.

In case of fire, it is probably true that a transfer table is not so expeditious in removing cars from a building as a series of entrance tracks, as it can carry only one car at a time. But when a car house or shop is divided into bays of only three or four tracks each, separated from each other by a considerable distance as in this case, the number of tracks from which the cars have to be cleared is practically reduced to those in each bay. With entrance tracks the cars at first can be taken out of the building more rapidly, but when they reach the main track they must be handled one at a time, and information collected in regard to several recent fires seems to indicate that after a few cars have been started out of the shop under emergency conditions a trolley wheel often gets off the overhead wire, a car becomes derailed or in some other way the entrance tracks become blocked. Moreover, many of the cars in a repair shop are on dummy trucks, and could not be removed with power in any event. It is also a fact that the fire regulations at many electric railway shops now require that the entire available force, after the fire department has been summoned, should give its attention to fighting the flames rather than removing more cars. These arguments among others lead the engineers of the Oneida Railway Company to believe that two transfer tables, under the conditions described, are at least as efficient as separate tracks.

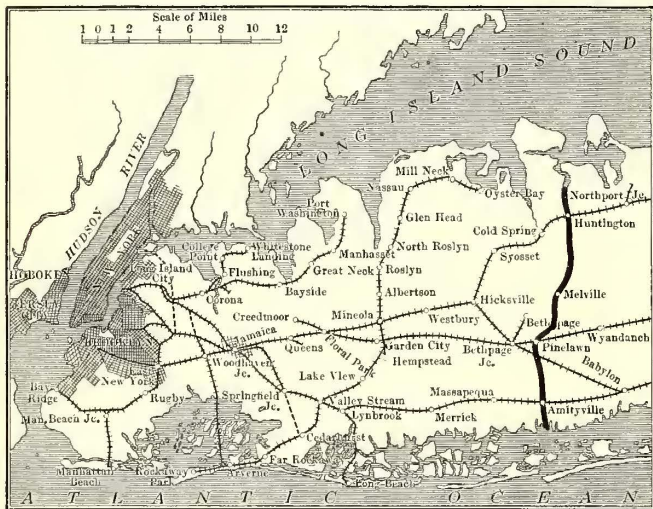
The final point is that of expense of installation and maintenance. Here the arguments are greatly in favor of transfer tables. As stated last week, the cost of the two transfer tables at the new Syracuse shops, installed complete with pits and foundations, was approximately 50 per cent less than the expense of corresponding ladder tracks and the cost of their maintenance is also estimated at far less than that required by the alternate plan, for the wear-and-tear on line and special work on the curves leading into a shop is always great. A single instance of a pole jumping the wire on an entrance curve might very easily cause damage to the overhead structure equal to, or greater than, the estimated cost of maintaining a transfer table for a year. The expense for power required to operate the table also was believed to be no greater than the extra expense involved in pulling cars around entrance curves.

It must be borne in mind that all of these arguments would not necessarily hold in the case of a car house installation, but it is interesting to find that in the case of the Syracuse repair shop, the various factors of efficiency and economy seemed to be all in favor of the double transfer table scheme.

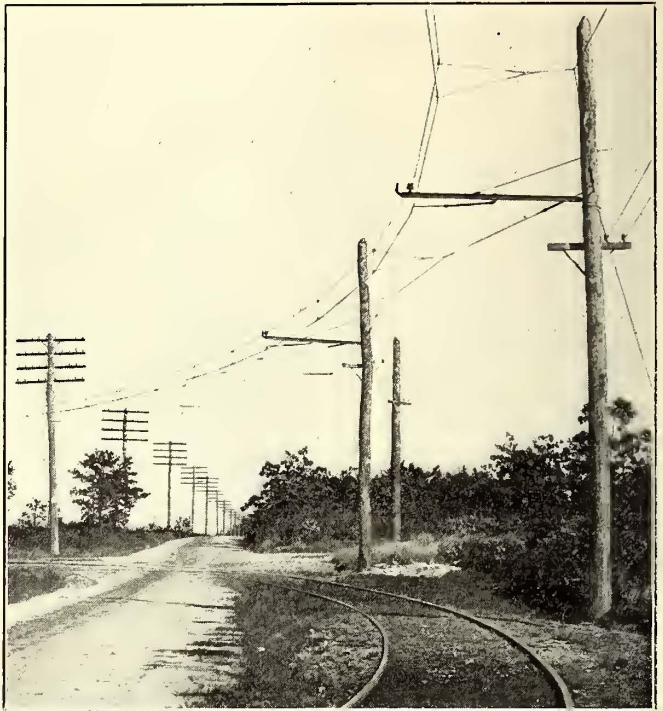
THE FIRST CROSS-ISLAND ELECTRIC LINE ON LONG ISLAND

The Long Island Railroad has recently completed, under the name of the Huntington Railroad, an electric line 18.53 miles long between Huntington Harbor on the north shore and Amityville on the south shore of Long Island. The towns named are respectively 34.6 miles and 31.5 miles east of the Brooklyn terminal of the Long Island Railroad and hence are practically just outside of the New York suburban zone. As shown on the accompanying map, the new electric railway affords the only direct connection between the three west-to-east divisions of the Long

The nucleus of the Huntington Railroad was a 2½-mile horse railway built in 1890 between Huntington village and the railroad station. Such a line was needed because, owing to the deep indentations on the north shore coast line, the steam railroad route is in general located more than



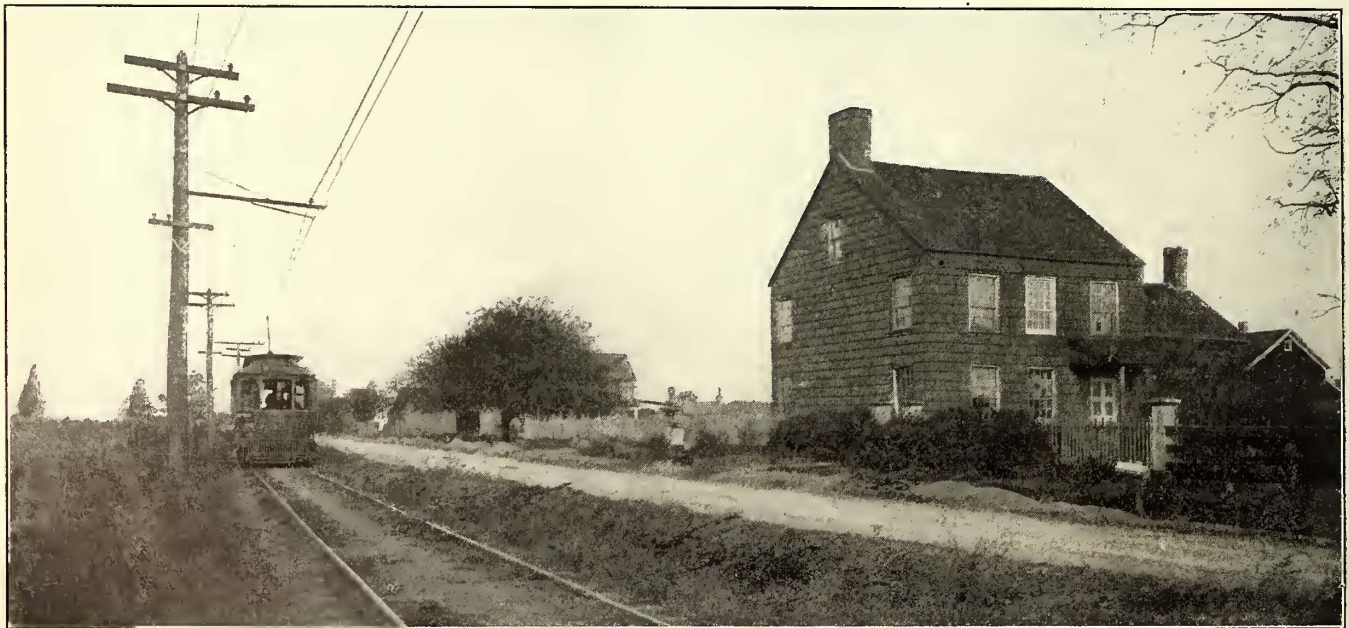
Huntington Railroad—Map Showing Cross-Island Electric Railway and Steam Railroad Connections



Huntington Railroad—Curve Construction in the Open Country

Island Railroad. It thus eliminates the long detour via Hicksville or Jamaica which was formerly necessary in making an all-rail journey between the north and south sides of the island or from either to the main line. The line was opened to the public from end to end on Aug. 25,

a mile inland from the towns on the shore after which the stations are named. In 1896 the horse line was purchased by the Long Island Railroad and the property was electrified for 500-volt d. c. operation and extended three-quarters of a mile north to the harbor of Huntington. Work on



Huntington Railroad—View Along the New State Highway Opposite the Birthplace of the Poet Walt Whitman

1909, and has not only proved a convenient feeder for the through steam divisions, but has also developed excellent local traffic. The total fare on this road from Huntington to Amityville is 30 cents; the five-cent fare zones average 3 miles in length.

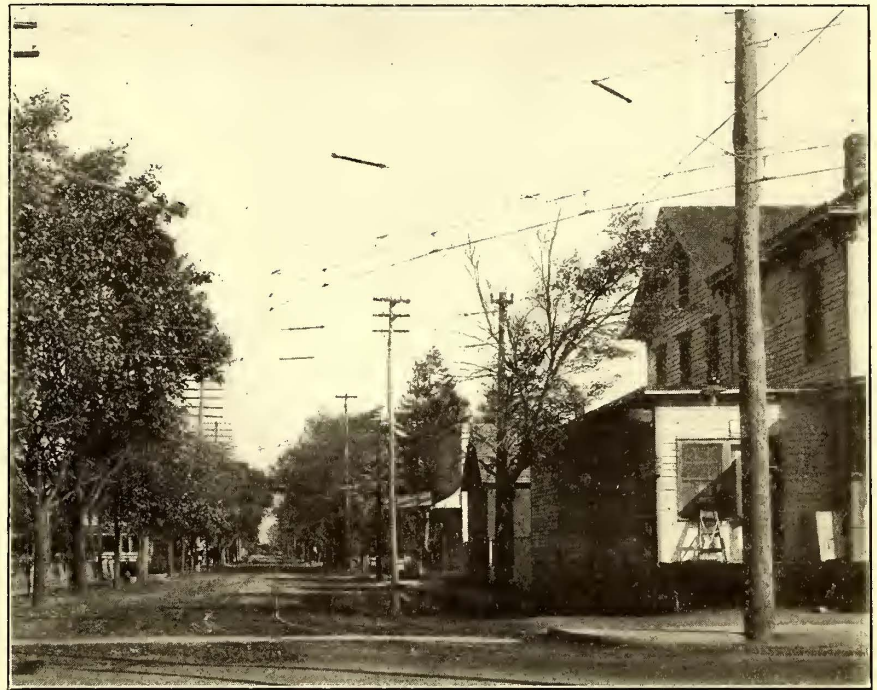
the cross-island extension to Amityville via the main line station at Farmingdale was started in 1907, but was discontinued on account of hard times until the spring of 1909. The construction was finished Aug. 15, 1909, and the road opened for service 10 days later as previously

mentioned. All of the new part of the line has catenary overhead construction and it is planned to change over the old portion between Huntington station and Huntington harbor during the spring of 1910.

ROUTE, BRIDGES AND BUILDINGS

The route of the Huntington Railroad after leaving Huntington follows the State highway through Melville and Farmingdale to Amityville except for a 2-mile cut-off on private right-of-way just south of Melville. The opening of the line has greatly stimulated travel for marketing and social purposes, while last summer's experience showed that the bathing beaches at each end were good drawing cards. The road is single track throughout, with short freight and passenger spurs from the highway to the Huntington station and one spur to the Farmingdale station. To avoid grade crossings with the three intersecting lines of steam tracks, undercrossings were built at Huntington and Farmingdale and a viaduct at Amityville. There are 11 sidings at present, but provision has been made for two more. At Huntington the electric cars pass under a new bridge, carrying the tracks of the North Shore steam division. A part of this bridge is shown in one of the accompanying views. It is of the half-through plate girder type, 68 ft. 5¾ in. long, and spans a 56-ft. roadway, the trolley track being located at one side near the abutment. It is carried on concrete abutments and has an 8-in.

clearance of 14 ft. and is of the open-floor deck plate girder type with a span of about 42½ ft. The Amityville viaduct, which is shown in one of the accompanying cuts, crosses over the Montauk division of the Long Island Railroad. This viaduct is made up of I-beam spans about 30 ft. long and one plate girder span 58 ft. long, the latter giving



Huntington Railroad—Curve Construction in the Village of Farmingdale

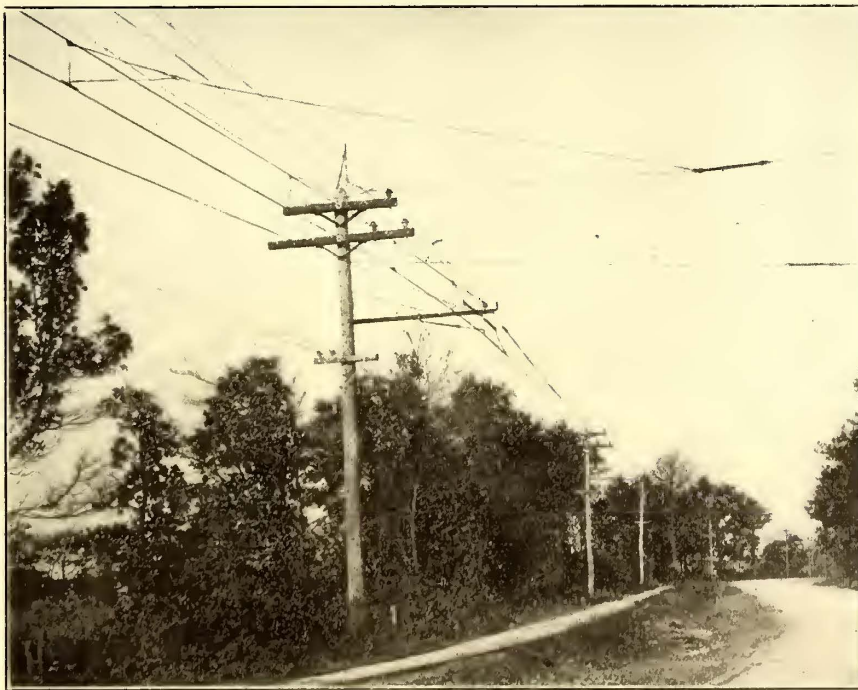
a 21-ft. clearance over the present two-track and future four-track line at this location. The overhead trolley is carried from light steel bridges which are riveted to brackets on top of the bents supporting the floor.

In building the new line it was determined to replace the old steam station at Huntington with a new structure accessible to both steam and electric passengers. As is evident from the accompanying view, the new station is a very handsome building. It is made of stuccoed brick with a shingled gambrel roof. The shelters on each side are made up of stuccoed columns, and as they have triangular roofs, the wings present the classic outlines of Greek temples. The station has been given a most attractive appearance by planting flowers and grass along the approaches. The station building is two stories high, 28 ft. wide and 82 ft. long, divided as shown in the accompanying plans. The lower floor contains the ticket office and the substation feeding the north end of the line, while the upper floor has been finished for living quarters for the station agent.

The improvements at Huntington, including the station, bridge and approaches, cost about \$100,000.

TRACK

The old tracks of the Huntington Railroad were laid with 56-lb. T-rail bonded with No. 00 concealed ribbon

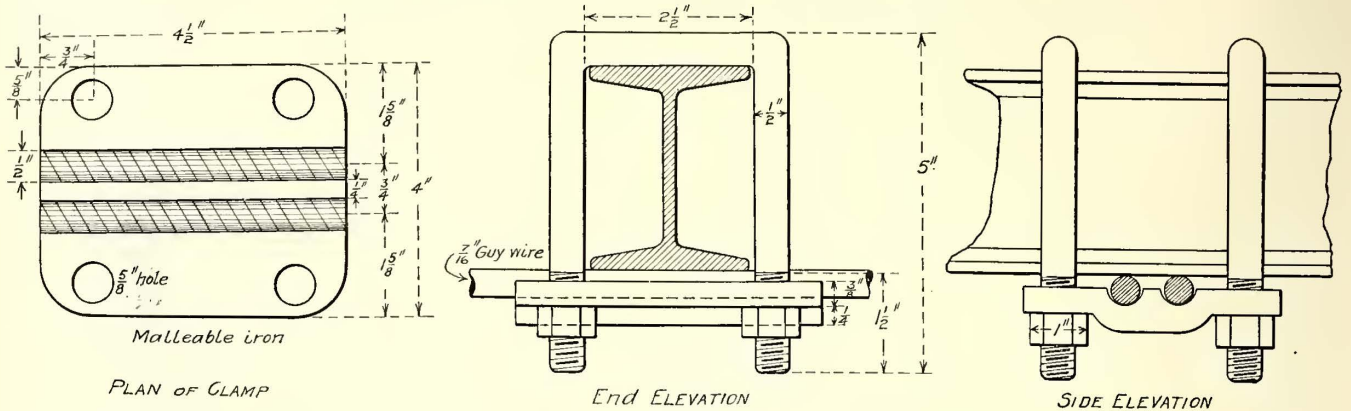


Huntington Railroad—Typical Anchorage with Connections to Opposite Poles

reinforced concrete jack-arch floor supported on 20-in., 70-lb. I-beams spaced 3 ft. apart. The girders of the Huntington bridge are 8 ft. deep. The Farmingdale bridge, carrying the main line division of the Long Island Railroad, crosses the 40-ft. wide Broad Hollow road with a

bonds 12½ in. long. In all of the new work 70-lb. T-rail was used except in Farmingdale and Amityville where 73-lb. girder rail is laid in straight track and 140-lb. sections at curves and through special work. The new rails are bonded with No. 00 cable bonds, 12 in. long. In general the rails are laid on white oak or yellow pine ties

ingdale and Huntington. The transmission circuits follow the main line of the Long Island Railroad as far as Farmingdale where they are diverted to the poles of the trolley line. The high-tension wires are of No. 4 copper and are carried on Thomas 6½-in. insulators. Protection from lightning is afforded by a No. 4 steel wire which is ground-

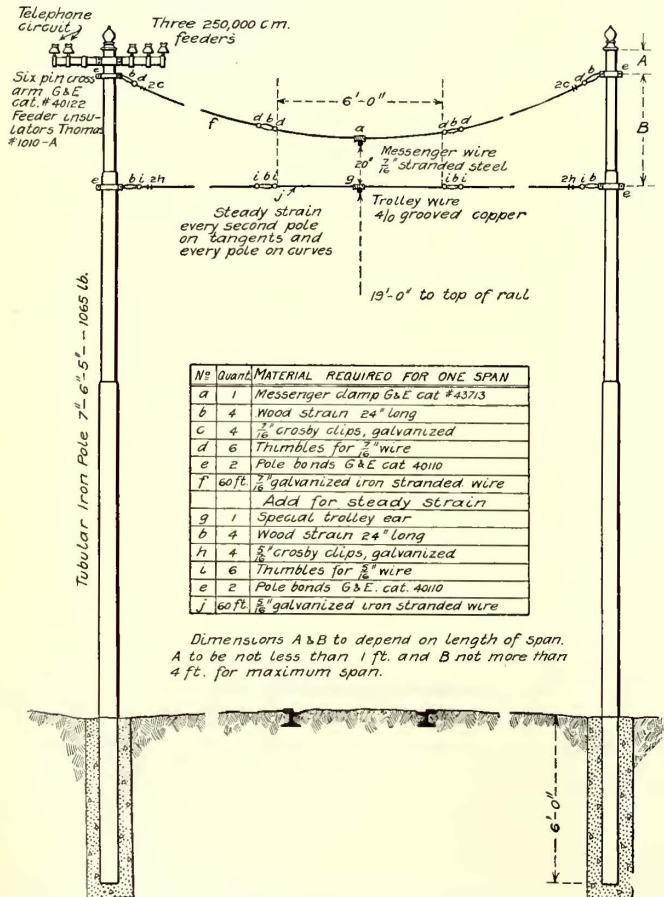


Huntington Railroad—Anchor Clamp Used for Bracket Construction

spaced 2 ft. apart center to center, but where the line passes over the macadamized street in Amityville the company installed yellow pine ties creosoted by the Barber Asphalt Company's Rueping process. The treated pine ties cost \$1.02 each against 85 cents for the untreated oak or pine ties.

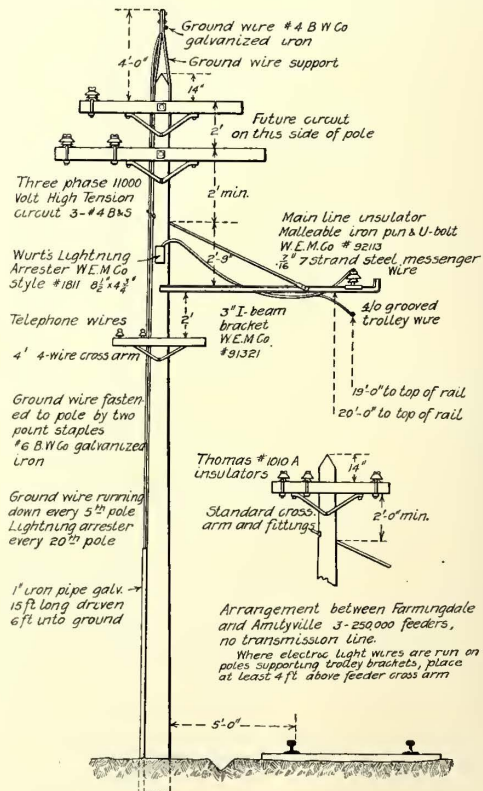
ed at every fifth pole. The telephone wires, which are carried on the same poles, are transposed at every fifth pole.

The feeder system comprises three 250,000 circ. mil cables between Farmingdale and Amityville; nothing except the trolley and messenger wire for the 9.5 miles between Farmingdale and Huntington, and a No. 0000 feeder from the Huntington substation to the harbor. The feeder and trolley are protected by a Wurts lightning arrester mounted on every twentieth pole or 2000 ft. apart. The trolley is of



Huntington Railroad—Span Construction with Steel Poles in Towns

TRANSMISSION, FEEDERS AND SUBSTATIONS
Power for the operation of this line is transmitted from the power station supplying the electrified lines of the Long Island Railroad Company in Long Island City at 11,000 volts, three-phase, 25 cycles to substations at Farm-



Huntington Railroad—Bracket Construction at a Feed Point

No. 0000 copper and the messenger wire of 7/16 in. steel throughout.

The Huntington substation is housed in a room of the passenger station with the exception of the lightning protection equipment. The latter, which is of the Westing-

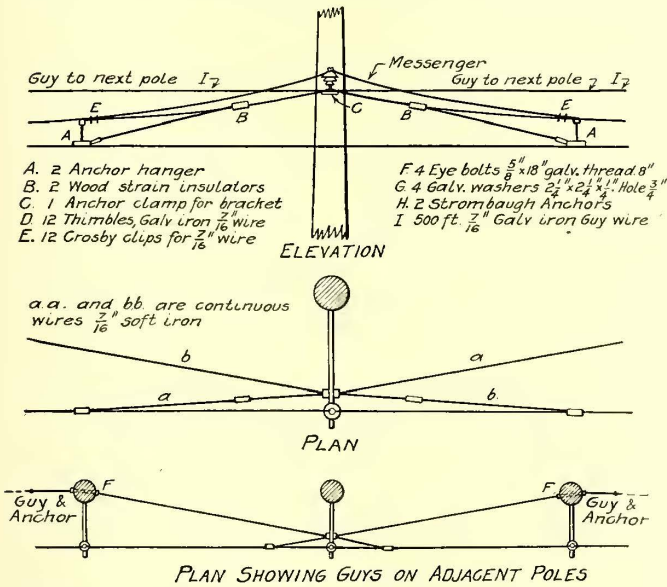
house electrolytic type, illustrated, is installed in a small brick structure about 500 ft. distant. The high-tension cables are brought from this house over the adjacent bridge in galvanized iron pipes and continued underground to the substation in fiber ducts set in concrete. The feeders from the substation are also carried underground

the old steam railroad station to house a 150-kw Westinghouse rotary converter and three 60-kw transformers. Provision has also been made here for installing a duplicate of the present equipment.

CATENARY LINE CONSTRUCTION

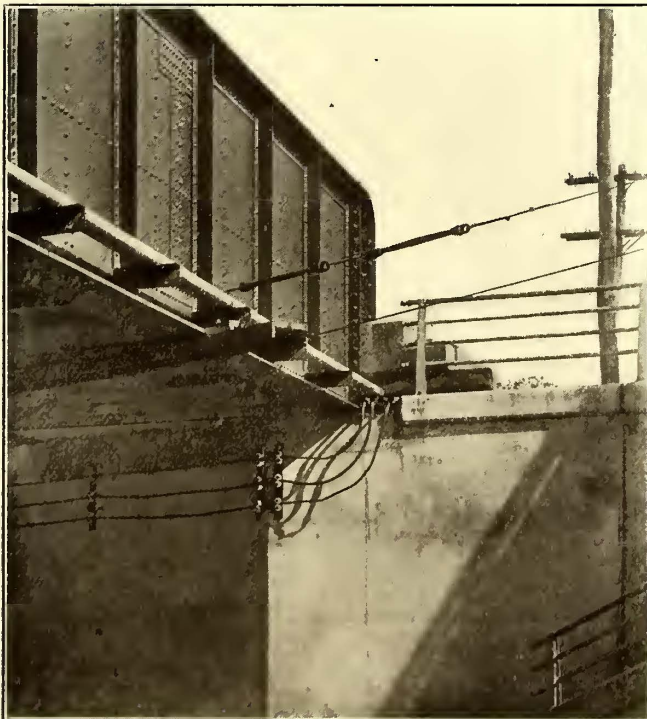
Although there is no likelihood that the Huntington Railroad will be operated by alternating current in the near future, the overhead line has been built according to the Westinghouse three-point catenary system and is suitable for 3300-volt, single-phase service at any time. The decision to use the catenary for d.c. operation was made largely for the reason that this line is so far from the other electric railways operated by the Long Island Railroad that it was essential to adopt a construction requiring the least possible maintenance. The catenary system therefore received favorable consideration and especially so in view of the company's experience on the Glen Cove (Long Island) line. The latter road is a 5-mile catenary line installed in 1905 on which very little has been expended as yet for the maintenance of the overhead work. Aside from the advantages of lower maintenance and possible change to high-tension current in the future, the adoption of the catenary permitted a pole spacing of 150 ft. instead of 100 ft. and avoided installing a feeder cable on part of the route.

In general the catenary is carried from 3-in. I-beam brackets attached to the same poles which carry the high-tension and other wires. In Farmingdale and Amityville, however, span construction is used with three-piece tubular iron poles weighing 1065 lb. each and set in concrete to a



Huntington Railroad—Anchorage Scheme with Bracket Construction

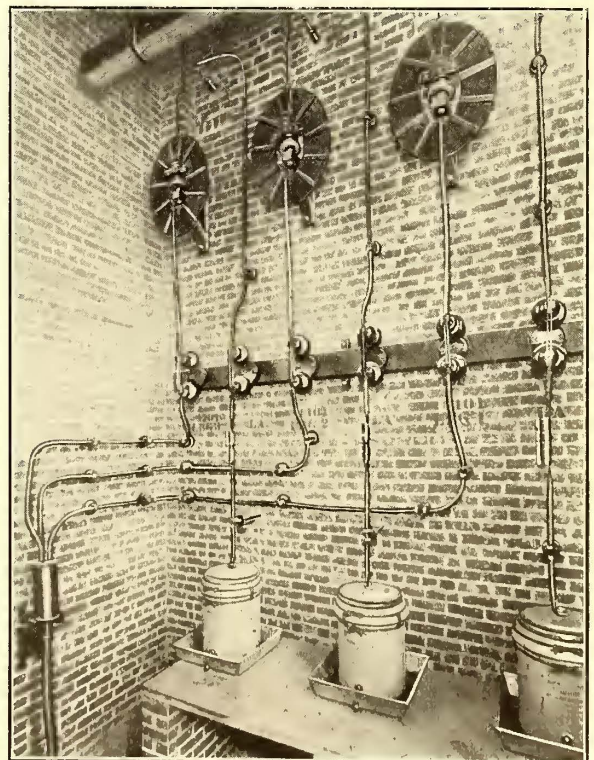
in fiber ducts. This method avoids the use of unsightly overhead wires which would spoil the appearance of the station and also confines any disturbances from lightning



Huntington Railroad—View of Huntington Bridge, Showing Pipe for High-Tension Lines, Temporary Feeder Connections and Double Trolley Insulation

discharges to a place some distance from the passenger station. The Huntington substation equipment includes two 125-kw General Electric rotaries and three 100-kw oil-cooled transformers.

At Farmingdale a two-story extension has been built to



Huntington Railroad—Interior of Isolated Lightning Arrester House at Huntington Showing Electrolytic Arresters

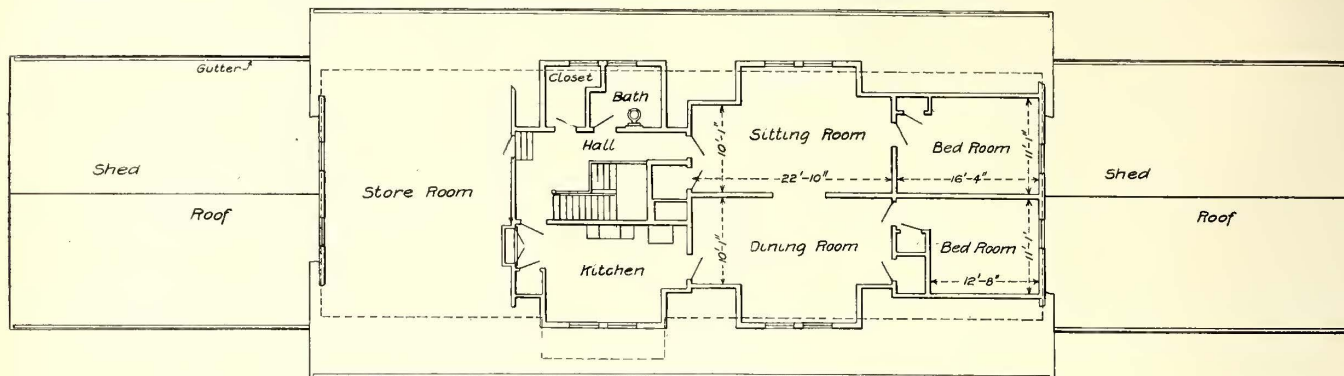
depth of 6 ft. In both cases the messenger wire is carried 20 ft. and the trolley wire 19 ft. above the rails. Hickory steady strains are used at all poles on curves and at every other pole on tangents.

One of the accompanying drawings shows the method

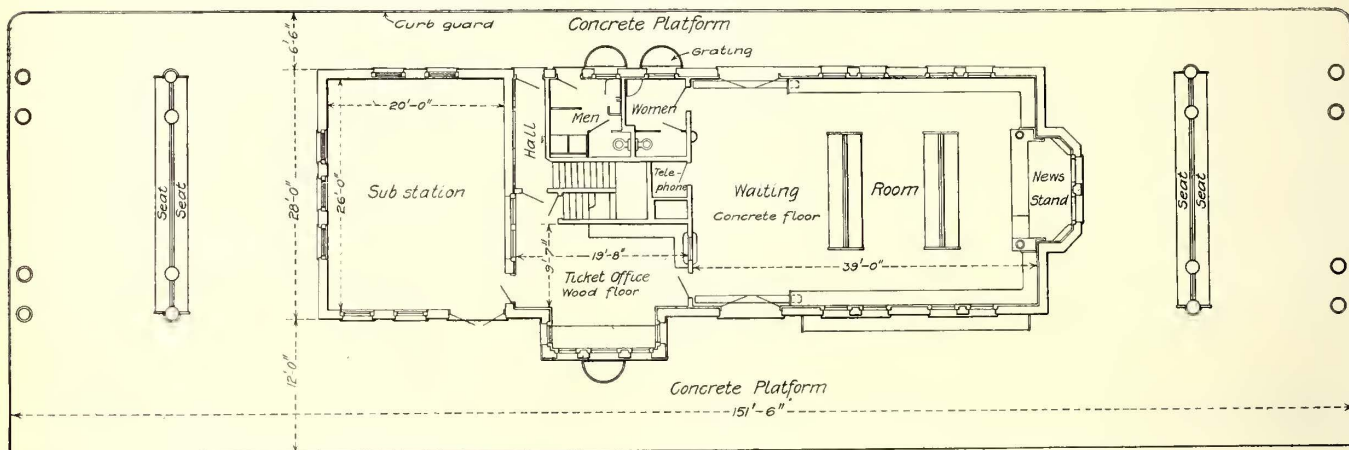
employed to anchor the line about every 2000 ft. on tangent sections and another shows the malleable iron anchor clamp which was devised for this purpose by the Long Island Railroad Company's engineers.

No. 112 designs. The cars were withdrawn from service on the Ocean Electric Railway, an allied company which operates a line from Far Rockaway, Long Island. The motor equipments are rather light compared with ordinary cross-country lines, but they appear to be entirely satisfactory for the moderate speed requirements on the Hunt-

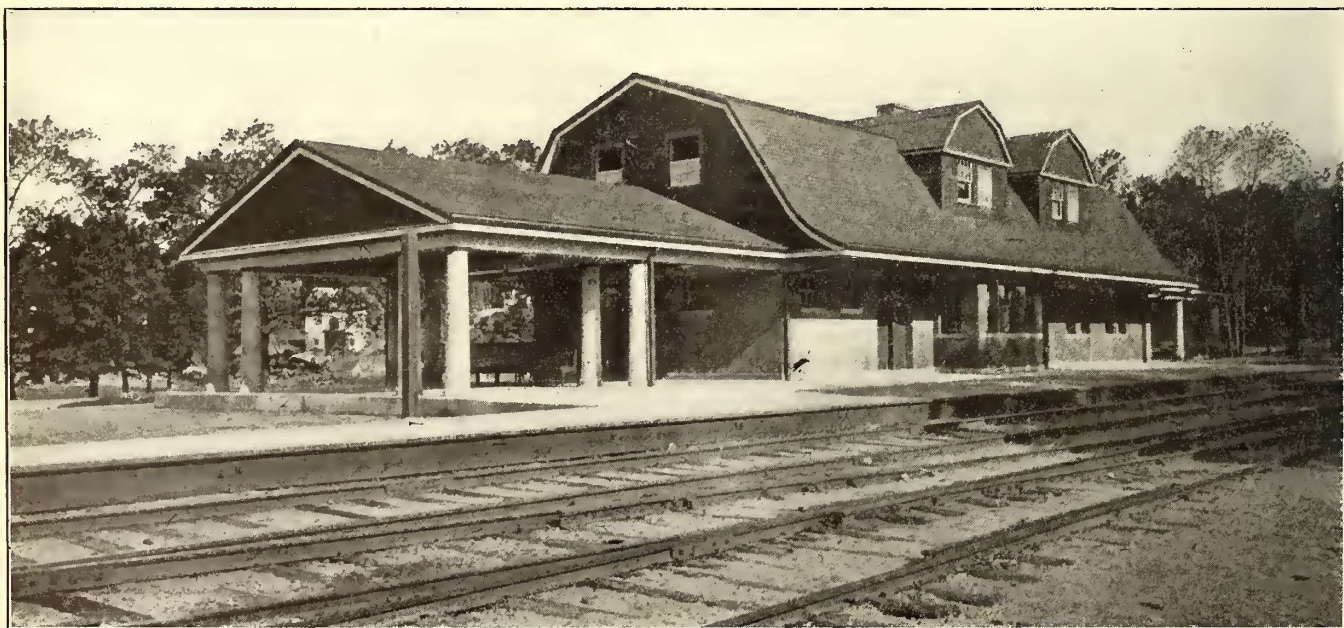
ROLLING STOCK, PASSENGER AND FREIGHT SERVICE
During the past summer the cross-island traffic of the



Huntington Railroad—Plan of Second Floor of Huntington Station



Huntington Railroad—First Floor Plan of Huntington Station, with Substation Room



Huntington Railroad—Combined Steam and Electric Passenger Station, Including a Substation Room, at Huntington

Huntington Railroad was carried in six convertible, vestibuled cars either 46 ft. 6 in. or 46 ft. 9 in. overall. These cars seat from 54 to 60 passengers each, the six cars having a total seating capacity of 344 passengers. They carry two-motor equipments of General Electric 57 or Westinghouse

ington-Amityville line. With these cars 16 through trips were made every day during the past summer. The schedule time between Huntington and Amityville was 1 hour and 16 minutes.

Aside from the cross-island service, local cars are

operated in Amityville on train orders and a good local service is given between Huntington station and the harbor. For the latter service there were used last summer seven cars of open, closed and convertible types ranging in length from 23 ft. 3 in. (10-bench trailer) to 36 ft. 3 in. and seating a total of 284 passengers. All but one of the Huntington cars are equipped with two GE-1000 motors.

All cars are dispatched by telephone and all orders are recorded in triplicate, one copy for each of the crew and one remaining in a locked box for the dispatcher, according to the system of the Autographic Register Company, New York. The through cars carry portable telephones and jack boxes are installed at all sidings and elsewhere along the line at intervals of 2000 ft.

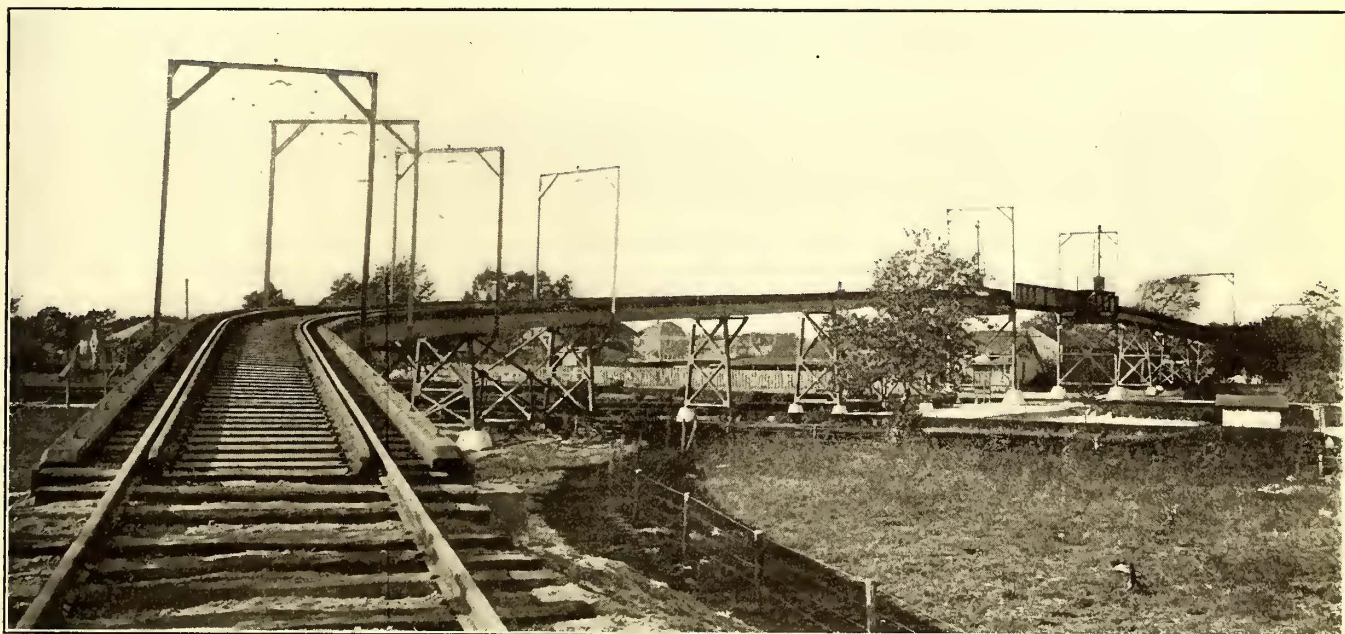
The company conducts a small freight and baggage transfer business between the station and town of Huntington. The charge for handling freight is 2 cents per 100 lb., with a minimum of 5 cents. There is no extra charge for the express baggage transfer as the charge of 50 cents per 100 lb. includes transfer to the village of Huntington from

REPORT ON VISITS OF PHILADELPHIA COMMITTEE

The report of the joint special committee of the Select and Common Councils of Philadelphia, appointed to investigate various features of the street railway systems in other cities of the United States and the statistical reports secured in each city visited, have been published in pamphlet form.

When the Philadelphia Rapid Transit Company issued an order in May, 1908, relating to the issue of free transfers, various ordinances and rules were introduced in Councils and were referred to the committee on street passenger railways, which, in turn, referred them to a sub-committee. After a public hearing, it was voted jointly by the Select and Common Councils to authorize the appointment of a joint special committee of three members from each chamber to co-operate and act in conjunction with the sub-committee on street railways to investigate the various questions involved.

In its report to the general committee the sub-committee



Huntington Railroad—Viaduct Over the Long Island Railroad Tracks at Amityville

Brooklyn or lower New York. This freight and baggage transfer service is performed with one 23-ft. motor baggage car carrying two General Electric-1000 motors, a trailer baggage car and a trailer flat car.

A JAPAN-BRITISH EXPOSITION IN LONDON

From May to October, 1910, there is to be held under the auspices of the Japanese government and prominent English interests an exposition of Japanese and British arts and manufactures at the "White City," Shepherd's Bush, London. The exposition will include a machinery building with an electrical engineering section. The Japanese exhibit will include examples of means of communication of different periods, particularly of engines and cars. This will be the first great display of Japanese products in Europe, and will probably create more interest than the Franco-British exposition. The exposition grounds cover 160 acres, and are within 15 minutes of the heart of London. It is announced that diplomas and medals will be granted to successful exhibitors. Applications for space should be addressed to the secretary, Japan-British Exposition, 1910, Great White City, Shepherd's Bush, London.

relates its experiences at Pittsburgh, Cincinnati, Milwaukee, Detroit, Cleveland, Buffalo, Boston, Brooklyn and New York. The committee states that it "met with the greatest courtesy and frankness in each city, and wishes to take this occasion to thank the officers of the various companies who thus offered every avenue of information and rendered every assistance in their power to aid your committee in its labors."

The report to the general committee is treated under six headings, covering (1) rate of fare, (2) length of routes, (3) transfer privileges, (4) abuse of transfers, (5) new construction in five years, (6) taxes. In addition to these matters, various other points were brought up by the committee.

The report states that "in nearly every case the managers of the street railway properties have advocated the speeding of the schedules. Mr. Beggs, of Milwaukee, thought that a schedule of 9 m.p.h., including stops, was about right for the center of the city, and pointed out that it took 12½ per cent less equipment to do the same work at the rate of 9 m.p.h. as at the rate of 8. On the other hand, Mr. Brooks, of the Detroit system, when asked whether a higher rate of speed was not economical for

the company, in that it reduced the number of cars and employees required, answered that speed cost money in the wear and tear of track and rolling stock, damages, etc."

Taking up in detail the visits to the various cities, the report describes first the visits to Pittsburgh, Cincinnati and Milwaukee. The Pittsburgh Railways Company stated that from its experience "special work costs twice as much as straight track for installation," and "the cost per foot run of track per annum for installation, renewal and maintenance is for special work about 3.77 times what it is for straight track." The Cincinnati Traction Company stated that from its experience the cost of installing and keeping up special work was about two and one-half as much as for track. The answers to the written questions given by the Milwaukee Electric Railway & Light Company related to the city system in Milwaukee only. These answers stated that there was abuse of the transfer system in Milwaukee to a very general extent. "The company felt that it had surrounded the issue and receipt of transfers with all the safeguards practicable, consistent with the conditions under which the company is operated. If the transfers are correctly issued by the conductors and properly used by the passengers under the conditions, there would be no abuse of the use of free transfers on this system." This company stated that the life of special work ran from approximately 33 1/3 per cent to 50 per cent of the life of straight track.

In his formal answer to the written questions of the committee, F. W. Brooks, general manager of the Detroit United Railway, referred as follows to the system of transfers in force on the lines of that company: "The lines in the city of Detroit comprise three separate systems. It is required that a transfer shall be issued upon the payment of a 5-cent fare from a line of one system to an intersecting line of the same system. It is not required that a transfer shall be given from a line of one system to a line of another system. The company, desiring to promote the general good of the city, voluntarily issues a transfer upon the payment of a 5-cent fare from a line of one system to a line of another system. It is in this way issuing many millions of transfers voluntarily. It is feared that the growing abuse of transfer privileges may necessitate withdrawing, to a large extent, the transfer privileges now granted to the public." In answer to other questions on the subject, Mr. Brooks said: "The company has reason to believe that on account of the abuse of the transfer privilege it is deprived of several million fares annually to which it is rightfully entitled." This company estimated that the cost of maintaining special work was about six times as much as for straight track.

The interview with the committee in Cleveland was held with A. B. duPont, at that time president of the Municipal Traction Company, which was operating then the lines of the Cleveland Railway Company. During this interview Mr. duPont expressed his opinion that the franchise under which the company was operating was worth \$25,000,000.

In visiting Buffalo the committee saw H. J. Pierce, then president of the International Railway. Mr. Pierce spoke of the hope for the future in the pay-as-you-enter car. Mr. Pierce stated in his written answer to the questions submitted that the cost of installing and keeping up special work was about five times as great as for straight track.

In its visit to Boston the committee interviewed C. S. Sergeant, vice-president of the Boston Elevated Railway. In relation to the subject of transfer abuse, the Boston Elevated Railway said in its written answer to the ques-

tions submitted by the committee that general abuse existed where transfer tickets were obtained unlawfully by persons who mingled with the crowds at transfer points, by the exchange of tickets and the use of tickets issued to others and by conductors' frauds. To stop the abuse, the company had put nearly all transfers into conductors' hands for issue. It gave what inspection it could and prosecuted offenders, but abuse was a serious loss.

In its visit to Brooklyn, the committee interviewed Edwin W. Winter and J. F. Calderwood, president and vice-president, respectively, of the Brooklyn Rapid Transit Company. Mr. Winter said that the growth of the transfer evil was caused in part by legislation and in part by the mistaken idea on the part of companies that the more people they moved the more money they would have. The cost of electrical apparatus and of operation, however, had been beyond what was anticipated. C. D. Meneely, secretary and treasurer of the Brooklyn Rapid Transit Company, showed the committee a map illustrating the possible abuse of the transfer privilege.

In visiting New York the committee called on T. P. Shonts, president of the Interborough Rapid Transit Company. In discussing the abuse of transfers in his written statement, Mr. Shonts said: "The result of compulsory transfers is most unsatisfactory. Added to the misuse by the public, the practical impossibility of a close accounting of the issue and receipt of transfers presents more or less opportunity for dishonest conductors to rob the company through direct sale and trading. Many years' experience with transfers on a large system confirms the statement that the use of transfers to any extent is a constant menace and source of loss, and from this point of view of the railroad companies, wholly undesirable and unsatisfactory." In answer to the question as to a remedy, Mr. Shonts suggested the discontinuance of the issue of transfers, or, if that was impracticable, that a charge be made and the number limited.

The answer of the Philadelphia Rapid Transit Company, to which the same questions were submitted, said in relation to the transfer abuse: "There is very great abuse by the public generally and by certain of our employees. The exact extent it is impossible to tell, but it is a matter of public scandal, and unquestionably has cost the company a great deal of money."

REPORT ON NEW SOUTH WALES GOVERNMENT TRAMWAYS

The report of T. R. Johnson, chief commissioner for railways and tramways of New South Wales, covering the year ended June 30, 1909, shows gross earnings for tramways of £1,097,565, as compared with £1,011,994 in the preceding year. The working expenses were £875,560, as compared with £809,065. The net earnings in the last year were £222,005, as compared with £202,929 in the preceding year. Deductions on account of interest on the capital invested were £142,831 last year, as compared with £134,504 in the preceding year, leaving balances of £79,174 and £68,425 for the respective years.

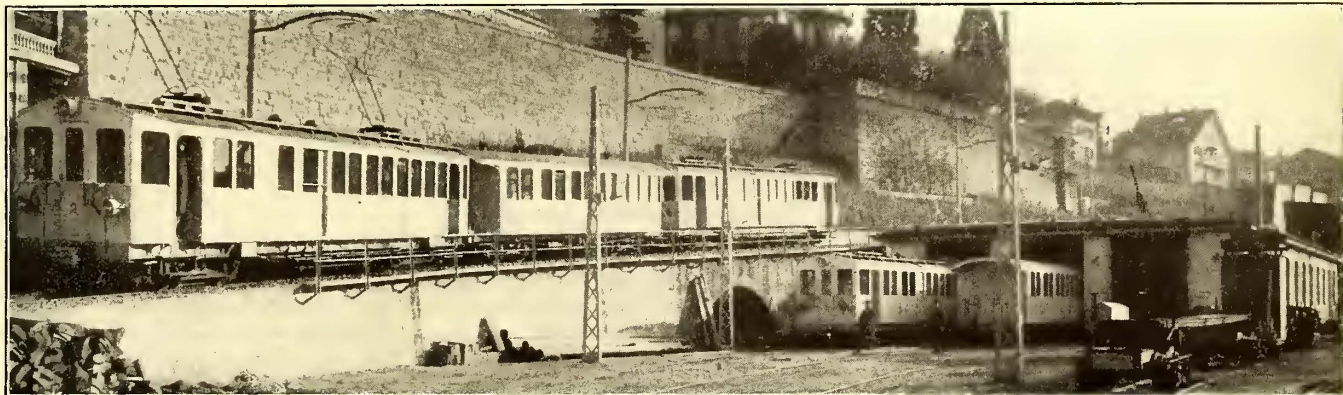
In describing the rolling stock the report says in part:

"Since the introduction of electric working, the capital of the old steam stock has been written down by £229,572, and that sum has been charged to working expenses to meet the cost of 101 steam motors, 158 steam cars, 39 cable trailers, 33 grip cars, 5 steam trail cars, 13 electric motor cars and 4 motor omnibuses written off the books."

THE MONTREUX-BERNOIS RAILWAY

Of the many electric railways which make the beauties of the Swiss Alps so accessible to the tourist there is none which offers a more interesting trip than the Montreux-Bernois Railway, between Montreux and Zweisimmen in the Bernese tableland. The entire line is 62.1 km (38.5 miles) long, and cost 13,050,000 francs (\$2,610,000). This comparatively high cost was due to the large number of tunnels and special construction required.

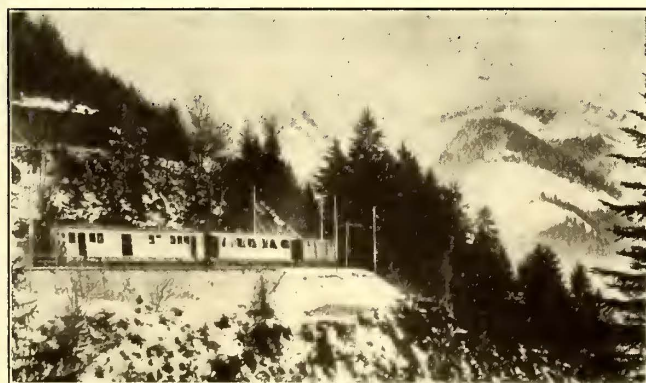
The first section of the railway was built in 1901, and was designed for steam operation, but changes were made



Montreux-Bernois Railway—Storage Yard and Car House at Montreux

later to make it conform to the construction of the rest of the road. The maximum grade on this section is 6.7 per cent and the minimum radius of curvature 40 m (131 ft.). The gage is 1 m (39.37 in.). The rails weigh about 49 lb. per yard and are laid on steel ties spaced 91 cm (35 in.) apart on tangents and 83.5 cm (32 in.) apart on curves. The track is heavily ballasted with broken stone.

The overhead line is carried from curved steel brackets attached to wooden poles, except in the yard at Montreux, where steel lattice poles are in use. Two staggered trolley wires are employed. Both are of hard drawn copper 8 mm in diameter (102,400 circ. mil) or 9 mm in diameter



Montreux-Bernois Railway—Motor, Trailer and Freight Car Going Down Valley

(129,600 circ. mil), and are carried at various heights above the rails, varying from 6 m (18.5 ft.) to 4 m (12.3 ft.) in tunnels. Under the last condition the pressure on the wire from the aluminum bow collectors is over 11 lb. The rails are bonded with Harold P. Brown's plastic alloy and cross-bonded with copper every 200 m (657 ft.), which is also the distance between the feeder taps. The feeder system is of such capacity that under normal running conditions the drop in the line will not exceed 20 per cent.

The power supply is purchased from hydroelectric companies and transmitted to converter stations at 8000 volts, 50 cycles, three-phase. Each station is supplied with 8000-volt induction motors, which are direct-connected to 750-1000 volt, shunt-wound d.c. generators. A converter set usually consists of a 250-hp motor and a 170-kw generator. The d.c. machines are mounted on insulators. It is rather instructive to learn why a d.c. system with series motors should have been chosen for this mountain railway. Three-phase equipment was seriously considered, but was not adopted because a two-speed motor appeared impracticable to carry out the schedule on a line

with so many diverse grades. The d.c. motors could be relied upon to make up lost time and to be less sensitive to a drop in voltage. Again, the subject of line repairs was particularly important, since a d.c. wire could be repaired while alive, and in any event with less trouble than a three-phase line. The most important reason for direct current, however, was the possibility of using storage batteries. Batteries have been placed in all converter plants and have made it possible to purchase current at the most favorable figures.

The type of car used is shown in the views. It is furnished with vacuum and with electro-magnetic track brakes. Each car has four 65-hp motors wound for 750 volts and operated with a series-parallel controller. Trail cars are used. One of the conditions set forth for the motor design was that the motor speed must not exceed 1100 r.p.m. when the car is running downhill at 40 km an hour (24.8 m.p.h.). Extra large resistances were adopted for better speed regulation on light grades.

All of the electrical equipment and part of the rolling stock was furnished by the Alioth Company, Basel, Switzerland.

TRACK CONSTRUCTION ON MARKET STREET IN SAN FRANCISCO

B. P. Legaré, engineer of maintenance of way and construction of United Railroads of San Francisco, calls attention to the fact that the work of reconstruction on the Market Street line in San Francisco during the early part of this year was carried out directly by the company and not by contract, as stated on page 555 of the issue of this paper for Oct. 2. The paving was done by the city, but the work on the construction of the track was carried out by the engineering department of the United Railroads.

The municipal authorities of Broussa, Turkey, have invited tenders for a concession to build an electric tramway system in that city.

HEARING ON HEATING CARS IN NEW YORK

The hearing before the Public Service Commission of the First District of New York to determine why an order should not be made by the commission specifying that a temperature of not less than 45 deg. Fahr. above zero nor more than 65 deg. above zero should be maintained between Oct. 15 and April 15 in all electric and horse cars operated within the territory under the jurisdiction of the commission, and requiring that a copy of the order and a thermometer be displayed in each car, was continued on Nov. 4. Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company; W. S. Menden, assistant general manager and chief engineer of the Brooklyn Rapid Transit Company; Edward A. Maher, manager of the Third Avenue Railroad and the Union Railway; F. T. Wood, assistant to the general manager, and H. H. Adams, superintendent of rolling stock and shops of the Metropolitan Street Railway; S. W. Huff, president and general manager of the Coney Island & Brooklyn Railroad, and W. O. Wood, president and general manager, and Chas. S. Banghart, master mechanic of the New York & Queens County Railway, were in attendance. The following counsel represented the companies: J. L. Quackenbush, the Interborough-Metropolitan Company and the Metropolitan Street Railway; Herbert J. Bickford, the Third Avenue Railroad; Brainard Tolles, the Second Avenue Railroad; C. L. Addison, the Ocean Electric Railway; A. H. Larkin, the Richmond Light & Railroad Company and the Staten Island-Midland Railroad Company, and L. F. Crumb, the Yonkers Railroad. The hearing was before John E. Eustis, as a member of the commission, with H. H. Whitman as counsel. E. G. Connette, transportation engineer of the commission, also was in attendance.

In opening the hearing Mr. Eustis said that some reasonable regulation for heating the cars was needed, and suggested that the testimony be directed to learning what kind of an order would be least burdensome to the companies and afford the public maximum protection. He referred to the fact that at the previous hearing objection had been general on the part of the representatives of the railroads to the minimum temperature of 45 deg. fixed in the proposed order and requested that the representatives of the companies state their objections to the use of thermometers. He asked how the public was to know whether the order was complied with if the thermometers were not used.

Mr. Hedley of the Interborough Rapid Transit Company was the first witness. He said that thermometers in the cars would be a source of continuous trouble to the companies and the commission. It would be difficult to locate the instruments so as to secure fair average readings, and the readings would vary at least 5 per cent. Longitudinal and side draughts especially would affect the instruments. He was opposed to any arbitrary rule. The heating of the subway and elevated cars was regulated from the general office of the company, the amount of heat being governed by the prevailing weather. At points near the center of the road and at all terminals placards were displayed informing crews of the amount of heat to be carried.

Mr. Hedley said that by means of the company's private telephone system the heat could be changed on all cars in seven minutes. The instructions to guards on the elevated lines were to open the rear doors of the cars first so that a

back draught would not be caused when the front door was opened. Even with this precaution the thermometer, no matter where located on the elevated cars, would record a drop of temperature of 20 deg. at stations on account of the inrush of air.

Mr. Hedley also said that with the temperature of the street from zero to freezing he considered that the maximum temperature of the cars should not be more than 50 deg. Mr. Whitman, counsel for the commission, read part of the order of the Railroad Commission of Massachusetts to the street railways operating in that State regulating the heating of street cars. This order fixes the minimum at 40 deg. and the maximum at 60 deg. and imposes a fine of \$25 for each trip made by a car insufficiently heated.

Mr. Menden of the Brooklyn Rapid Transit Company, who at the previous hearing had agreed to relate the experience of his company with thermometers, said that about seven years ago his company suffered the loss of several power stations by fire and that because of resultant lack of power it was impossible to heat cars sufficiently at all times. As a result complaint was made to the Railroad Commission and in accordance with an order from the commission thermometers were installed in about 100 cars and were continued in use from January, 1903, until March, 1903. During this time some of the instruments were stolen and many broken. The period was so short and the results so disastrous that no effort had been made to preserve the records.

Mr. Menden said that the ratio of power consumed in the heaters to the amount required to run a car varied greatly with the type of equipment, the degree of temperature desired to be maintained and the number of stops. While he did not care to testify regarding this point without consulting his records he said that with both the high and low resistance coils of the heaters in circuit giving the maximum of heat it would take about half as much current to heat a car as to operate it.

Mr. Maher of the Third Avenue Railroad and the Union Railway said that the first winter when electric heaters were installed in the cars of the Union Railway the regulation of the heat was left in the hands of the conductors, but this proved so unsatisfactory that the heat on cars of both the Union Railway and the Third Avenue Railroad had since been regulated from the car house of the company at Sixty-fifth Street and Third Avenue and the general office at 129th Street and Third Avenue, and was therefore entirely under the control of the office forces at these places. The heaters on cars operated over these lines were turned on one point when the thermometer registered more than 30 deg. and two points when it registered 30 deg. or below. Mr. Maher knew of no better way than that used by his company to regulate the heat. It would certainly be much more difficult to heat the pay-as-you-enter cars, in use on Third Avenue Railroad and the cross-town lines in the city proper, than the ordinary type of car, as both the front and rear doors of the pay-as-you-enter cars were opened simultaneously.

As it had previously been explained that the New York order was based largely on the order of the Massachusetts Commission regulating the heating of cars, Mr. Quackenbush said that the companies he represented would be willing to accept an order similar to the Massachusetts order and Mr. Larkin said that the companies he represented would also abide by such an order. Mr. Eustis of the commission said that personally he felt that the thermo-

meters could be dispensed with, but that he could not venture to say whether the other members of the commission would share this opinion with him. He said the purpose of the commission was to promulgate a reasonable order and that he thought the method followed in Massachusetts of having employees of the commission make occasional readings would suffice to determine whether the companies were wilfully neglecting to comply with the requirements.

F. T. Wood of the Metropolitan Street Railway said that during the period between Oct. 1, 1908, and April 1, 1909, a total of only 29 complaints had been received that could in any way be construed to bear on the heating of the cars of his company and that during this time 182,000,000 passengers had been carried, making the percentage of complaints very small. Among these complaints there were several that were general and very unfair, such as one in which the assertion was made that none of the cars of one of the company's crosstown lines was heated. All complaints to his company that were specific were investigated.

Mr. Wood said that the heating of cars on the Metropolitan Street Railway was regulated from a central point, and that at a temperature of 38 deg. all doors of cars were closed, at 35 deg. the heaters were turned on one point, at 32 deg. two points and at 25 deg. three points. At 4 a. m. in the morning the car house foreman fixed the amount of heat in accordance with this schedule. In the event of a change of temperature starters and inspectors were immediately advised and every few blocks there was an employee vested with authority to regulate the heat in accordance with instructions from the general office. The regulations under which the Metropolitan Street Railway carried its insurance were very strict and made the heating of cars impossible before they were run out of the car houses in the morning for service.

H. H. Adams of the Metropolitan Street Railway said that the cars of that company were equipped with 8, 14 and 16 heaters, the number of heaters to a car being governed by the type of car. Mr. Adams had studied the subject of temperatures recently and presented a tabulation of temperature in New York and Boston, which showed that the mean temperature of Boston for 38 or 39 years was about 5 deg. lower than New York. One table showed the variation month by month of temperatures in New York and Boston for the winter of 1908-1909. This disclosed the fact that for one month the average mean temperature in New York was 10 deg. higher than for Boston.

Mr. Adams experimented with thermometers in cars beginning Oct. 20, and while the period was a most unsatisfactory one climatically, the variation in the readings of thermometers was as much as 8 deg. He explained that there really was very little need to heat cars of the Metropolitan Street Railway before placing them in service for the day as the wet sprinkler system of fire protection was used in most of the car houses of the company and under the regulations of the insurance underwriters structures in which the wet system was used must be kept at a temperature of not less than 40 deg.

Mr. Huff of the Coney Island & Brooklyn Railroad said that heating on his road was governed on the central authority plan. The heat was turned on at 40 deg. and three points were carried at zero and below. According to the insurance regulations governing his company cars out of service must be kept with the power off, but this requirement was interpreted not to extend to cars being prepared for service for the day and heat was turned on in such cars 15 minutes before they were started on their runs.

Mr. Connette of the commission, who recently was general manager of the Worcester (Mass.) Consolidated Street Railway, said that the State police and the inspectors of the Railroad Commission in Massachusetts carried thermometers and were constantly on the lookout for violations of the order of the commission regarding the heating of cars. He had under his charge at Worcester 80 miles of city railway and 200 miles of suburban and interurban lines, and during four years of service with the company had experienced no difficulty in complying with the requirements of the Massachusetts Commission. One of his lines extended from Worcester to Fitchburg, a distance of 26 miles, and cars were operated over it at a speed of 30 m.p.h. Heat was turned on in the interurban cars 30 minutes before they were taken out of the car house.

Mr. Banghart of the New York & Queens County Railway said that about five years ago a road with which he was connected in Pennsylvania had of its own accord experimented with thermometers, but that they were dispensed with as unsatisfactory after a short term of service. The New York & Queens County Railway operated suburban lines largely and had in service about 150 cars. Mr. Banghart did not think it would be possible to meet the 45 deg. requirement between 11 p. m. and 5 a. m. in zero weather. This would be rather serious, as practically all the lines were operated all night.

Some of the cars of the New York & Queens County Railway were equipped with 12 heaters and some with 18 heaters, the capacity being the same in both cases, the 18 heaters giving a better distribution of heat. Some of the heaters were single coil and some double coil. Where 12 heaters were installed the units were 36 in. long and where 18 heaters were installed the units were 17 in. long. Mr. Banghart said that to comply strictly with the terms of the order of the commission as submitted would probably require rebuilding a considerable number of heaters in use on the New York & Queens County Railway.

Mr. Connette was of the opinion that if the heaters in use on the New York & Queens Railway were well maintained and the cars in good repair a minimum temperature of 45 deg. could be maintained at 10 deg. below zero, except under very trying circumstances. It was decided to have Mr. Connette inspect the equipment of the company so as to pass an authoritative opinion on this point.

Mr. Eustis then announced that so far as the other companies were concerned they might consider the matter closed, but that the commission would be glad to receive any additional information from the companies in writing that might occur to the counsel or the managers as not having been brought out at the hearing.

In conclusion Mr. Quackenbush for the companies said that a minimum of 15 or 20 minutes for complying with the requirements of the commission should be inserted in the order so as not to subject the companies to complaints on evidence based on casual readings taken at a time when some outside influence had, perhaps, made it impossible for a company to comply with the order.

At the hearing on Nov. 9 Mr. Connette said that on Nov. 8 he examined the steel cars of the New York & Queens County Railway at its barn at Woodside, Long Island. These cars have seven cross seats on either side and one longitudinal seat on either side at each end with a capacity of four people to each seat. Mr. Connette hung a thermometer in the center of the cars under test on a level with the windows and turned on the heat two notches, but was

unable to obtain a rise in temperature of more than 6 deg. in 30 minutes. Two hours were required to increase the heat 20 deg. He attributed his failure to secure better results to two causes. In the first place he considered the heaters too small for the style of car to which they were applied, and, secondly, the steel cars seemed to conduct and radiate heat much more readily than wood cars. Mr. Connette's study of the subject was not thorough enough for him to warrant an authoritative expression of opinion on the matter of conduction and radiation, and it was decided to adjourn the matter for a week so as to enable him to conduct comparative tests with steel and wood cars, W. O. Wood of the New York & Queens County Railway saying that cars could easily be arranged so as to secure good results although the same number of heaters are not in use on the steel and the wood cars.

TESTS OF POWER CONSUMPTION OF CARS IN CLEVELAND

Some tests of the power consumption of interurban and city cars while within the city of Cleveland and on the track of the Cleveland Railway, have recently been conducted by L. P. Creelius, superintendent of power of the Cleveland Electric Railway at Cleveland, and F. W. Coen, vice-president and general manager of the Lake Shore Electric Railway Company. The tests were carried out on May 3 and May 4, so that the operating conditions could be as nearly alike as possible. The results given in the two accompanying tables were obtained. Tests were also conducted to determine the amount of power required by the interurban cars while on the city company's tracks, as these tracks do not end in all cases at the city limits. The figures are slightly less than those for the cars while in the city limits, being 2.7854 kw-hours per car-mile and 88.2983 watts per ton-mile.

TABLE I—DATA ON INTERURBAN CARS.

Name of Line.	Car. No.	Motor equip.	Gear ratio.	Total length in ft.	Weight in lb.	Kw-hrs. per car-mile.	Watt-hrs. per ton-mile.
Lake Shore Elec.	148	West	121	14,51	50	73,320	3.211
Lake Shore Elec.	19	West	76	24,58	50	62,500	3.035
C. S. & C.	128	West	112	22,67	50	67,140	4.551
C. S. & C.	93	West	56	24,58	50	57,940	2.506
C. S. & C.	145	West	112	22,67	45	61,000	3.691
N. O. T. & L. Co.	32	G. E.	204	22,55	52	77,320	4.769
N. O. T. & L. Co.	28	G. E.	57	28,59	45	59,300	2.578
N. O. T. & L. Co.	21	G. E.	57	26,59	42	50,820	3.612
E. O. T. Co.	31	J.	34	21,67	42	42,900	2.901
E. O. T. Co.	16	J.	34	21,67	46	53,260	2.480
E. O. T. Co.	39	J.	34	25,69	46	54,300	2.152
C. P. & E.	104	West	112	22,67	50	60,800	2.4810
C. P. & E.	42	G. E.	57	24,63	42	49,800	2.4346
Average of all						2.8982	91.5207

TABLE II—DATA ON CITY CARS.

Car No.	Motors.	Gear ratio.	Classification.	Weight. lb.	Kw-hrs. per car-mile.	Watt-hrs. per ton-mile.
517...4	West. 49	14.68	34 ft. pay-enter	45,600	3.604	143.12
433...4	G. E. 67	17.67	33 ft. pay-enter	43,460	3.413	143.76
455...4	West. 49	14.68	14 bn. convert.	38,240	2.556	124.46
199...4	West. 101	15.69	29 ft. box	39,840	3.073	143.14
337...4	None	....	28 ft. box, trail	27,700	2.510	63.43
149...4	West. 101	15.69	29 ft. box	39,800	2.825	131.72
728...4	None	....	28 ft. box, trail	27,700	1.870	52.23
509...4	West. 49	14.68	34 ft. pay-enter	46,580	4.656	182.20
54...4	West. 12-A	14.68	14 bn. convert.	38,140	2.911	140.64
121...4	West. 101	15.69	30 ft. box	40,180	2.663	124.55
322...4	None	....	28 ft. box, trail	27,700	2.402	61.67
793...2	West. 101	15.69	28 ft. box	33,280	1.873	94.90
3369...4	G. E. 80	19.67	34 ft. pay-enter	43,300	3.360	130.70
Average of all					2.851	126.64

"Fuel Tests with Illinois Coal," by L. P. Breckenridge and Paul Diserens, is issued by the Engineering Experiment Station of the University of Illinois as Circular No. 3. It consists of a compilation of data relating solely to the coals of the State of Illinois, selected from the complete reports of the Government investigations on the fuels of the United States. Copies of the circular may be obtained gratis upon application to W. F. M. Goss, director of the Engineering Experiment Station, University of Illinois, Urbana, Ill.

CRUSADE AGAINST ILLEGAL USE OF TRANSFERS IN NEW YORK

The receivers of the Metropolitan Street Railway Company are making an active effort to reduce the illegal use of transfers on that line. At present there are approximately 4,000,000 passengers a year on the Metropolitan Street Railway system, and of this number about one-third ride on transfers. Although the number of transfers issued in New York has been largely curtailed by the segregation from the Metropolitan Street Railway of the Third Avenue Railroad, Central Park, North & East River Railroad, Second Avenue Railroad and other companies, there is still considerable abuse of the transfer system, a fact which was clearly shown in the testimony of Oren Root, general manager for the receivers, and of other witnesses at the hearings before the Public Service Commission last year.

The existing statutes in regard to transfers and the decisions on their issue make it difficult for the company to

ADRIAN H. JOLINE, DOUGLAS ROBINSON, Receivers
METROPOLITAN STREET RAILWAY COMPANY

TO THE PUBLIC.

ATTENTION IS CALLED TO SECTION 1566, PENAL LAW OF NEW YORK STATE, IN WHICH PROVISION IS MADE THAT NO TRANSFER TICKET SHALL BE ISSUED, SOLD OR GIVEN TO ANY PERSON NOT LAWFULLY ENTITLED TO RECEIVE THE SAME. THE LAW PROVIDES THAT THE PERSON RECEIVING THE TICKET UNDER SUCH CIRCUMSTANCES, AND ALSO THE PERSON WHO ISSUES, GIVES AWAY OR SELLS SUCH TICKET MAY BE IMPRISONED FOR ONE YEAR AND FINED \$500.00.

PERSONS VIOLATING THIS LAW MAY BE INDICTED AND CONVICTED FOR A CONSPIRACY, THOUGH THE OBJECT OF SUCH CONSPIRACY HAS NOT BEEN EXECUTED.

ANY PERSON DETECTED IN VIOLATING THE ABOVE STATUTE WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

Receivers, METROPOLITAN STREET RAILWAY COMPANY.
 Dated November 7th, 1905.

Warning Notice Against Illegal Use of Transfers

stop all illegal use of transfers and permit, for instance, a passenger to ride eastward and westward again on the crosstown lines for an unlimited number of times after he has paid his initial fare. It does, however, provide a penalty for trafficking in transfers. It is the intention of the company to take advantage, as far as possible, of this law, and in order to secure convictions a corps of detectives has been organized. In addition, notice has just been posted in all the cars of the company, calling attention to the section of the Penal Law of the State prohibiting the issue, sale or gift of a transfer ticket to any person who is not entitled to receive it. A copy of this notice appears above.

The record of passenger trains reported to the New York Public Service Commission, Second District, for September shows that of 62,092 trains, 82 per cent were on time at division terminals. Average delay of each late train, 24.3 minutes; for each train run, 4.2 minutes. Principal causes of delay: Waiting for trains on other divisions, 32.7 per cent; train work at stations, 19.3 per cent; train connections with other railroads, 14 per cent.

FIRST ANNUAL REPORT OF BOARD OF SUPERVISING ENGINEERS, CHICAGO TRACTION

The first annual report of the Board of Supervising Engineers, Chicago Traction, covering the period ended Jan. 31, 1908, has just been published by the board. A preliminary abstract of this report was presented in the *ELECTRIC RAILWAY JOURNAL* for Oct. 31, 1908, page 1285. The full report contains a most complete history of Chicago traction affairs and a detailed explanation of the work of the board. The Board of Supervising Engineers, Chicago Traction, is as follows: Bion J. Arnold, chairman; George Weston, successor to Charles V. Weston, representing the city of Chicago; Harvey B. Fleming, representing the Chicago City Railway Company; John Z. Murphy, acting for the receivers of the Chicago Union Traction Company, and later representing the Chicago Railways Company. F. K. Parke is secretary and auditor and L. H. Davidson, assistant secretary of the board.

HISTORY OF CHICAGO TRACTION

The first annual report is a book of 462 pages, 6 in. x 9 in. in size, substantially bound. The contents are divided into seven chapters, followed by a chronological and subject index. Twenty-four full-page halftone and wax engravings present illustrations of the construction standards, report and accounting forms used, views of new substations and car houses and types of rolling stock equipments used since the early horse-car days.

The first chapter is a chronological summary of traction events in Chicago since 1837, setting forth in historical narration the development of Chicago's local transportation facilities. In this chapter will be found presented in a clear way the important events of the involved traction strife which led up to the settlement ordinances of Feb. 11, 1907, ordinances which created the traction board and made possible the great street railway rehabilitation work now so well being carried out by the surface railways of Chicago. A chronological summary of the important extensions and improvements in the five elevated railroads of Chicago concludes this historical chapter.

The second chapter is a brief outline of the main provisions of the traction ordinances of Feb. 11, 1907, as they have been interpreted. The general character and main provisions of the ordinances are clearly and concisely set forth in a brief and argument, submitted by special traction counsel, Walter L. Fisher, to the Supreme Court of Illinois, in what is known as the Venner case. The validity of the general provisions of the ordinances, as construed by Mr. Fisher, was sustained, and the board quotes Mr. Fisher very fully in this chapter.

WORK OF THE BOARD

Chapters III and IV include a summary of the work undertaken and accomplished under the jurisdiction of the board for the year ended Jan. 31, 1908, and a summary of the financial exhibit and estimates of the Chicago City Railway Company and the Chicago Railways Company for that year. It is related that in character and duties the board was without precedent or tradition to guide its actions, and there was necessarily much initiative work of a constructive character in organization, methods of procedure, and particularly in the practical application of the provisions of the ordinances to ordinary as well as extraordinary railway operating conditions. During the first year of its existence the board held 95 meetings, and plans and specifications were passed upon and adopted for the entire rehabilitation work for the year under review and for the

supervision and inspection thereof. Bids were passed upon and contracts authorized for the necessary construction material, as were contracts for electric power, electric welding of rail joints, paving, etc. The plan was adopted for verifying the accounts of the railway companies covering the value of the properties and the equipment and additions thereto purchased or acquired between June 30, 1906, and Feb. 1, 1907. This plan of verifying the certificates of the work included a field check of the work in place by the chief engineer of the work and an audit of original accounts by the auditor, undertaken independently of each other, and subsequently compared and harmonized.

The report states that standard plans and specifications have been passed upon by the board, covering the multiplicity of details connected with the rebuilding of a modern and complete system of street railways which, when entirely rehabilitated, will have required an expenditure during the first three years of reconstruction of approximately \$17,000,000 for the Chicago City Railway Company and \$26,000,000 for the Chicago Railways Company. For the period covered by the report the gross earnings of the two railway companies were \$18,823,094.31. Operating expenses and taxes were \$13,176,166.01, leaving net earnings of \$5,646,928.30. The interest on capital investment was \$2,802,167.43, leaving a net income of \$2,844,760.87. Of this net income the railway companies' proportion was \$1,280,142.40 and the city's proportion \$1,564,618.47. The report explains that as the ordinances arbitrarily fix upon 70 per cent of the gross earnings for operating expenses and taxes during the three-year period only, and as many operating difficulties are encountered at a time when a complete reconstruction of roadway and plant is being effected, a comparison of the operating results of these companies with other traction properties could not fairly be made.

During the three-year periods, beginning April 15, 1907, for the Chicago City Railway Company and Jan. 28, 1908, for the Chicago Railways Company, all of the construction, reconstruction, equipment, re-equipment, extensions and additions to plant and property provided for or required by the ordinance, according to the ordinance, are to be added to capital at actual cost plus 10 per cent for conducting the work and furnishing the equipment and 5 per cent for procuring funds, including brokerage; except on certain river tunnel work of the Chicago Railways Company, for which no added percentages are allowed. The value of these additions during the year ended Jan. 31, 1908, amounted to \$6,235,292 for the Chicago City Railway Company and \$1,809,177 for the Chicago Railways Company. The total values of the properties Jan. 31, 1908, were \$61,641,193.

STATISTICS

The earlier abstract of this report showed statistical information regarding the expense of carrying passengers and a subdivision of the nickel fare, showing its disposition. The important financial exhibits of the two railway companies have been published earlier. Interesting operating statistics included in Chapter V of the board report are contained in the table on the following page.

Chapter V comprises 110 pages of the report, and is a summary of the work done by the chief engineer of the work during the date of the passage of the ordinances, Feb. 11, 1907, and the date of the organization of the Board of Supervising Engineers, May 7, 1907, and a description of the organization of the board and the work performed during the period covered by the report.

The board is organized as regards the working force

into the following divisions, each in charge of a division engineer specialized in the particular work covered by his division:

- Division D, track and roadway, R. F. Kelker, Jr.
- Division E, electric power distribution, Edward N. Lake.
- Division G and I, buildings and fixtures—power plant equipment, R. A. Sanborn.
- Division K, cars and car operation, Wray Thorn.
- Drafting room, F. W. Steeg.
- Division of accounts, L. R. Acton.

DIVISION OF ELECTRIC POWER DISTRIBUTION

The report discusses the work undertaken and accomplished by each of these divisions during the period under review. The characteristic of roadway and track are first presented, and the reasons given for the use of the three types of track structure. During the period covered by

of the specifications for three-conductor cable, the question of ultimate transmission potentials was considered. A study was made of the underground transmission at the present standard voltages, ranging from 9000 to 22,000. It was noted that the limiting factor in three-phase underground transmission was the size of the duct. Thus the capacity of a 3¼-in. duct is about 4000 kw at any of the standard voltages considered, and of the 3½-in. duct about 5000 kw. This is due to the fact that the increase in insulation thickness and the decrease in conductor diameter for higher potentials are in such relation that a three-conductor cable of a given outside diameter has about the same kilowatt capacity for all of the standard voltages compared.

Considering 13,200 volts as against 9000 volts, for example, it was found, as will be seen by the following table, that the saving in cost by the use of the higher voltage was only about 2 per cent. It was therefore believed that the increase of about 50 per cent in voltage could not be justified.

COMPARATIVE STUDY OF THREE-PHASE CONDUCTORS FOR POWER TRANSMISSION IN STANDARD 3¼-IN. DUCT, BASED UPON A UNIT CABLE CAPACITY OF APPROXIMATELY 4000 KW.

Voltage of transmission.....	9,000	13,200
Thickness of total insulation in inches.....	8/32x3/32	8/32x3/32
Nearest size of conductor for 4000 kw.....	4/0	1/0
Actual kilowatt capacity of conductor.....	4,288	4,001
Diameter in inches of cable over lead.....	2.567	2.627
Estimated net price per foot of cable installed.....	\$1.395	\$1.275
Range in miles delivering full kilowatt capacity at 10% loss, 100% power factor.....	5.68	6.52
Estimated net price per 1000 kw per foot installed.....	\$0.325	\$0.319
Per cent of price per 1000 kw per foot compared to 9000 volts.....	100	98.1

General:	OPERATING STATISTICS FOR YEAR ENDED JAN. 31, 1908.	
	Chicago City Railway Co.	Chicago Railways Co.
Miles of track owned (single).....	244.30	326.80
Miles of track operated (single).....	217.13	306.446
Gross earnings per mile of single track owned... \$	33,627.49	32,459.91
Gross earnings per mile of single track operated... \$	37,835.38	34,615.88
Gross earnings of system.....	8,215,196.49	10,607,897.82
Paid to employees (wages)*.....	3,539,667.75	4,471,906.34
Average number of employees.....	4,932	6,854
Per cent of gross earnings used in operation (including reserve for taxes and damages).....	70.00	70.00
Per cent of gross earnings reserved for damages.....	5.71	8.15
Per cent of gross earnings reserved for taxes.....	2.92	1.88
Transportation:		
Total passengers carried.....	268,099,953	350,200,313
Passengers carried for revenue.....	162,578,888	209,544,311
Passengers carried on transfers, employees and other free passengers.....	105,521,065	2,525,723
Per cent of transfer passengers to fare passengers.....	57.19	65.92
Average gross earnings per passenger (cents)...	3.06	3.03
Average passenger earnings per passenger (cents).....	3.02	2.96
Average expense per passenger, including 5% interest on agreed valuation of property (cents).....	2.61	2.57
Average operating expenses per passenger (cents).....	2.15	2.12
Average interest charge per passenger, based on agreed valuation of property (mills).....	4.61	4.47
Average profit per passenger (mills).....	4.58	4.62
City's proportion (55%) of profit per passenger (mills).....	2.52	2.54
Company's proportion (45%) of profit per passenger (mills).....	2.06	2.08
Power:		
Kilowatt output in hours (all plants).....	116,134,558	82,529,728
Total rated kilowatt capacity (all plants).....	28,640	18,737
Load factor (all plants), 24 hours.....	46.29	50.3
Cost per kilowatt-hour (all plants)—(cents).....	0.90	1.078
Average kw-hr per car per day of 18 hours.....	5.22	2.68
Energy consumed per car mile (kw-hr).....	3.46	2.333

* City Railway: In addition \$679,145.36 was paid to 775 employees on construction and rehabilitation work.
 * Chicago Railways: In addition \$349,676.43 was paid to employees on construction and rehabilitation work.

the report a total of 46.186 miles of single track was constructed. The work of the electric power distribution division, as for other divisions, included the preparation of plans and specifications, engineering inspections of construction work, estimates of the work done and checking of the charges to rehabilitation expenditures under this division by the two railway companies. The plans and specifications prepared for underground conduit construction covered: Type A—square-bore multiple duct; type B—round-bore, single duct, installed in cable slots, and type C—square-bore, single duct. Several types of manhole construction have been developed. It was found in the outlying districts, where there were few underground obstructions, that a considerable saving in cost could be effected by the use of concrete. The report includes five engravings exhibiting manhole and duct construction. Specifications have been prepared for wires and cables, and it is noted that on account of the wide margin of safety which was afforded at a small additional cost, the specifications for all rubber insulating cables for 600-volt service were made to call for a 30 per cent rubber compound 5/32 in. thick, with a ½-in. protecting sheet of lead; a factory test potential of 12,000 volts a.c. at a frequency of 60 cycles was required.

The report states that in connection with the preparation

A feature of the work of this division consists of the tests of the conductivity of the electrically welded rail joints. These tests are made with apparatus especially designed for this purpose, and copies of reports, showing the results, are sent to the railway companies.

A summary of tests made on lines of the Chicago Railways Company prior to Jan. 30, 1908, showed 62 joints below standard out of 3499 tested. All joints showing a conductivity below the requirements of the ordinance are rejected and replaced by the manufacturer free of cost to the railway company.

THE DIVISION OF BUILDINGS AND FIXTURES

The division of buildings and fixtures was organized in May, 1907. With the acceptance of the ordinances by the traction companies a complete change in the operating car houses of the railway companies became necessary, due to the cable trains being superseded by electrical equipment and the adoption of a standard type of large double-truck car. In order to give the efficient service required of the companies, it became imperative to have the most modern methods of car inspection, housing and cleaning. The question of closed versus open storage of cars, the advantages to be gained by building double-end houses, with the consequent increased facility of movement of cars; the proper pit area and washing facilities; the architectural features; the question of fireproof construction versus mill construction from a fire hazard standpoint; the insurance rates on different types of building; the possible saving by fireproof construction and the installation of sprinkler systems, and the determination as to proper area to be allowed between fire walls, etc., have been carefully studied. The result is the car houses now being built are the embodiment of what is considered the best design for and construction of an operating car house for a large city where the highest standard of efficiency of service is required. In general, it is the intention that all car houses be constructed of sufficient capacity to permit all cars to be stored under cover.

POWER PLANT AND CARS

The report of the work done by the division of power plant equipment includes illustrated descriptions of large rotary converter substations of the Chicago City Railway and the Chicago Railways companies. Rotary converters of 2000-kw capacity have been chosen for the present and future work. The Van Buren and Jefferson Street substation of the Chicago Railways Company had four units of this capacity.

The report of the division on cars and car operation describes the evolution of the Chicago street car from the earliest four-wheel, one-horse, no-conductor car to the present large, four-motor, pay-as-you-enter equipment. A large number of attractive halftone illustrations and several engravings illustrate this section. A description of the latest type of car includes the following stated advantages of the pay-as-you-enter system:

- "Absence of confusion in loading and unloading. * * *
- "Reduction of possible number of accidents. * * *
- "Orderly and systematic collection of fares.
- "Wide and comfortable seats and wide aisles.
- "Good ventilation."

THE DIVISION OF ACCOUNTS

The province of the division of accounts, as described in the report, is:

To keep a running check upon the expenditures of the street railway companies coming under the supervision of the Board of Supervising Engineers in so far as they relate to the cost of rehabilitation; to ascertain, with the assistance of reports from the engineering divisions, whether or not such expenditures are reasonable; to determine whether or not such expenditures are proper additions to capital account in accordance with the rulings of the board; to determine whether proper reserves have been created and are maintained in the accounts of the railway companies in accordance with the provisions of the ordinances; to prepare and submit to the Board of Supervising Engineers each month certificates authorizing the railway companies to charge to capital account the amounts shown therein; to keep a set of accounts displaying the value of the properties of the railway companies as fixed in the ordinances, together with the additions thereto authorized by the board; to prepare monthly reports showing the locations and costs of all such additions, for filing with the comptroller of the city of Chicago; to prepare reports for submission to the railway companies showing the distribution of such authorized capital expenditures to the several construction and equipment accounts standardized by the American Street & Interurban Railway Accountants' Association; in general, to institute and maintain a proper checking system in order that the board may be assured that all the provisions of the ordinances as regards additions to capital account are observed; and to keep account of all expenditures made by the board in the carrying out of its duties, which expenditures, in accordance with the terms of the ordinances, are to be added to the capital accounts of the railway companies during the period of rehabilitation, and after that period are to be charged to operating expenses.

In order to carry out the duties as above briefly outlined the division of accounts checks and passes upon the accounting features of all work orders submitted to the board by the railway companies covering such work as they propose to perform and charge to capital account. The work orders are then passed upon by the chief engineer of the work, and finally by the board.

Authority for the work having thus been given, it becomes necessary that the board be furnished with complete data covering construction and reconstruction expenditures. This has been accomplished through an arrangement with the railway companies by which they transmit to the board each day copies of material manifests showing the quantities, values and disposition of all materials issued by their storekeepers; labor reports showing the hours, values and disposition of time as reported by their timekeepers; audited

vouchers, audited and approved by their auditors, showing quantities, values and disposition of all material, etc., delivered direct to the various pieces of work and which have not passed through the storerooms of the companies; accounts receivable vouchers covering sales of scrap and other credits to capital account; journal vouchers covering all transactions not otherwise provided for.

The accuracy of these reports is checked in the division of accounts as to quantities, prices, extensions and additions, and, as far as possible, points of delivery.

The expenditures shown thereon are summarized under each work order and each subdivision of each work order on special forms, in order to determine the total expenditures on each piece of work each month. The totals are then checked against the monthly reports submitted by the railway companies to the board covering the amounts which they claim should be added to capital account.

Concurrently with the recording of values under work orders, the quantities and values of all materials used are analyzed under each class of material and under each work order, the engineering division whose duty it is to check such expenditures being shown on the forms used and also the sub-capital account to which the charge is to be made.

The result of such analysis of materials, together with a summary of the hours and value of labor by departments is carried to recapitulation of expenditure forms, on which the total expenditures each month under each work order, subdivided according to the standard classification of accounts, is shown. These recapitulation reports are made in duplicate—one copy being sent to the division engineers to be checked against their estimates, the other being filed in the division of accounts.

Each of the division engineers has as a part of his organization certain inspectors who, in addition to their other duties, render to him on forms daily, semi-monthly and monthly reports of the quantities and kinds of materials used and hours of labor expended on each piece of work in progress. These reports are used by the division engineers as the basis of their monthly estimates, and also as a check upon the expenditures made by the railway companies and reported to them by the division of accounts. Thus, a counter check from two entirely independent sources is secured, viz., from the reports of the railway companies, checked and summarized by the division of accounts, and from the field reports of the division engineers.

Each month the division engineers submit to the auditor the result of their check of expenditures by work-order numbers, showing the expenditure as reported by the railway companies and checked by the division of accounts, also the estimates as prepared by the division engineers and the amounts which they recommend be added to capital account.

From these reports, after they have been approved by the chief engineer of the work and by the auditor, certificates are made and submitted to the board for approval and signature, showing the total authorized expenditures made by the railway companies, the percentages added in accordance with the terms of the ordinances, and the amounts which the companies are authorized to charge to capital account.

The expenditures having thus been checked and certified by the board a summary report showing work-order numbers, locations, costs for current month and total cost from the beginning of the rehabilitation period to date is made, submitted to the chairman of the board for signature and filed with the comptroller of the city of Chicago, copies also being furnished to the railway companies and to each member of the board.

In order to be assured that the accounts of the railway companies will be in harmony with the accounts of the board, a further report is made analyzing the expenditures according to the standard classification of construction and equipment accounts and forwarded to the railway companies. This report is prepared from the analyses made by the division of accounts, is in accord with the accounts as carried upon the books of the board, and is the authority for the final distribution of capital expenditures to like accounts upon the books of the railway companies.

All receipts and expenditures of the board are examined and passed upon monthly by an auditing committee appointed by the board.

DRAUGHTING DEPARTMENT

The draughting department is organized under a chief draughtsman, who receives his instructions direct from the assistant chief engineer, and the four division engineers and their respective assistants. He has general supervision of the work performed in the department, and of the various systems and records required. Reporting directly to the chief draughtsman are a clerk and four squad foremen. Each of these is held respectively responsible to him for the correct and proper execution of the work performed under his immediate supervision. Each squad foreman is assigned to a special class of work, and, as the needs or demands of that particular department require, draughtsmen and tracers are accordingly detailed in order to insure the best and most desirable results.

THE REMAINING CHAPTERS

Chapter VI of the report of the board is the full text of the ordinances of Feb. 11, 1907, authorizing the Chicago City Railway Company and the Chicago Railways Company to construct, operate and maintain street railways in the city of Chicago, followed by a very complete subject index.

Chapter V is a digest of the minutes of the meetings of the traction board for the first fiscal year, ended Jan. 31, 1908.

EXTENSION OF NEW YORK CENTRAL ELECTRIC ZONE TO NORTH WHITE PLAINS

Work is progressing rapidly on the equipment of the Harlem division of the New York Central & Hudson River Railroad for electric operation from the present temporary terminal of the electric zone at Wakefield to North White Plains, which is to be the permanent electric suburban terminal on this division. The details of the electrical equipment now being installed are the same as those of the sections below Wakefield and Yonkers which have been in operation for some time. Two new substations are being built, one at Tuckahoe, which is about 50 per cent completed, and the other at White Plains, which is about 25 per cent completed. These are both plain brick buildings on concrete foundations, and each will contain three 1000-kw Westinghouse rotary converters and three groups of three single-phase, air-cooled General Electric transformers of 375 kw capacity each. Storage batteries will not be installed at either of these substations at present, although ground space has been provided near each building on which a battery house can be erected in the future if it is found desirable to add an equipment of batteries. All of the lightning arresters and switching apparatus are to be furnished by the General Electric Company.

The high-tension transmission line carried on steel poles is being extended north from Wakefield, and both substations will be looped in on it. This branch of the high-tension distribution system extends south from Wakefield to the substation at Botanical Gardens, where it is tied through the switchboard to both the Port Morris and the Yonkers generating stations.

There are six circuit-breaker houses on the extension containing the third-rail sectionalizing switches. The switches in each house are of the remote control type, and will be operated from the nearest substation.

The bonding of the track rails has been completed for the entire distance of 10 miles for both tracks. Underrunning type protected third-rail has been erected for about half the distance. It is expected that complete electric operation from Grand Central Station to North White Plains will be

begun soon after Jan. 1, 1910, after which time the temporary steam and electric locomotive terminal at Wakefield will be abandoned and dismantled.

TESTIMONY IN CLEVELAND VALUATION

Testimony was given in Cleveland on Oct. 27 by Frank R. Ford, of Ford, Bacon & Davis, in the hearing before R. W. Tayler, judge of the United States Circuit Court, who is the arbitrator in the negotiation between the Cleveland Railway Company and the city of Cleveland in relation to the renewal of franchises. Mr. Ford was examined by Horace E. Andrews, president of the Cleveland Railway.

Mr. Ford testified that for the last 15 years he had been a member of the firm of Ford, Bacon & Davis, consulting engineers in the building and operation of street railway properties. The firm was engaged at present by the Coney Island & Brooklyn Railroad and the receivers of the Metropolitan Street Railway of New York in valuations of the properties which are being made by the Public Service Commission through its experts and the company through Ford, Bacon & Davis. From 1904 to 1906 the firm was consulting engineer of the Chicago City Railway, and in that connection Mr. Ford worked out a number of expert matters bearing on the settlement with the city.

Mr. Ford had found it was necessary in preparing engineering estimates upon the physical construction in which his firm had been concerned to add a percentage charge or overhead charge for the contingent items of construction and for engineering service, contractor's profit, etc. The company estimates of proposed capital expenditures must provide for the overhead charges relating more particularly to the organization of the company, legal expenses and other expenses which did not pertain directly to construction. Mr. Andrews asked Mr. Ford to state how he would proceed to value a property like that of the Cleveland Railway. In answer, Mr. Ford said he would give the method that was used in the case of the Coney Island & Brooklyn Railroad, in which a valuation was being made for the purpose of determining the rate of fare to Coney Island. The company charged a 5-cent fare on its city lines and 10 cents to Coney Island. A petition filed with the Public Service Commission had asked for a reduction of the Coney Island fare to 5 cents. Since the matter of physical valuation had been agitated Mr. Ford's firm had been employed in the last three or four years in several other places where valuation was involved, notably in Kansas City, Toledo and Baltimore, and had made a special study of the methods of valuation for various purposes followed in this country and abroad. From that study, he believed that in a rate making case, where the question was as to the amount to be charged for the service or commodity, there were four different bases of valuation that should be considered, as follows:

DIFFERENT BASES OF VALUATION

1. Value of the Earning Power. This was the basis upon which most of the European steam railroads had been appropriated by the State. For instance, an average was taken of the net earnings for five or seven years and that was capitalized on the basis of from 4 per cent to 5 per cent. Payment was made for the properties in some cases in bonds of the State.

2. Market Value of the Securities of the Company. This was the basis which Prof. H. C. Adams, in charge of statistics and accounts for the Interstate Commerce Commission, employed in his report for the Census Bureau on the

"Commercial Valuation of Railway Operating Property in the United States."

3. Cash Investment in the Property. This was the equivalent of the cost of reproduction of the property through its period of development. In the case of the Cleveland Railway, it would mean the actual cash put into the property from its beginning as a horse car line, through the cable period and the early electric road and continuing through the various developments of electrical construction and equipment to the present system.

4. Cost of Reproduction New To-day of an Adequate Modern System of Electric Railway. In this method it was assumed that the present system did not exist, and it was desired to reproduce not only the present system but to add the necessary additions, extensions and betterments, to serve the public adequately. This was the basis which a competing company would have to use and upon which it would have to sell its service.

Discussing the fourth method, the cost of reproduction new to-day of an adequate system, Mr. Ford said that it would be proper to allow not only for the reproduction of the physical property but also for the reproduction of all of the labor and expense necessary to secure the right to place the property in the streets. Strictly speaking, the valuation of the physical property would be a valuation simply of the physical material inventoried. That part of the cost of construction which was represented in labor was largely estimated. In the track, there were the rails, ties and ballast, physical articles, some of which could be seen, but the cost of the labor of putting these in place had to be estimated. The costs of getting the rights and the overhead charges or development expenses were largely matters of labor and expenses that also had to be estimated. It was much more difficult to estimate the cost of that labor than labor on the physical construction, because it was not apparent except by close and deep investigation into the subject.

DEVELOPMENT EXPENSES

Mr. Ford presented a list of the development expenses which he suggested to the New York Public Service Commission, First District, as printed in the *ELECTRIC RAILWAY JOURNAL* of June 19, 1909. Judge Tayler said he would like to have the list.

Discussing this list, Mr. Ford said the cost of reproducing a street railway property started in the first place with the cost of promotion. In order to finance any street railway property, allowances had to be made for this cost in one of two ways: It had either to be included in the value of the property as a capital charge or to be represented by a rate of return on the value which would be larger than the current rate of interest. In other words, if a return of say 8 or 10 per cent was allowed, as is permitted by the laws of some States, the promotion cost ought not to be included in the value of the property. Mr. Ford understood that the New York Public Service Commission, Second District, had allowed in the capitalization 5 per cent on the estimated cost in the case of the Rochester, Corning, Elmira Traction Company. He was informed that in that case, the allowance was not sufficient and the property therefore had not yet been financed.

The cost of promotion would include the preliminary technical expenses of survey and location of line and estimates of earnings, and cost of construction and operation together with legal and miscellaneous expenses and the preparation of prospectus. The second item would be the profits of promotion. Then, there would be the cost of

organization of the company before the construction period, that is, during the promotion and financing period. This period would include the time spent in obtaining the rights, and the expenses down to the commencement of construction. In the case of large cities, such as New York, Mr. Ford thought this period would occupy probably three years, due to various legal formalities which were required to secure consents of a number of public bodies. This cost of organization of the company before the construction period would include legal expenses, the cost of the company's own organization, its various expenses in connection with the issue of securities, etc. A charter and franchises would have to be obtained in that case under conditions of competition, which, of course, increased the cost. Various expenditures would be entailed in securing consents of property owners and of local authorities.

CHANGES IN THE ART

Included in the costs of development through which all companies had to go, there would be various technical expenses of development such as those resulting from changes in the art and, in the case of New York, experiments with the horse system, the cable system, the storage battery and compressed air, some of which had not existed in Cleveland, and also improvements in the art, such as double truck cars in place of single truck, three or four designs of motors, improvements in the grade and alignment of track, improved type of rail, improved paving, steel poles instead of wooden poles, placing overhead feeder wires underground, fireproof car houses and shops in place of non-fireproof wooden structures, and the various developments in the power houses, such as steam turbines and the use of large units in place of small units and, finally, the alternating current distribution for large areas. There would also be the extra cost of construction due to non-interference with operation, the extra cost due to piecemeal construction, the solidification of roadbed and adaptation of construction and equipment, terms that had been used in some of the State Railroad Commission valuations of steam properties, and in some cases, the development of park and amusement enterprises.

Leaving the construction for a moment, Mr. Ford testified that there had been considerable expense in the development of properties due to various corporate consolidations. Where a large number of small companies competed or occupied separate sections of the city, there was first a suppression of intangible capital due to consolidation. Taking the charter as an instance, there would be 25 charters, each of which had cost a certain amount, and when the properties were consolidated, a large amount of the original cost would be wiped out. A premium was paid in some cases for the securities of smaller properties in order to effect consolidation and the various legal and organization expenses and payments to the State and the city for the consolidated company should be included.

LOSS IN EARLY OPERATION

From the standpoint of the business of the company, there had been considerable loss in the early operation of many lines. Companies had always considered, when they lost on perhaps the first five or 10 years of operation of outlying lines, that they would overcome the deficit by the larger profits of the inner lines and subsequent profits from the new lines. Losses were made by inefficient managements during the early period of the business. Managements of the smaller companies particularly made mistakes which larger and more expert forces probably would not have made.

Taking up the period of financing, Mr. Ford said that in New York City permission for the issue of securities had to be obtained from the State and Public Service Commission and the company had to pay its legal and organization expenses in submitting the project to bankers. It also had to meet the cost of the sale of securities to the bankers, including commissions and discounts and, if a large project was involved, the expense of underwriting syndicates.

CONSTRUCTION PERIOD

That would bring the property to the construction period. During this period, there would be various expenditures which Mr. Ford had divided into several classes. The first class would be the company's overhead charges, such as those involved in its own organization, accounting department, office, store room, and stable expenses, permits of authorities and city inspection, engineering of its organization, consulting engineers and architects, interest, taxes, legal expenses, and wear and tear during construction. Then there would be the contractor's overhead charges, which would cover his organization and office expenses, general superintendence, watching, lights, fire, accident and liability insurance during construction, maintenance and use of tools and finally, the contractor's profit. In addition, Mr. Ford called attention to physical extras, incidentals and contingencies due, first, to incomplete inventories and second, to loss and wastage of material during construction. Next was the cost of material and labor for the present physical construction, which Mr. Ford would figure as an inventory priced on the basis of sub-contracts. Mr. Ford also included the cost of reproduction of the land used for right-of-way and sites for power houses, car houses, shops and terminals. The basis which he had used was (1) its assessed value, (2) an additional sales value, (3) an additional value for railroad purposes, due partly to the contiguity factor, such as a long, narrow right-of-way. The additional value for railroad purposes was also represented by the necessity of discarding part of the real estate purchased. It was very seldom that real estate of the exact size needed could be bought. The question of discarding buildings was also a proper one to consider. A street railway usually had to have a certain amount of its construction of power houses, car houses, shops or office buildings in or near the center of the city where buildings already existed on the land desired. Unimproved real estate could not be bought in such cases and the existing buildings had to be discarded.

Mr. Ford had one case in mind in a large city where a substation building site was the cheapest that could be secured in the most economical location for the distribution of current. The cost of the site was \$4,000, of which the value of the building on the site was \$2,000. The building had to be discarded but the land remaining represented a valuation of \$4,000 on the books. There might be other additional values for railroad purposes such as additional cost of condemnation of real estate, and the monopoly value due to location, such as the necessity of locating the car house on the line of track or of locating a power house near a railroad or water supply. In addition to these factors in estimating the reproduction value of land, Mr. Ford stated that there were certain overhead charges on the real estate which had to be paid, such as the expenses of commissions, brokerage, legal expenditures, cost of search and title insurance.

With the property thus reproduced and ready for operation, it was necessary to have a certain amount of working capital. By that, Mr. Ford meant a supply of cash on

hand sufficient at all times for purposes of credit and for extraordinary drains on the cash and also to represent the amount of bills or accounts outstanding. In addition, certain reserve funds and special deposits might be required.

For rate making purposes, Mr. Ford thought that depreciation should not be deducted from the cost of reproduction.

The amount that a street railway should charge for its service was not dependent on whether the physical property of the company was old or new. If a company gave the same kind of ride to its passengers in an equally comfortable car at the same speed, it should obtain the same rate whether the car was new or five or 15 years old. The rate that a cab driver charged was not dependent on whether the horse was four years or 14 years old, and it made no difference to the passenger provided he reached his destination with reasonable promptness. The buyer of water, so long as the water was of good quality and the pressure sufficient, did not care whether the pipe was new or 50 years old. The same statement was true respecting an electric wire carrying current.

Judge Tayler said he was very much interested in the analysis of the whole subject because it showed a large number of items that under varying conditions might affect the cost of creating a finished service. He supposed, however, to use one item as an illustration, that the city would not admit that if a \$50,000 building had been destroyed to make room for a car house, the Cleveland company would be entitled now to have that placed in value.

Mr. Andrews said he would not claim that, but he claimed that it might have a bearing when the question of fixing a rate on capital was reached.

Judge Tayler said this case was not a rate making case exactly although in many respects the reasoning would have to be analogous.

Mr. Ford said that the Cleveland case was regarded by the general public of the United States and especially by street railway people as one of the most important rate cases that had ever arisen.

VALUE IN CALCULATING A RETURN

Judge Tayler said that, of course, it was a question of the value on which the owners of the property were entitled to receive a normal rate of interest. In the last analysis it might come to the question of rate of fare, but it was a little more definite than that. The amount of return on the capital would be fixed and the rate of fare would take care of itself in this particular instance. Mr. Ford asked if it was not important that the amount on which the figure was calculated should include all features of the company's property.

Judge Tayler replied that he did not know that the philosophy was different in the two cases. This was not exactly a rate making case. In the New York case, in determining what rates of fare might be charged, there had to be an overhead allowance in order to make sure that the capital received its return. In the Cleveland case, no protection of that character was needed because the capital was assured of its rate of return. The question was what justly and truly ought the capital to be to-day. It was presumably to be based on the value of the property to-day and as most of it had been in use for a longer or shorter period of time, it was necessary to undertake to arrive at the reproduction value of the property as it is found and suited to the purposes. It was rather a difficult question to answer, but it was admitted that there must be an overhead charge as to most, if not all of the items,

whether figured on the whole amount of the value that could be appraised or only on parts of it. There were certain items for which allowance must be made, not fanciful at all in their foundation but due to the actual expenditure of money, and therefore necessary to produce the property. The question was rather as to the amount of money than to the soundness of the principle that there must be some error in human computations, and they must therefore place some blanket figures in the account for those expenses which must have been included in the finished articles.

Mr. Ford said it was necessary as a constructor to allow for contingencies. It seemed to him that the item of contingencies was simply a small one of the overhead charges. Actual labor and expenses could probably be located. Returning to the illustration of the cab horse, Mr. Ford said that the purchaser of the horse would want to know how old it was, but the rider in the carriage did not care so long as the destination was reached on time. The same condition probably was true with the electric wire or the water pipe. The purchaser would not want to pay full value for something that was 50 years old, although if he was buying water or electric current, the pipe or wire would serve just as well, regardless of the age.

Judge Tayler said that there had been depreciation, and that allowance must be made, therefore, in determining the just and true value of the property, in view of the fact that it was, in effect, to be appropriated by the city. The fact of depreciation was involved necessarily in the inquiry, and the value of the property would have to be determined according to the just view that was taken of the extent of the depreciation and its effect upon the present value of the property.

OPPORTUNITY FOR RECONSTRUCTION DESIRABLE

Mr. Ford said that to follow the course of basing the rate on the depreciated value would be to take from the company the opportunity of repairing and renewing the property. If such a rule was followed, a certain rate of fare could be charged on a brand new railroad, but if the property was half worn out a smaller rate of fare would have to be charged, and in the latter case the company would be prevented from reconstructing and keeping up its equipment.

Judge Tayler said he understood the principle, but it was not being applied in that way in this case.

Mr. Andrews asked Mr. Ford whether after examining the Cleveland property and its value he could arrive at a fair percentage for overhead charges.

Mr. Ford answered that he could give only his general experience on certain items. He knew he could not give any figures that would cover the majority of overhead charges without a careful study of the local situation. He could give his general experience on the items of contractor's profit, cost of engineering and allowance for physical contingencies, but to compute figures of the cost of administration during the construction period and the expenses of promotion, financing and development of the property would be a very difficult matter and would take some time to arrive at proper values. His firm had used for contingencies of physical construction, due to incomplete inventories and loss and wastage of materials, from 5 to 15 per cent. For instance, on cars he might use 5 per cent and on certain parts of track construction as high as 15 per cent. These figures had been borne out by his experience in the construction of street railway properties.

He would say that the cost of the company's own engi-

neering organization and of consulting engineers and architects would amount to from 5 to 10 per cent of the cost of the physical property. His experience was that contractors' charges, including their organization expenses and profit for building street railways generally amounted to from 7½ to 15 per cent of the cost of the physical construction, depending upon the size of the undertaking. He would not be prepared to name any figure for other charges without a study of the local situation.

Mr. Andrews said that the endeavor was to determine the value of the property, not the rate of fare to be charged.

Mr. Ford said that the items he had in mind would not apply in determining the value of the property, though allowance should be made for them if provision for the future was intended. He had in mind such elements as the cost of raising the property to an adequate physical standard, the extensions of tracks, and the additional equipment that might be necessary to serve the public properly.

Judge Tayler said he thought that other provision had been made for this feature of the situation.

Mayor Tom L. Johnson cross-examined Mr. Ford as to the percentages mentioned in the testimony. He quoted Mr. Ford's figures as extending from 17½ to 40 per cent, and inquired whether some more definite figures could not be given.

VARIATION IN CHARGES

In response, Mr. Ford stated that the cost would depend upon the character, location and the amount of the construction. The charge might easily run to 40 per cent on a small property where the construction was of a very difficult character and the amount of contingencies might reach higher figures than in another case where there was a large property with fairly easy standard construction.

Mr. Johnson asked what percentage Mr. Ford would fix as a proper charge for contingencies in the case of 240 or 250 miles of street railway track, naming about the mileage of the Cleveland property.

Mr. Ford asked whether the track was assumed to be constructed by piecemeal, as it was actually built.

Mr. Johnson said it was assumed that the construction was undertaken as though there had been no track in the street.

Assuming the construction of all the track at one time, Mr. Ford thought that the contingencies might extend to 10 per cent. He thought the allowance for engineering might be 7½ per cent, and would place the contractor's profit at 10 per cent. These figures were given without knowledge of the local conditions, contracting, labor, local materials or the lines themselves. The 10 per cent allowance for contingencies would cover in this case loss and wastage of material during construction, and the question of incomplete inventories which might, of course, involve changes in type of construction during the progress of the work. Mr. Ford had in mind in specifying the latter item some of the track of the Coney Island & Brooklyn Railroad, where the city required a change in the type of construction during the progress of the work, increasing the cost 10 per cent.

Mr. Johnson asked whether the contingency item would be larger or smaller in calculating the present worth of an existing mile of track than in estimating 1 mile that was projected. Mr. Ford thought he would use the same percentage. The unit price in the case of new construction should be sufficiently high to cover any fluctuation in the cost of material. The cost to reproduce a mile of track, including the history of its cost and the items entering into

it, was as difficult, if not more difficult, to obtain than the theoretical cost for a standard piece of track which was to be built.

Mr. Johnson asked where Mr. Ford would place loss of time and expense due to weather conditions. Mr. Ford thought he would place that in the cost of labor as part of the track construction. It would be a part of the labor item rather than of the contingency item. He would allow a sufficient amount for labor to cover the usual cost of track work of this character, and that would include a reasonable allowance for interferences of that nature.

Mr. Johnson asked Mr. Ford whether he included in the item of contingency anything for fluctuations in costs of labor or material. The witness replied that he would include in his unit costs sufficient allowance for any usual fluctuations.

Mr. Johnson asked whether the estimate would not be reduced to the extent that the unit price went largely into detail and provided for the type of construction found. Mr. Ford thought so, but would like to apply the same answer to the intangible labor or the cost of development. If such costs were to be disregarded, or practically disregarded, there would have to be a large percentage for contingencies in the labor and expense of that part of the cost of construction of the railway. If the cost of producing the rights of the company and the costs of organization and development were not to be itemized, and an effort made to inventory and price them, he thought that a considerably larger percentage would have to be added for contingencies than the percentage which he had discussed.

SUBSEQUENT PROCEEDINGS

Hearings on the street railway question before Judge Tayler were resumed on Nov. 5. W. F. Cook, superintendent of the Municipal Traction Company, testified on the morning of Nov. 5, but the greater part of the time was taken up in discussing the franchise valuation. Mayor Johnson argued that the earnings of the company, in addition to the expenses and 6 per cent on the physical value, form the basis for franchise values. Judge Tayler seemingly favored the idea, but Mayor Johnson added that as the 6 per cent profit would consume the earnings, or the greater part of them, there would be no franchise value. Judge Tayler stated that the Euclid Avenue line would be valued in connection with the others and not separately. In order to ascertain the earning power of this line, men have been placed in East Cleveland to board the cars and ask all passengers their destination, so as to fix the average length of ride taken by residents of the village and the cost of transportation, so far as it affects the business of the Euclid Avenue line.

Judge Tayler has lengthened the hours of the sessions, and has informed both sides that they must make their examinations brief, so that the work will not be delayed unnecessarily.

LIFE OF TRACK

On the morning of Nov. 6 C. H. Clark, engineer of maintenance of way of the Municipal Traction Company, testified that the average life of the track was greater than had been contended by Mr. Andrews and others. Mr. Clark gave the dates when track was laid on various streets, and produced a table showing that the average life was about 20 years. Mr. Clark said that he secured the figures from City Engineer Hoffman. Mayor Johnson tried to show that Mr. Clark had copied the figures, dates and other information from a printed volume of testimony taken when the Goff-Johnson valuation was made. Mr. Clark insisted

that he secured the data from Mr. Hoffman. Judge Tayler asserted that it was not fair to him for the city to put Mr. Hoffman on the stand as an expert witness and then try to discredit him. He said that this was the first time he had heard the figures questioned. On the statement by the Mayor that he was trying to show that the witnesses were basing their deductions from assumed dates, Mr. Andrews said that Mr. Hoffman had taken the figures from the records in the office of the Cleveland Electric Railway. Judge Tayler took the table in the absence of better proof, and he read the facts from the records of former hearings, as given by Mr. Hoffman. They were as stated by Mr. Clark.

Considerable testimony was taken to clear up the contention of the city that certain sections of tracks examined showed that the life was much shorter than claimed by the company. Even the number of trips made over these sections had been computed and compared with the less frequent use of other parts of the same line. Comparison was also made with the headway on the entire length of some of the lines which served more sparsely settled sections of the town. Foundations and track bed were also taken into consideration as affecting the wear of some portions of the tracks. The administration was endeavoring to show that the value of the track was lower than shown by the Goff-Johnson valuation.

Warren Bicknell, receiver of the Municipal Traction Company, and Henry J. Davies, secretary of the Cleveland Railway, testified on Nov. 8 that the substitution of long cars for the small ones had not increased the traffic and earning capacity of the system. Both thus disagreed with A. B. duPont. Mr. Bicknell and Mr. Davies agreed, however, that the large cars are preferable, especially from the passengers' point of view.

Judge Tayler questioned Mayor Johnson sharply as to why he agreed to a valuation in the Goff-Johnson settlement which he now states is several million dollars too high. Mr. Johnson said that was a trade, and that allowances had to be made for good-will in the interest of an early settlement. The judge intimated that Mr. Johnson did not take into consideration the fact that he was putting a burden on the community, and said the present valuation would be made differently.

At the instance of the Chamber of Commerce a temporary injunction was secured against the board of elections at Cleveland on Nov. 4 to prevent the counting of several thousand blank ballots cast at the recent election on the subway proposition. Of the actual number of votes, 35,158 were in favor of the proposal and 38,539 against it. The friends of the proposition insist that the blank ballots put into the boxes should be counted as votes. If this were done the proposal would be carried. The Chamber of Commerce contends that the blank ballots should not be considered as votes. A decision by the courts on the question will involve an authoritative expression of opinion on a point in elections that will count for much, as improperly marked or unmarked ballots are usually thrown out.

Various comments are heard on the results of the recent election, when Mayor Johnson was defeated for a fifth term and Herman C. Baehr was chosen to succeed him. Mr. Baehr is a business man, and it is believed that he will want good cars and good service, even if they involve a little higher fare than the present administration has insisted upon.

City Solicitor Newton D. Baker was re-elected by more than 1200 plurality. In addition, seven Johnson councilmen were elected. This places the next Council in relation to

Mr. Baehr about the same as the present body to Mayor Johnson. At first it was hinted that Mr. Baker would not accept the office to which he was elected, preferring to go with the others to private life, but it is thought now that he will hardly take such a step.

On the day following the election traction stock advanced 13 points on the Cleveland Stock Exchange. On Monday, Nov. 1, it sold at 75 and on Wednesday, Nov. 3, at 88. Only about 300 shares changed hands, however.

It is understood that A. B. duPont was slated for the position of street railway commissioner if Mr. Johnson had been re-elected, but it is not likely that Mr. duPont will be appointed to that position by the new administration.

RULES FOR OHIO INTERURBAN LINES

In the *ELECTRIC RAILWAY JOURNAL* of Oct. 23, 1909, page 910, a brief account was printed of the first joint conference of representatives of interurban railway companies in Ohio and the State Railroad Commission to prepare a basic code of operating rules for all interurban roads in the State. On Oct. 28 another conference was held in Columbus, and the railway representatives recommended the adoption, with some modifications, of the new standard code of interurban rules as revised at the Denver convention of the American Street & Interurban Railway Transportation & Traffic Association last month. The commission accepted this recommendation and is to have printed the suggested modifications of the standard rules. Copies of these proposed changes and of the Transportation & Traffic Association's standard code as adopted in Denver are to be sent to all interurban roads in the State which have no book of rules on file with the commission, with instructions that a rule book based on the modified and standard rules as distributed must be prepared and filed with the commission before the expiration of six months from the date of the order.

A NEW FIRM OF ELECTRICAL ENGINEERS

Theodore Stebbins, formerly general manager of the Texas Traction Company, of Dallas, Tex., and Albert B. Herrick, electrical engineer, of New York, have formed a partnership, to be known as Herrick & Stebbins, which will succeed the business of Mr. Herrick. Clarence G. Boyden and John G. Rockwood, who have been assistants to Mr. Herrick, are also members of the partnership, whose headquarters will be in New York. The firm will make a specialty of reporting on and conducting electric railway maintenance work. This will include the autographic record, by apparatus designed by Mr. Herrick, of track and bond data, and also of electrical and magnetic defects in car equipment. Announcement is also made that these engineers are prepared to install a system of complete electrolysis protection. Mr. Stebbins will have the executive management of the partnership.

Comprehensive plans have been presented to the City Council of Cincinnati providing for a subway system to connect the business section with the outlying residential districts. The plans were drawn by City Engineer Sunkmaker, and have the approval of the city administration. They involve an expenditure of from \$10,000,000 to \$15,000,000. The project is entirely one of municipal ownership, although it is proposed that the roads shall be operated under lease.

COMMUNICATION

COASTING REGISTERS ON MANHATTAN ELEVATED

TRANSIT DEVELOPMENT COMPANY

BROOKLYN, N. Y., Nov. 4, 1909.

To the Editors:

In the issue of Oct. 30 there is an interesting article describing the coasting registers on the Manhattan Elevated. Two speed-time curves are given, which presumably were intended to illustrate the effect of the additional coasting time which has resulted in such large economy. There is no doubt that there is large opportunity for effecting economies by proper attention to the matter of coasting on the part of the motorman without material sacrifices of running time, and any device which will secure attention to this matter is of value. I object, however, to the two speed-time curves, which certainly do not illustrate the point at issue. It is obvious to any one that the average speed of the run with little coasting is necessarily higher than where prolonged coasting is used. The fact that both speed-time curves show the running time to be 66.5 seconds means, necessarily, that they refer to runs of unequal length. By measuring the area of both speed-time curves with a planimeter the area of the one with little coasting was found to be 2.19 sq. in. and that of the one with prolonged coasting 1.97 sq. in. As the scales of both curves are alike, and as printed in the Oct. 30 issue, 1 sq. in. represents a distance of 845 ft., the length of the first run is approximately 1850 ft. and the second run 1663 ft. Why the speed-time curves with little coasting, characterizing ordinary practice, and the prolonged coasting obtained by the use of the coasting registers were not given for the same length of run I do not know. I note that one curve is marked "Average Run" and the other "Typical Run." To assume that this difference in wording was used advisedly is to assume rather unsatisfactory disingenuousness in the writing of the article.

H. G. H. SMITH,

Chief of Testing Bureau.

[The speed-time curve showing little coasting was plotted from known data on the equipment of the Manhattan Elevated, and truly represents "average" operating conditions. The curve showing long coasting was plotted principally to show the difference in the general shapes of the current and velocity curves when the coasting period is prolonged. The two curves, of course, are not strictly comparable.—Eds.]

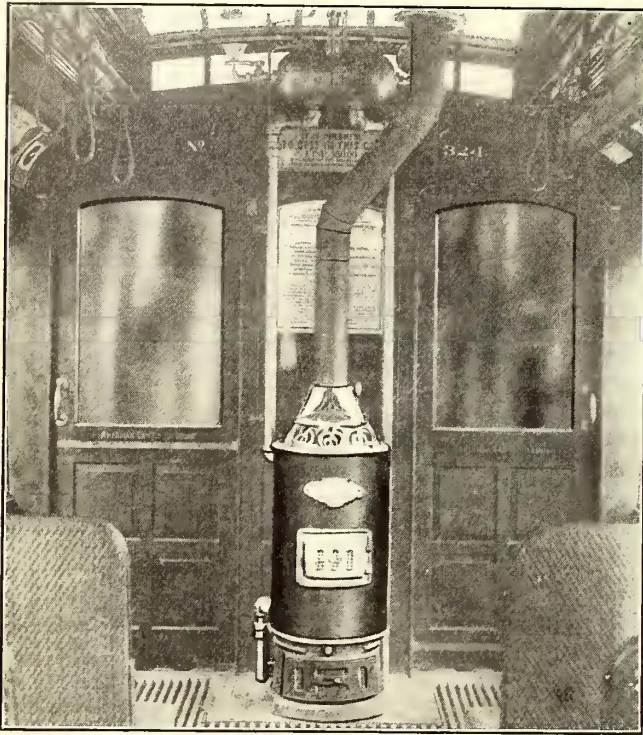
HOT WATER HEATERS FOR P-A-Y-E CARS

The Grand Rapids (Mich.) Railway recently received from the American Car Company, St. Louis, Mo., 12 pay-as-you-enter cars which are equipped with No. 3-C magazine hot-water heaters made by the Peter Smith Heater Company, Detroit, Mich. This is said to be the first installation of hot-water heaters on pay-as-you-enter type cars. As shown in the accompanying engraving, the heater is placed near the bulkhead at one end of the car, between the entrance and exit doors. It occupies a space only 17 in. wide, and as the inlet and outlet pipes are brought out of the heater casing at an angle of 45 deg., the heater can be mounted close up against the bulkhead.

The expansion chamber is mounted under the upper deck, directly above the heater. The heater is connected to the expansion chamber by a 1¼-in. pipe, and from the chamber the feed pipe runs down through the car floor. Under the

floor it crosses over to one side of the car and connects with the heater coil on that side. This coil is made of 2-in. pipe and runs to the opposite end of the car and return. After passing through this coil, the hot water is led across the car, underneath the floor, through a 1¼-in. pipe to the double coil on the other side. The outlet of this coil is

The heater is connected to the expansion chamber and to the piping under the car floor by ground joint unions. It can be removed for the summer season in 15 minutes' time by disconnecting these unions. The heaters were guaranteed to heat these cars to a temperature of 60 deg. Fahr. in the coldest weather, with an average fuel consumption of not more than 40 lb. of hard coal in 24 hours.



Hot-Water Heater Installed in Pay-As-You-Enter Car

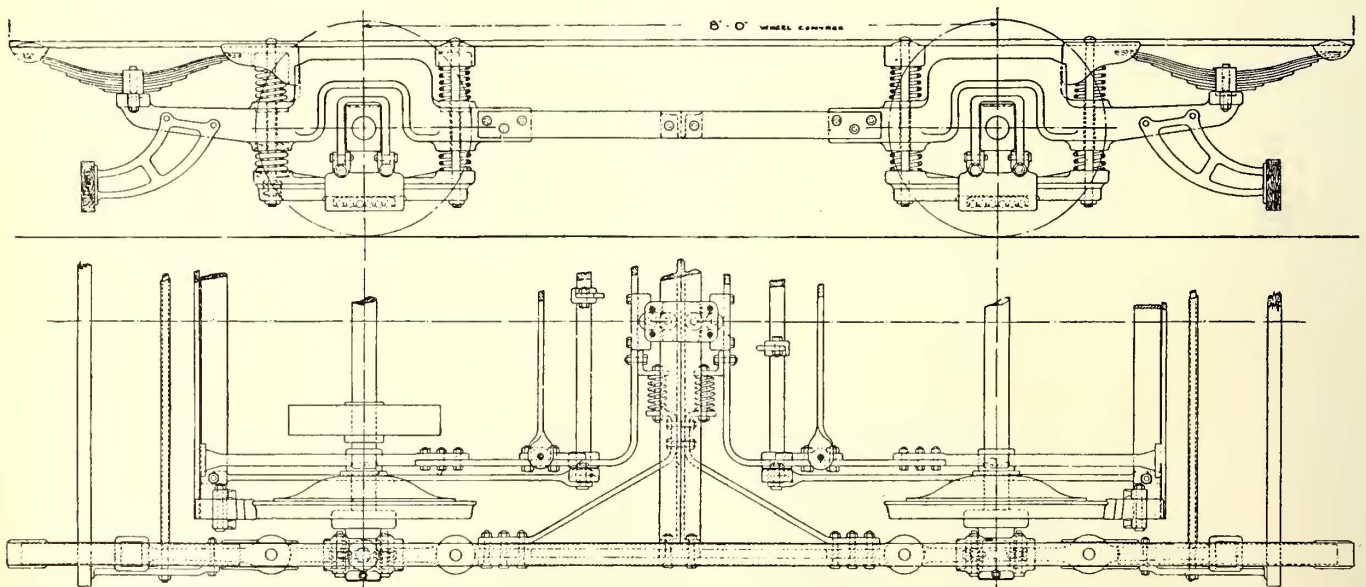
brought up through the floor to the return connection on the heater.

The fuel magazine drops down to within 10 in. of the grate, and as the bottom coils in the fire pot are closely wound, it is said to be impossible for any red hot coals to

RADIAL PENDULUM TRUCK

The Peckham Truck Company, London, England, has recently put on the market several improved types of single and double trucks for electric cars, which are the inventions of Edgar Peckham, manager of the company. The improvements relate to the method of supporting the truck frames on the journal boxes and to the use of a radiating gear, whereby the wheels and axles of a single truck are permitted to assume a true radial position on sharp curves. The accompanying engravings illustrate an 8-ft. wheel-base single truck embodying both of these features.

The weight of the car body is carried by the top members of the side frames, each of which rest on two pairs of coil springs mounted on the main frames just outside of the pedestals. The overhang of the car body is supported by leaf springs carried on extensions of the main side frames. Over each journal box is a forged yoke or hanger, to which is fastened at the bottom a short bar carrying coil springs at each end. The weight of the main frames rests on these springs. By means of these yokes the wheels and axles have free side play to take up lateral shocks. In trucks built without the radiating feature the links or hangers are attached directly to the horizontal spring-supporting bars by pin connections. A different method is used, however, in the radial truck illustrated. The swing links are connected flexibly to a housing or box surrounding the horizontal spring-supporting bar. This housing is provided with a number of cold-rolled steel rollers, on which the spring bar rests. The spring bar is thus free to move



Side Elevation and Half Plan of Pendulum Radial Truck

get between these coils and overheat the inside casing. The inside and outside casings are separated by a 1-in. air space with inlets at the bottom for cold air and outlets at the top for heated air. It is therefore impossible for the outer casing to become hot enough to burn passengers who might come in contact with it or to scorch their clothing.

longitudinally with respect to the journal box, and by widening the pedestal jaws sufficiently each pair of wheels and axle can assume a true radial position on a curve without setting up strains in the truck frame. To prevent the housing from binding on the spring bar the seat for the swing links on top of the journal box is made to swivel,

thus permitting the links to remain in a plane parallel with the supporting bar when the axle assumes an angular position with respect to the truck frame. In the radial truck the motor gears and brake rigging are carried on auxiliary frames supported by bearings on the axles and by movable links from the central cross-tie.

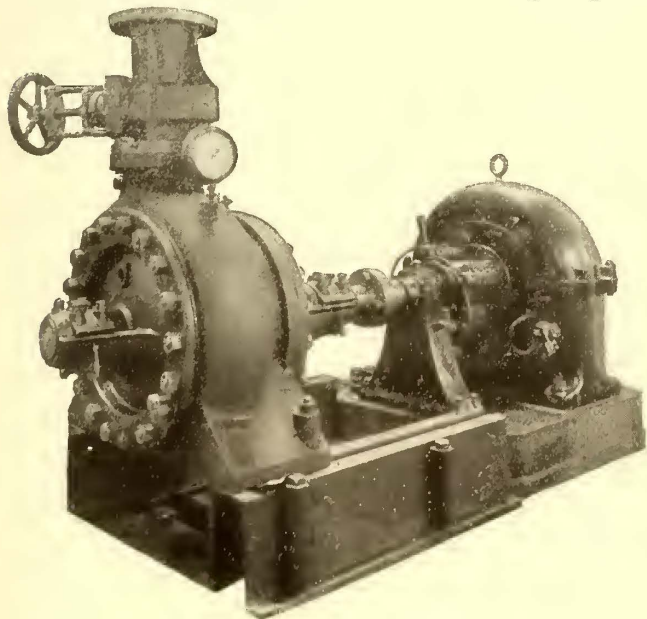
It is claimed that experiments made with this type of radial pendulum truck in England have shown a reduction in tractive effort required to tow a car around curves of less than 150-ft. radius of 25 per cent over that required for the same car equipped with other types of trucks. The riding qualities of this truck under a double-deck car 30 ft. long over all are said to be excellent.

The pendulum suspension of the truck frame adds about 2 ft. 6 in. to the effective spring support spacing, and this feature is applicable to single or double trucks, including maximum traction types. These improvements have been patented in the United States, and, it is understood, will soon be introduced in this country.

MOTOR-DRIVEN TURBO-PUMP

Willans & Robinson, Limited, Rugby, England, are building a new line of turbo-pumps designed for both high and low lifts. The low-lift pumps are suitable for use as circulating pumps for condensing plants, and are designed to pump against heads up to 50 ft. or 60 ft. The high-lift pumps are intended for use in mine pumping and similar applications, and will pump against heads of 2000 ft. or less.

These pumps have no pressure stuffing boxes at the delivery end, as only low-pressure exists in the end chamber behind the last diaphragm. The stuffing box at the suction end is water sealed, and as it must remain tight against



Motor-Driven Turbo-Pump

a pressure of only one-tenth of an atmosphere, it is not necessary to set the packing up hard against the shaft. No end thrust bearings are used, as the end thrust is balanced at all times by a simple patented arrangement which automatically adjusts itself to changes of head or output while the pump is running, and also adjusts for any wear of the impellers.

The bearings are separated by a gap of more than 1 in. from the packing to prevent the entrance of any water, grit or mud. They are arranged for ring oiling and are cast in

one piece with the end covers. As these end covers fit accurately with the center casing, it is impossible for the bearings to get out of alignment.

The impellers and guide wheels are made of special bronze, and the inner surfaces are all finished perfectly smooth. Experience has shown that when handling dirty water the wheels thus finished have a much longer life than wheels which have rough surfaces. The central casing is also lined with special bronze to prevent wear or corrosion.

APPRENTICESHIP COURSE AT LEWIS INSTITUTE, CHICAGO, ILL.

At a meeting of the Electric Club of Chicago on Nov. 3, Dean P. B. Woodworth, professor of electrical engineering, Lewis Institute, Chicago, described a new "co-operative course in mechanic arts" which is being conducted by Lewis Institute in conjunction with the managers and superintendents of a number of industrial plants in Chicago. The plan is similar to the co-operative educational and apprentice system recently established at the University of Cincinnati. A year ago the managers of some of the large industrial plants in Chicago were asked to nominate two or more of their apprentices for enrollment in the course, which was started on Jan. 1, 1909. Since the beginning of the year 47 boys have enrolled and 24 are still pursuing their studies.

The boys spend half of their time at school and half in the shops, attending school one week and working in the shops the next week. Two, four or six boys are drawn from each shop and paired off, one boy of each pair working in the shops while the other attends classes. In this way the regular shop routine is not interfered with.

A typical course in the schoolroom is as follows: General instruction in physics laboratory, 8:30 a. m. to 10:30 a. m.; mathematics, 10:30 a. m. to 11:30 a. m.; English, 11:30 a. m. to 12:30 p. m.; mechanical drawing, pattern making, foundry practice or machine shop practice, 1:30 p. m. to 5:30 p. m. Many of the apprentices enrolled have had little more than a grammar school education, and some of them left school at the end of the sixth grade course. The instructors in the Institute have noted, however, that the apprentices show much more rapid progress in the laboratories where manual skill is an important factor than the regular students, who have not had any shop practice. At frequent intervals the shop superintendents and the school instructors meet and discuss the progress made by the individual students.

The Lewis Institute imposes a condition on the manufacturers desiring to send apprentices through the co-operative course in mechanic arts, that the boys be paid \$14 per calendar month for the work which they do at the shops in alternate weeks. Of this amount \$4 is paid to the Institute for tuition. Many of the boys now taking the course receive more than \$14 per month.

Bulletin No. 1 of the revenues and expenses of steam roads of the United States, covering the nine months ended March 31, 1909, and prepared by the bureau of statistics and accounts, has been issued by the Interstate Commerce Commission. In an introductory letter, Prof. H. C. Adams states that the publication will be followed by similar bulletins showing the results by months for April, May and June, as well as by a comparative general summary covering the entire years ended June 30, 1909 and 1908.

ELECTRIC RAILWAY LEGAL DECISIONS

LIABILITY FOR NEGLIGENCE

Alabama.—Carriers — Passengers — Injuries — Petition — Negligence.

A count in a petition averred that plaintiff was a passenger, etc., and "was waiting to alight, or engaged in or about alighting therefrom," and "said car was started or jerked, or the speed suddenly increased, and as a proximate consequence plaintiff was thrown," is demurrable, in that its allegations of negligence were insufficient, since it is not every increase in the speed of a car or starting of same, whether with or without a jerk, that amounts to negligence. (Birmingham Ry., Light & Power Co., v. Parker, 47 S. Rep., 138.)

Colorado.—Street Railroads—Municipal Regulations—Validity—Regulations—Negligence—Evidence—Collisions—Actions—Complaint—Appeal and Error—Denial of Motion to Strike Evidence—Prejudicial Error—Operation—Care of Drivers of Vehicles—Care Required—Contributory Negligence—Res Gestæ—Expressions of Pain—Damages—Personal Injuries—Mental Pain and Fright—Instructions—Roving Commission.

Municipal ordinances requiring suitable and seasonable warning to be given of the approach of street cars to crossings are reasonable and proper regulations. A municipal ordinance requiring suitable and seasonable warning to be given of the approach to crossings of street cars, supplemented by other proof, is competent evidence in an action by one injured in a collision with a street car by the negligence of the street railway company, though the ordinance is not pleaded. Where the complaint in an action against a street railway company for injuries in a collision with a street car charged the failure to give any warning of the approach of the car, a municipal ordinance requiring suitable and seasonable warning to be given of the approach of street cars was admissible. Where, in an action against a street railway company for injuries in a collision with a street car, defendant introduced in evidence the complaint, which set forth a copy of an ordinance regulating the operation of street cars, the refusal to grant its motion to strike from the evidence the ordinance introduced by plaintiff without including the evidence introduced by it was not prejudicial. In an action against a street railway company for injuries in a collision with a street car, evidence held to warrant the jury in finding that the company was guilty of actionable negligence. Where the driver of a vehicle along the streets of a city does not know of the existence of street car tracks on a street which he is about to cross, and there is nothing in the physical conditions to impute to him such knowledge, the law does not impose an absolute duty on him to look and listen for an approaching car before attempting to cross, for the driver has a right to rely on the law requiring the giving of timely warnings of the approach of cars. The duty to look and listen for an approaching street car before attempting to cross a street car track depends on the circumstances of each case, and it is not negligence for a person to drive across street railway tracks, but the question of negligence in each case depends on the proximity of the approaching car, its speed, and other circumstances; and, where at the time he started to drive across the track the car was at such a distance that an attempt to cross after having seen it was not contributory negligence, his failure to look for the car will not preclude a recovery. While a street railway company has a preferential right to the use of that portion of the city streets on which its tracks are laid, it has no right to proceed regardless of the probability of encountering at a street crossing vehicles with a right to use the crossing as a common highway, but the motorman, in approaching such crossing, must proceed with such care as, while serving the public in rapid transit, will reduce to the minimum the danger to those equally entitled to the use of the street. In an action against a street railway company for injuries in a collision with a street car, evidence held not to show that the driver of the vehicle was guilty of contributory negligence. Expressions of pain by a person when taken from a wreck occasioned by a street car running into the vehicle in which he was riding, and expressions of pain made immediately thereafter, are admissible as part of the *res gestæ*. One may recover for mental pain and fright connected with or resulting from a physical injury. An instruction in a personal injury action which limits the recovery to bodily pain and mental suffering which plaintiff had endured or might endure on account of the injuries, or as a direct result of the injuries, properly limited the measure of damages for mental suffering. An instruction in a personal injury action that, where mental suffering occurs in connection with a

bodily injury, the law allows a recovery for both, and the amount thereof is left "to the judgment of an enlightened jury to be assessed in such reasonable sum" as may to them seem right, and that the award of damages must be in such sum as in the judgment of the jury the evidence warrants, is not open to the objection that it permits the jury to award damages without reference to the evidence. (Denver City Tramway Co. v. Martin, 98 Pac. Rep., 836.)

Illinois.—Municipal Corporations—Obstructions in Streets—Liability of Person Causing Obstruction—Burden of Proof—Contributory Negligence—Question for Jury—Trial—Instructions—Conformity to Issues.

Placing an obstruction in a street is *prima facie* unlawful, and the person so placing it has the burden of showing an express license obtained from the city, or that the obstruction is of such character as may be lawfully placed in the street without express permission. Where one places unlawful obstructions in a street without properly guarding the same and injury results to a traveler, he cannot avoid responsibility by showing that it was the duty of a third person to remove such obstruction or to maintain warning lights. In an action for injuries from obstructions placed in a street by defendant, it appeared that plaintiff was a battalion chief of the fire department of the city, and at the time of the injury he was responding to a fire alarm, and was driving at a speed of nine or ten miles an hour along the side of a street railway track, striking an obstruction maintained by defendant at the side of the street. An ordinance of the city provided that no person should drive at a greater speed than six miles per hour. Held, that the question of plaintiff's negligence was for the jury. In an action for injuries caused by an obstruction in a street, an instruction that plaintiff could not recover on the mere ground alone that defendant deposited the obstruction in the street was properly refused, where he did not seek to recover on that ground alone. (Kenyon v. Chicago City Ry. Co., 85 N. E. Rep., 660.)

Indiana.—Carriers—Street Railroads—Alighting Passengers.

As a matter of law the position of a street car passenger, standing on the outer edge of an open car running 12 miles an hour, is perilous, where the car is brought to a sudden stop by a quick, violent, backward motion. (Richmond St. & I. Ry. Co. vs. Beverley—No. 6207—85 N. E. Rep., 721.)

Iowa.—Carriers—Carriage of Passengers—Actions for Injuries—Evidence—Sufficiency—Questions for Jury—Proximate Cause—Negligence—Contributory Negligence—Conduct in Emergency—"Emergency"—Instructions—Appeal and Error—Review—Harmless Error—Pleading.

Evidence, in an action for injury to a street railway passenger, held sufficient to go to the jury on the question of whether he was in the exercise of due care.

Evidence, in an action for injury to a street railway passenger, held sufficient to go to the jury on the question of whether defendant was negligent in starting the car, proximately resulting in the injury.

Where the immediate effect of the negligent starting of a street car was not to throw a passenger, who was attempting to board, to the ground, but instead he maintained his hold on the rail, and ran alongside for some distance in an effort to board, when finally his hold was broken or relinquished, and he fell and was injured, the question whether his fall was the proximate result of the negligent starting of the car, if the facts permitted of a question, was for the jury.

A negligent act, putting another in a position of danger, continues and controls as long as the danger continues, unmodified by any independent, affirmative and voluntary act of the person affected, or by some intervening, controlling circumstance.

Where what is done by a person in the face of an emergency is no more than may be expected from an ordinarily prudent person under like circumstances, due care is not wanting.

Where reasonable minds might differ whether a person in the face of an emergency acted with due care, the question is one for the jury.

Whether a passenger, thrown from his footing in attempting to board a street railway car by the negligent starting thereof, was guilty of contributory negligence in not releasing his hold on the rail and in running alongside and attempting to regain his position and board the car held for the jury, and especially where the starting of the car was slow.

In the sudden and unexpected starting of a street car while a passenger is attempting to board, there is presented an emergency; an "emergency" being a sudden or unexpected happening or occasion calling for immediate action.

An instruction, in an action for injury to a street railway passenger, after advising the jury that plaintiff could not recover if his own negligence contributed to the accident; that the fact that plaintiff did not let go of the car, but kept his hold on the rail, and ran alongside trying to get on after it had started, did not necessarily show that he was guilty of contributory negligence; that if by reason of the starting of the car an emergency arose, then, even though his action was ill judged, if under the facts he acted as a man of ordinary prudence in a like situation, and had used ordinary care in his original attempt to get on the car, he was not guilty of contributory negligence—correctly stated the law, and without confusion.

Where, in a personal injury action, there were other elements of damage alleged than loss of time, to which evidence was addressed, and the verdict was for \$5,000, there was no prejudice in the court's failure, in its instructions, to place any limitation on the amount recoverable for loss of time, though the petition alleged damage, on that account, of but \$1,000.

Where the trend of the allegations of fact, in a petition for injury to a street railway passenger, was to the effect that he was in the exercise of due care for his own safety, an allegation that the injury was not due to any act of negligence of his was sufficient as a conclusion, or, at least, the pleading was not wholly wanting in an allegation on that subject; and if the street railway company desired more it should have moved therefor. (*Burger vs. Omaha & C. B. St. Ry. Co.*, 117 N. W. Rep., 35.)

Kentucky.—Pleading—Amendment—Trial Amendment—Street Railroads—Death of Children—Instructions—Cars—Operation—Crossings—Crossing Accidents—Discovered Peril.

In an action against a street railway company for killing plaintiff's child, the court held that plaintiff's allegation of defendant's gross negligence in running, operating and managing the car, and in failing to give warning of the approach of the car to the crossing by gong, bell or otherwise, was not sufficient to entitle plaintiff to prove absence of a headlight, whereupon plaintiff tendered a trial amendment charging negligence in not having a headlight on the car. Held, that the court's refusal to allow the amendment was erroneous; defendant having made no application for a continuance by reason thereof.

Plaintiff's intestate, a child of 12, was run into and killed by defendant's street car at or near a crossing. The proof of both parties showed that the child went on the tracks so close to the approaching car that she could not be saved. Defendant's evidence was that she fell on the track and was struck for this reason, while plaintiff's proof showed the car was running too rapidly; that it was very dark, and that there was no warning of the car's approach. Held, that an instruction that, if plaintiff's intestate attempted to cross the tracks so close to the car that the motorman by ordinary care could not stop before injuring intestate, then plaintiff could not recover, was erroneous as requiring a verdict for defendant, though the jury should believe plaintiff's evidence to be true.

A street railroad company is required to moderate the speed of its cars at public crossings, to give notice of their approach by proper signals, to maintain a headlight when dark, and to keep a lookout for persons on the crossing, that they may be warned of approaching danger.

Where a street railroad company operates a car over a crossing without proper warning and at excessive speed, and a person is injured, the company cannot be exonerated from liability on the sole ground that, after his peril was discovered, his injury could not be averted. (*Whitman's Adm'r vs. Louisville Ry. Co.*, 119 S. W. Rep., 165.)

Massachusetts.—Master and Servant—Injuries to Servant—Contributory Negligence—Knowledge of Danger.

Plaintiff, a street railroad motorman, was injured by a derailment of his car, claimed to have been caused by a defective rail joint. Plaintiff at the time was running at usual speed, in violation of a rule requiring motormen to slow up at that point, though he had known for more than a month that there was a sunken joint there which was liable to cause derailment. Held, that plaintiff was negligent, precluding a recovery.—(*Lanen v. Haverhill, G. & D. St. Ry. Co.*; *Same v. Boston & N. St. Ry. Co.*, 86 N. E. Rep., 776.)

Michigan.—Master and Servant—Injuries to Servant—Railroads—Negligence—Instructions—Concurring Cause—Fellow Servant's Negligence—Expert Testimony—Basis for Opinion—Question for Jury.

The conductor of an electric car was injured in a rear-end collision. The braking apparatus of plaintiff's following car was not in a reasonably safe condition, and defendant failed to discover the defect in its inspection of the car, and plaintiff was not conclusively shown to have had knowl-

edge of the defect. Held, that defendant's rights were protected by an instruction that, if plaintiff had actual or constructive knowledge of the defect, he could not recover, and that he had constructive knowledge, if by reasonable care he could have learned of the defect.

Where injuries to the conductor of an electric car in a rear-end collision were found to have resulted from a defective brake on the following car or other negligence of the railroad company, and there was evidence that such defective brake was a direct contributing cause, defendant was not relieved because a fellow servant failed to obey a safety rule which also contributed to the result.

Two contributing causes of an injury were concurring where both were essential to produce the injury.

Without evidence that a train dispatcher knew that the braking appliances on a following car were defective when he ordered it to follow a preceding car, which had been ordered to proceed after repairs, it was error to permit experts to testify that, in their opinion, the dispatcher's order was improper.

In an action for injuries to a car conductor in a rear-end collision, evidence held insufficient to go to the jury on the question of the negligence of defendant's train dispatcher in sending out the local car in a crippled condition, and in ordering plaintiff's car to follow.—(*Welch v. Jackson & B. C. Traction Co.*, 117 N. W. Rep., 898.)

Missouri.—Carriers—Carriage of Passengers—Actions for Injuries—Instructions—Contributory Negligence—Damages—Conformity to Pleadings and Evidence—Parts Injured.

An answer in an action against a carrier by a passenger to recover for injuries was treated by the trial court and both parties as pleading contributory negligence, and several instructions bearing on that issue were given on request of defendant. Held, that it was not error to instruct that contributory negligence is an affirmative defense to be proven by defendant unless it appears in other evidence, and that, if such defense is not established, the finding should not for that reason be for plaintiff, but it should be that there was no contributory negligence in the case.

In an action by a passenger against a carrier for personal injuries, evidence as to injury to a "thumb" and to a rupture justifies instructions submitting an injury to the "hand" and to the abdomen, although plaintiff treated injury to the thumb and hand as distinct, and similarly treated injuries to the rupture and abdomen, especially where there was affirmative evidence of injury to both thumb and abdomen. (*Gerhart vs. Metropolitan St. Ry. Co.*, 112 S. W. Rep., 10.)

New York.—Street Railroads—Operation—Actions for Injuries—Sufficiency of Evidence—Negligence—Res Ipsa Loquitur—Appeal and Error—Presentation of Objections Below—Necessity—Variance.

Where plaintiff was injured by a bolt which was seen to fall from defendant's elevated railroad structure while its train was passing over it, though there was evidence that the structure was inspected the next day without finding any bolts missing, and that there were no bolts of that kind in the bridge, the rule of *res ipsa loquitur* applied.

In an action for injuries caused by a bolt falling from an elevated railroad structure, defendant's evidence held insufficient to require a finding that the presumption of negligence arising from the accident was overcome.

Where the complaint was for injuries caused by a bolt falling from an elevated railroad structure because not securely fastened thereto, if defendant wished to rely on a variance in that the evidence showed that it might have fallen from a passing train, it should have urged the objection in its motion to dismiss so as to permit the trial court to pass upon it and give plaintiff an opportunity to amend, and, not having done so, cannot rely thereon on appeal. (*Sturza vs. Interborough Rapid Transit Co.*, 113 N. Y. Sup., 974.)

New York.—Municipal Corporations—Use of Street—Acts Constituting Negligence—Running Automobile—Question for Jury—Contributory Negligence—Injuries from Negligent Use.

It is negligence for a person in charge of an automobile to run it along the street past a street car, that has stopped to allow persons to get off and on, at the rate of six or seven miles an hour.

Whether defendant was running his automobile negligently, where the evidence as to whether he was running fast or slow is conflicting, is for the jury.

A passenger on a street car is not guilty of contributory negligence if he alights from the car after it has stopped to allow passengers to alight; and if he follows other passengers out of the car, and onto the sidewalk, without looking to the right or left to see whether an automobile is approaching, as when a car stops and it is

announced that passengers are to alight, a passenger may assume that it is safe for him to alight in the ordinary manner.

A pedestrian and driver of a vehicle must each be careful in the exercise of his rights upon the streets, and the owner or driver of the vehicle must exercise the greatest care and vigilance not to injure the pedestrian, and the pedestrian is bound to not place himself where an injury will probably result to him. (*Brewster vs. Barker*, 113 N. Y. Sup., 1026.)

Pennsylvania.—Street Railroads—Injury to Person on Track.

In an action to recover for injuries received by being struck by a street car while lying on the track, evidence held to require binding instructions for defendant. (*Moyer vs. United Traction Co.*, 70 Atl. Rep., 551.)

CHARTERS, ORDINANCES AND FRANCHISES

Connecticut.—Municipal Corporations—Control of Streets—Use for Street Railways—Electric Conductors—Statutory Provisions—Review of Decision of Municipal Authorities—Appeal to Railroad Commissioners—Appeal to Superior Court.

In view of the history of legislation fixing the general rule of policy that municipalities shall be bound to maintain public highways, and invested with the power of protecting the public safety in their use, appearing in its final form in General Statutes 1902, c. 125, secs. 2012-2089, and the legislation as to occupation of highways in aid of public uses, giving municipal authorities control of the placing and maintenance of electric lines and conductors, leading up to General Statutes 1902, sec. 3905, providing that the common council of any city shall have full direction and control over the placing, erection and maintenance of any wires, conductors, etc., of any company engaged in using any electric wire or conductor for any purpose, and may make all orders necessary for the exercise of such power and direction of control, and especially in view of the history of legislation on the subject of railways along the highways, and the control by local authorities, appearing in General Statutes 1902, sec. 3824, providing that the Mayor and Council of each city shall have exclusive control over the placing or locating of tracks, wires, conductors, etc., subject to the right of appeal to the railway commissioners, the placing of electric wires and conductors in a highway by a street railway company, for the purpose of applying electricity as the motive power for the operation of its railway, is subject to the direction of the local municipal authorities, which may direct that such wires and conductors shall be placed underground or overhead as they may deem proper for the safety of the public; and there is no exemption from such municipal control by force of Special Laws 1905, p. 711, sec. 3, amending the charter of the New York, New Haven & Hartford Railroad Company, and authorizing it to establish and maintain conductors over, on, or under any street, highway or public grounds, subject to the general provisions of secs. 3904-3907, inclusive, of the General Statutes of 1902, relating to control by the local authorities, etc., and to transmit electricity thereby in such manner, etc., as said corporation shall find necessary for the best conduct of its business, for the power given the company is subject to all general laws, and especially to the laws mentioned in the amendment; and, in the absence of action by the railroad commissioners, the local authorities may exercise full direction and control given by the statute in respect to placing electric conductors in the highways by a street railway company, subject to the final action of the railroad commissioners.

Under General Statutes 1902, sec. 3832, providing that whenever the Mayor and Common Council of any city shall make any decision, denial, order or direction with respect to any matter relating to street railways, any company affected thereby may appeal to the railroad commissioners from such decision, etc., and sec. 3834, providing that any party to any proceeding relating to street railways, brought before said commissioners, either upon original application or by appeal, may appeal therefrom to the Superior Court, and sec. 3905, providing that the Common Council of any city may make all orders necessary to the exercise of the power of control over the placing of electric conductors, etc., subject to the right of appeal by such company to a judge of the District Court, any action taken by the Common Council of a city, with respect to matters relating to street railways in respect to the placing of electrical conductors, may be retried and determined by the railroad commissioners, and any one injured in his legal rights, by unlawful action of the local authorities in the exercise of specified administrative powers, may apply to the Superior Court or a judge thereof sitting in chambers, through the

original process called "appeal" for such appropriate relief as comes within the judicial power vested in the court, and this process will run against the municipal board when the actual injury complained of results from the unlawful action of that board.

Under General Statutes 1902, sec. 3905, authorizing an appeal to a judge of the Superior Court from orders of the Common Council of a city, relating to the placing of conductors of electricity, purely legislative and administrative powers or duties are not transferred to the Superior Court for performance in such matters, and the action of the board charged with their performance is final; and where the Common Council of a city denies an application to erect overhead wires for the conducting of electricity from an electric street railway power plant to a substation, on the ground that it is unsafe, a judge of the Superior Court has no authority to reverse the order, and authorize the erection of such conductor in the manner desired by the company. (*Appeal of N. Y., N. H. & H. R. Co.*, 70 Atl. Rep., 26.)

Michigan.—Street Railways—Acquisition of Rights in Road—Statutory Provisions—Consent of Adjoining Owners—Fraud in Securing Consent of Some Owners—Effect—Eminent Domain—Compensation—Additional Servitude—"Railroad"—"Street Railway"—Titles and Subject Matter—Constitutionality.

Under Comp. Laws, chap. 164, sec. 51, art. 2, as amended by Laws of 1901, p. 370, No. 238, permitting the construction of interurban railroads upon public highways under certain conditions, provided the company obtains the consent of two-thirds of the owners of adjoining property, if the consent of more than the required two-thirds of the adjoining property owners was properly obtained the fact that the consent of two others was obtained by fraud would not affect the validity of the company's right.

There is a well-defined distinction between the definition of the words "railroad" and "street railway." The one is a word of general and extended meaning, applying to all roads incorporated under the general law, and has always been held to impose an additional servitude upon a public way for which abutting owners are entitled to compensation. The other is local in its signification, referring to transportation of a character entirely different from that of a general railroad, and has been held to add no burden as an additional servitude.

Comp. Laws, c. 164, entitled "An act to revise the laws providing for the incorporation of railroad companies and to regulate the running and management, and to fix the duties and liabilities of all railroads and other corporations owning or operating any railroad in this State," was amended by Laws 1901, page 370, No. 238, by adding to Article 2 thereof a new section, to wit, Section 51, which gave to corporations organized to construct and operate street and interurban railroads, operated by other than steam power, authority to construct such roads on streets, highways, etc., on certain terms. Held, that the amendment relating to street railways was not germane to the purposes of the general railroad law as expressed in the title; hence the act of 1901 was unconstitutional, as in violation of Constitution, Article 4, Section 20, providing that no law shall embrace more than one object, which shall be expressed in its title. (*Ecorse Township v. Jackson, A. A. & D. Railway et al.*, 117 N. W. Rep., 89.)

Massachusetts.—Statutes—Construction—Construction with Reference to Other Statutes—Death—Actions for—Statutory Provisions—Street Railway Companies.

St. 1906, c. 463, revising and re-enacting the general railroad law, is as to part 1, sec. 63, almost identical with Rev. Laws, c. III, sec. 267. St. 1907, p. 338, c. 392, amended St. 1906, p. 506, c. 463, pt. 1, sec. 63. St. 1907, p. 324, c. 375, amended Rev. Laws, c. 171, sec. 2. Held that, as the amending statutes are in effect the same as if they had been originally enacted in the Revised Laws, the same rules of construction are applicable as if both were enacted at the same time and as part of the same general statutory scheme. Statutes alleged to be inconsistent in whole or in part must be so construed as to give reasonable effect to all, unless there be some positive repugnancy between them. St. 1907, p. 324, c. 375, giving an action against any person or corporation whose negligence, or the negligence of whose servants, causes the death of a person other than an employee, does not include a street railway company; but damages against it for the death of a passenger can be recovered only under St. 1906, p. 506, c. 463, pt. 1, sec. 63, as amended by St. 1907, p. 338, c. 392, making street railways liable for the death of passengers, and persons other than passengers, not employees, in the exercise of due care. (*Brooks v. Fitchburg & L. St. Ry. Co.*, 86 N. E. Rep., 289.)

News of Electric Railways

Engineer of New York Commission Files Report on Moving Platform Proposal

Henry B. Seaman, chief engineer of the Public Service Commission of New York, filed with the commission on Nov. 5 a report on the proposed moving platform which the Continuous Transit Securities Company has offered to build under Broadway, between Fourteenth Street and Forty-second Street at Times Square. The proposition of the Continuous Transit Securities Company was made in February, 1909, and amended on June 1, 1909, following the passage by the Legislature of the amendments to the rapid transit act permitting subway construction by private capital. On July 1, 1909, William R. Willcox, chairman of the Public Service Commission, sent a letter to the Board of Estimate and Apportionment, calling the attention of that board to the general subject of moving platforms and suggesting the advisability of a committee from the Board of Estimate considering the matter and a committee appointed by that body with Herman A. Metz, controller of the city, as chairman is at work. The report by Mr. Seaman to the commission says in part:

"Owing to the constantly increasing density of population on Manhattan Island, it has long been evident to students of the transportation problem that a contrivance similar to that offered by the Transit Securities Company may eventually be necessary as a means of transportation for the most congested routes of the city.

"The moving platform is made up of short units coupled together, forming an endless chain, which is kept in continuous motion. This platform is provided with seats, and will travel at a speed of 12 m.p.h. Provision is made for the loading and unloading of passengers at will by the introduction of narrow loading platforms moving at differential speeds. Thus, for the continuous train moving at 12 m.p.h. speed there would be three loading platforms moving at 9, 6 and 3 m.p.h., respectively. The passenger steps from a stationary platform to one moving at the 3-mile speed; thence to the 6-mile speed; thence, etc., until reaching the ultimate speed of the continuous train. The transition of speed between platforms, each increasing at 3 m.p.h., may be made without inconvenience.

"The advantages of this arrangement are: 1. A vastly increased capacity, and seats for all passengers. 2. There is no delay incurred by waiting for trains at stations, as the train is always there and constantly moving. 3. Passengers may board or leave the train at any point at will, and instead of placing stations one-third of a mile apart, as on the present subway, they may be placed at every cross street, or, indeed, at any intermediate point, and the construction may take the form of a continuous arcade.

"The disadvantage is the fact that a larger investment is required. This, however, may be offset by the increased earning power from larger patronage, short trips, and from other sources.

"I have had this device most carefully investigated, and submit herewith typical plans indicating its construction and method of operation. The details of the mechanism may be so designed as to be practically noiseless. The designs and estimates indicate that as a means of transportation this method of conveyance will be efficient, safe and reliable, and, with dense traffic, most economical. For purposes of illustration, the Broadway route has been selected.

"In order to compare the time of transit by means of the moving platform with that by means of the present local trains, we may assume that the average passenger starts from a point one-fourth distance between local stations, and travels to a point of destination likewise one-fourth distance between local stations, and is required to wait at the station one-half the interval between trains. For the purposes of calculation the following data may be used:

- "Distance between express stations, 2 miles.
- "Distance between local stations 1/3 mile.
- "Distance between cross streets, 1/20 mile.
- "Speed of express trains, including stops, 25 m.p.h.
- "Speed of local trains, including stops, 15 m.p.h.
- "Speed of platform, 12 m.p.h.
- "Speed of pedestrian, 3 m.p.h.
- "Interval between trains (average), 3 minutes.

"It will be found that for all distances less than 4 miles the moving platform is a quicker and more convenient mode of conveyance than is the local train service, or even quicker than the local and express service combined; for instance, a passenger may reach Times Square station from any local station south of Fourteenth Street quicker by the

moving platform than by the local and express trains of the present subway.

"These results are derived from the assumption that the local train travels at the schedule speed of 15 m.p.h. As a matter of fact, however, it has been found that during the rush hours the local service averages only about 12 m.p.h. If this rush hour service is compared with a platform speed of 12 m.p.h., it is evident that the platform will have the advantage for all distances, because there is no train interval to wait and no distance between stations to walk.

"Since surface cars, in congested districts, do not travel faster than 8 m.p.h., while in rush hours their speed is diminished in some instances as low as 3 m.p.h., it may readily be seen that a platform would have a great advantage in every case.

"In order to compare the capacity of the two systems of travel, the following table has been prepared:

	CAPACITY PASSENGERS PER HOUR (IN ONE DIRECTION).			
	Mid-day Seated.	Seated.	Rush hour Standing.	Total.
5 car local train...	5,500	7,500	15,000	22,500
8 car express train.	8,000	12,000	24,000	36,000
Moving platform ..	73,500	73,500		73,500

"This table indicates that the moving platform has a capacity far greater than the combined rush-hour service of the local and express trains of the present subway, and furthermore, as already stated, will carry all passengers seated.

"In view of the foregoing, I would respectfully recommend that the proposed routes be laid out as requested by the Continuous Transit Securities Company, and that an early installation of some one route be required."

Philadelphia Transit Talks

Transit Talk No. 25 of the Philadelphia (Pa.) Rapid Transit Company was dated Oct. 12, 1909. It was entitled "An Invitation Renewed." The talk follows:

When we began these talks we asked for suggestions from the public as to subjects about which Philadelphians wanted information.

The responses to this invitation have been disappointing in one way, though helpful in another. They don't assist us in finding out what people in general want to know about the transit company.

Most of the letters deal with details of the service that do not affect the public at large; but in a number of cases we have been able to correct faults called to our attention in this way. All such suggestions are welcome, and each will have careful attention.

Don't hesitate about writing to us, even if you only want to know how to reach some point on our lines.

We are dealers in a merchandise called transportation, and want to satisfy our 500,000,000 customers. The proprietors of a department store are not more anxious to please people than we are.

Write to us with this idea in mind, and don't forget that we want to know what you want to know about the affairs of the company. Address 228 Land Title Building—an office established especially to supply information to the public.

Transit Talk No. 26 was dated Oct. 15, 1909. It was entitled "How to Reach Point Breeze," and contained a map and directions for reaching Point Breeze Park, where an aeroplane flight and automobile races were scheduled to take place on Oct. 16.

Transit Talks No. 27 was dated Oct. 20, 1909. It was entitled "To Prevent Accidents to Children." The talk follows:

In an endeavor to lessen the chances of accidents to children this letter was recently sent to the principal of every public school in Philadelphia:

"We wish to enlist your co-operation in our efforts to prevent injuries to children, resulting from the operation of our cars near your school.

"In spite of every precaution taken by the company, the careful operation of our cars by employees and constant vigilance in the enforcement of safety rules, accidents happen more often than they would if children were carefully instructed by those in authority concerning the dangers of carelessly playing in the streets, crossing streets without looking for cars and stealing rides on cars.

"We believe that a warning and instruction against these practices would tend to diminish the chance of accident, and we earnestly request that you will give such warning to the children under your charge.

"This letter is sent with the approval of Dr. Martin G. Brumbaugh, superintendent of schools." Respectfully, CHARLES O. KRUGER, President and General Manager."

The responses to this appeal have been very gratifying, and we now address it to every parent in Philadelphia. Children cannot have too many of these warnings.

The fact that the company is rarely held responsible for accidents to children proves conclusively that such mishaps occur, ninety-nine times out of a hundred, under circumstances that relieve us of all blame. This fact also shows that we use every care to avoid accidents.

If we could induce passengers and pedestrians to use half as much care as we do, the accident roll would be greatly reduced.

Even now we have but one accident for every 2,289 miles run by our cars, and only one out of every 14,486 passengers is in any way injured. In this computation the most trivial accidents count as much as those of a serious nature.

Transit Talk No. 28 was dated Oct. 26, 1909. It was entitled "About One of Many Safety Rules." The talk follows:

This notice has lately been posted in all of our car barns: "Recently we have had a number of accidents, the direct cause of which can be attributed to conductors unnecessarily standing inside the car. The requirements of Rule 24, Page 18, in the Book of Rules and Regulations must be complied with hereafter, otherwise infringement of said rule will be sufficient cause for suspension."

The rule referred to in this notice is one of many framed to safeguard passengers. The rule reads:

"The conductor's position when not otherwise engaged in duty, is upon the rear platform, standing erect, attentive to the wants of his passengers, and on the watch for persons desiring to enter or leave the car."

Our platforms are protected from the weather, and there is no reason why conductors should not be almost constantly at their proper stations, on the rear platform.

It will aid us in the stricter enforcement of the rule quoted if passengers will refrain from unnecessary conversation with conductors. That is the reason why we bring this matter to the attention of the public.

Transit Talk No. 29 had for its subject "Poisoning the Wells of Public Opinion." The company referred to the effort made in some quarters to make the company an issue in the recent municipal campaign and reprinted part of the last baccalaureate address by President Hadley, of Yale University, as a reproach to those who had sought to slander the company.

Transit Affairs in New York

The Public Service Commission has given out designs for the elevated parts of the new subway, which have been approved by the Municipal Arts Commission. It was said, however, that this approval was tentative, and that the designs finally adopted would go again before the Arts Commission for consideration. The drawings of the new structures show several departures from the old style of elevated railway construction, among which are a noise deadening scheme and a footpath extending from station to station; also larger stations. The stations will be on the mezzanine plan. The ticket office will be placed on a floor half way between the street and the rail platforms, and there will be as many platform approaches as convenient. This will make access to either side of the station possible without crossing the street, and one ticket office will do for each station. The platforms for express stations will be 480 ft. long, allowing for 10-car trains, and for the local stations 435 ft. long, permitting 8-car trains to be used. On the latter, if only one door of the end car is used 10-car trains may also be used. The design provides that 14 ft. of head room shall be provided underneath the elevated structure, and the base of rail is never to be higher than 25 ft. above the curb line of the street.

The Public Service Commission of the First District of New York has referred to the entire commission as a committee of the whole the letter from the New York Edison Company to the commission in which an offer was made to submit bids for supplying the current necessary to light and operate the new subways in New York. This letter was published in full in the *ELECTRIC RAILWAY JOURNAL* of Oct. 30, 1909, page 951.

The Public Service Commission on Nov. 9 signed the contracts for the Brooklyn subway under Fourth Avenue, from the Manhattan Bridge to Forty-third Street, Bay Ridge. Work will begin just as soon as a few remaining preliminaries can be taken care of. The Fourth Avenue subway, as laid out under the contracts, calls for the expenditure of \$15,886,381, of which \$14,886,723 is for the construction of railway and the tube itself, and the balance for pipe galleries along its sides. James P. Graham, the successful bidder on Section 1, from the bridge to Willoughby Street, arranged for the assignment of his section to Smith, Scott & Company, a firm of which Mr. Graham is a member. Following is a list of the contracts and the sums they call for:

Section 1—Nassau Street to Willoughby Street, James P. Graham, Bensonhurst, L. I., N. Y. Railroad, \$1,020,476; pipe galleries, \$101,374.

Section 2—Willoughby Street to Ashland Place, William Bradley, New York, N. Y. Railroad, \$3,436,019; pipe galleries, \$58,695.

Section 3—Ashland Place to Sackett Street, William Bradley, New York, N. Y. Railroad, \$3,392,091; pipe galleries, \$208,135.

Section 4—Sackett Street to Tenth Street, E. E. Smith Contracting Company, Philadelphia, Pa. Railroad, \$2,283,553; pipe galleries, \$206,672.

Section 5—Tenth Street to Twenty-seventh Street, Tide Water Building Company and Thomas B. Bryson, New York, N. Y. Railroad, \$1,945,640; pipe galleries, \$251,076.

Section 6—Twenty-seventh Street to Forty-third Street, E. E. Smith Contracting Company, Philadelphia, Pa. Railroad, \$2,808,982; pipe galleries, \$176,665.

In a letter addressed to the Public Service Commission on Nov. 9, the Edison Illuminating Company of Brooklyn expressed its desire to furnish power for lighting or operation of the Brooklyn subway. In its letter to the commission the company said:

"We respectfully ask that in the preparation of specifications providing for the operation of the railway, any contractors who may assume the operation of the whole or any part of the railway be given the privilege of obtaining electric current necessary for the maintenance and operation of the subway from the mains of this company, or any properly equipped electric supply company. We believe that it will be found to the advantage of the city of New York, as well as to the contractors who may operate the Fourth Avenue system, to contract for their electric light and power service, rather than to make the large investment necessary to provide for a special power plant."

New Pennsylvania Road Opened.—The Irwin & Herminie Traction Company has placed in operation its line between Irwin and Herminie, 4 miles distant. The company has an extension under construction reaching the Youghiogheny Valley at West Newton.

Submission of San Francisco Plan to Voters.—A date between Dec. 22, 1909, and Jan. 1, 1910, will be selected for submitting to the voters of San Francisco the resolution of the Council providing for the reconstruction of the Geary Street, Park & Ocean Railroad by the city and the building of an extension in Market Street from Geary Street to the Market Street ferry.

Forest Hills Extension in Boston to Be Opened Shortly.—The Boston (Mass.) Elevated Railway will shortly open its new double-track elevated extension to Forest Hills, thus affording the West Roxbury district high-speed train service from the center of Boston. There will be only one stop between the present end of the elevated system at Dudley Street, Boston, and Forest Hills Square, and the completion of the line will throw open for travel a through route from Sullivan Square to Forest Hills via the Washington Street tunnel, about 7½ miles long.

Quarterly Meeting of New York State Street Railway Association.—A meeting of the executive committee of the Street Railway Association of the State of New York was held in Schenectady on Nov. 5, and it was decided to hold the next quarterly meeting of the association in Albany on Dec. 7 and 8. The meeting will be opened with an informal dinner at 8 p. m. on Dec. 7 and two sessions will be held on Dec. 8. A program of the meeting and an announcement of the place at which the meeting and dinner will be held will be published in an early issue of the *ELECTRIC RAILWAY JOURNAL*.

Kansas City Ordinance Passed.—The ordinance granting the Metropolitan Street Railway, Kansas City, Mo., an extension of its franchise until 1951 under new terms has been passed by both houses of the Council and signed by the Mayor. The ordinance provides for six tickets for 25 cents and 25 tickets for \$1 after 1913, the right being reserved to the city to purchase the property of the company any time after 1945. Both branches of the Council have passed, and the Mayor has signed, an ordinance ordering a special election on Dec. 16, 1909, at which the new franchise will be submitted to the voters for approval.

Hearing by Joint Commission on Boston Elevated Structure.—The Massachusetts Railroad Commission and the Boston Transit Commission, sitting jointly, gave a public hearing on Nov. 4, 1909, on the bill of J. F. Cronin and others, referred to it by the Legislature of 1909, asking that the Boston Elevated Railway be required to accept a subway from Castle Street to Dover Street, Boston, under Washington Street, in place of its present elevated structure. After hearing arguments by Mr. Cronin in favor of the bill, the board read a statement from T. A. Babson, corporation counsel, of Boston, criticizing the measure as wholly impracticable. Mr. Babson said that if the elevated structure were removed in the section asked, other sections would demand removal; that the Boston Elevated Railway has already paid damages to the abutting property owners; that the courts would require the company to be compensated for the loss of its structure, legally built and owned, if the road should be forced into a tunnel, and that the subway would be a financial failure. F. E. Snow, counsel of the Boston Elevated Railway, questioned the constitutionality of such an act as Mr. Cronin's bill suggests. He said that the contention that the elevated structure constitutes a nuisance is based on the assertion that it obstructs light and air, that it is unsightly, and that its operation by electricity is noisy. Concluding, Mr. Snow stated that the particular type of structure erected and operated in Washington Street was specifically authorized by the Legislature, and that the plans were approved in detail by the Railroad Commission and the Mayor of Boston. The company has paid damages to abutters and acquired property rights in the street which even the Legislature may not constitutionally abrogate. The board will report its recommendations or comments to the next Legislature.

Financial and Corporate

New York Stock and Money Market

November 9, 1909.

The stock market was dull to-day and there was a tendency of prices to sag, in keeping with the trend during the entire week, although on previous days conditions have been a trifle less emphatic. The unsettled condition of the money market, principally abroad, is responsible for the depression. There has continued to be considerable activity in Interborough-Metropolitan, especially the common stock, and on a receding market the prices of these issues has advanced. Other tractions have been rather dull. Money to-day was quoted: Call, 4½ to 5½ per cent; 90 days, 5 per cent.

Other Markets

Dealings in Philadelphia Rapid Transit stock have been heavy, but there have been as many buyers in evidence as sellers, with the result that the price is at the same figure at the end of the week as at the beginning. Other tractions have been fairly active at unchanged prices.

In the Boston market, Massachusetts Electric common and Boston Suburban preferred have been the leading tractions in the trading. The prices of these stocks have not changed to any extent.

There has been little interest shown in tractions in the Chicago market during the past week. Even Subway shares have been dull, with the price still hovering around 7. Metropolitan Elevated preferred is a trifle lower.

In the Baltimore market, the bonds of the United Railways Company, the only traction issue in which there has been trading, have been selling liberally at about 57¼ for the incomes, 84 for the funding 5s and 85¼ for the 4s.

At the auction of securities in New York last week the following were sold: 150 shares Second Avenue Railroad at 19¼, 4 shares Metropolitan Street Railway at 20¾, and 4 shares American Light & Traction preferred at 105½.

Quotations of various traction securities as compared with last week follow:

	Nov. 2.	Nov. 9.
American Railways Company.....	445½	445½
Aurora, Elgin & Chicago Railroad (common).....	45	49¼
Aurora, Elgin & Chicago Railroad (preferred).....	95	a95
Boston Elevated Railway.....	130	130¾
Boston & Suburban Electric Companies.....	*18¼	a18½
Boston & Suburban Electric Companies (preferred).....	77¾	77½
Boston & Worcester Electric Companies (common).....	a12	a12½
Boston & Worcester Electric Companies (preferred).....	a53	a52
Brooklyn Rapid Transit Company.....	75¾	75½
Brooklyn Rapid Transit Company, 1st pref., conv. 4s.....	85	84¾
Capital Traction Company, Washington.....	a139	a136
Chicago City Railway.....	a190	a190
Chicago & Oak Park Elevated Railroad (common).....	*2	*2
Chicago & Oak Park Elevated Railroad (preferred).....	*10	*10
Chicago Railways, pteptg., ctf. 1.....	a106	a106
Chicago Railways, pteptg., ctf. 2.....	a36	a35
Chicago Railways, pteptg., ctf. 3.....	a24	a24
Chicago Railways, pteptg., ctf. 4s.....	a10	*10
Cleveland Railways.....	*84	*84
Consolidated Traction of New Jersey.....	a76½	a76½
Consolidated Traction of N. J., 5 per cent bonds.....	a106	a106
Detroit United Railway.....	a70	a67½
General Electric Company.....	164	162
Georgia Railway & Electric Company (common).....	a99½	a100½
Georgia Railway & Electric Company (preferred).....	a87	a88½
Interborough-Metropolitan Company (common).....	19½	20¼
Interborough-Metropolitan Company (preferred).....	50	50¾
Interborough-Metropolitan Company (4½s).....	83¾	83
Kansas City Railway & Light Company (common).....	40	a40
Kansas City Railway & Light Company (preferred).....	*a82	*82
Manhattan Railway.....	141	142
Massachusetts Electric Companies (common).....	a18	a18½
Massachusetts Electric Companies (preferred).....	a83	a83
Metropolitan West Side, Chicago (common).....	a17	a17½
Metropolitan West Side, Chicago (preferred).....	a54	a52½
Metropolitan Street Railway.....	*a24	*24¾
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	79	79¾
Northwestern Elevated Railroad (common).....	a20	a20
Northwestern Elevated Railroad (preferred).....	a68	a68
Philadelphia Company, Pittsburg (common).....	a49	a49
Philadelphia Company, Pittsburg (preferred).....	a44½	a43¾
Philadelphia Rapid Transit Company.....	a26½	a27¾
Philadelphia Traction Company.....	a89½	*89½
Public Service Corporation, 5 per cent col. notes.....	*100½	*100½
Public Service Corporation, ctf. 5.....	*97	a100½
Seattle Electric Company (common).....	115¼	116
Seattle Electric Company (preferred).....	103	a104½
South Side Elevated Railroad (Chicago).....	a52	a53
Toledo Railways & Light Company.....	*8	*8
Third Avenue Railroad, New York.....	20	19
Twin City Rapid Transit, Minneapolis (common).....	108	109½
Union Traction Company, Philadelphia.....	52½	a53¾
United Rys. & Electric Company, Baltimore.....	13¼	*13¼
United Rys. Inv. Co. (common).....	42	42
United Rys. Inv. Co. (preferred).....	73¼	73¾
Washington Ry. & Electric Company (common).....	47	a47
Washington Ry. & Elec. Company (preferred).....	a94	a94
West End Street Railway, Boston (common).....	92½	92½
West End Street Railway, Boston (preferred).....	103	103½
Westinghouse Electric & Manufacturing Company.....	86½	85½
Westinghouse Elec. & Mfg. Company (1st pref.).....	*140	*140

a Asked. * Last Sale.

Annual Report of Northwestern Elevated Railroad

The annual report of the Northwestern Elevated Railroad of Chicago, covering the year ended June 30, 1909, shows a gain of 3.15 per cent in gross earnings, reflecting the failure of the elevated properties of that city to maintain their usual rate of traffic development against the improvement in the surface lines. A statement of the income account, with a comparison, is as follows:

Year ended June 30—	EARNINGS.		
	1908	1909	Increase
Passenger earnings.....	\$1,857,754	\$1,913,515	\$55,762
Other earnings (including Loop net earnings)....	605,434	627,368	21,934
Total earnings.....	\$2,463,188	\$2,540,883	\$77,696
OPERATING EXPENSES.			
Maintenance of way and structure.....	\$40,115	\$45,038	\$4,924
Maintenance of equipment.....	130,381	147,045	16,664
Conducting transportation.....	693,760	699,843	6,083
General expenses.....	100,861	103,893	3,032
Total operating expenses.....	\$965,117	995,819	\$30,703
Net earnings.....	\$1,498,071	\$1,545,064	\$46,993
CHARGES.			
† Taxes.....	\$226,381	\$261,846	\$35,465
Bond interest.....	802,837	848,852	46,015
Other interest.....	117,995	78,590	*39,375
Total charges.....	\$1,147,183	\$1,189,288	\$42,105
Surplus.....	\$350,883	\$355,776	\$4,888
Ratio of operating expenses to earnings (excluding loop net earnings).....	50.22	49.82	.....
Ratio of operating expenses, loop account and taxes to earnings (excluding loop net earnings).....	66.64	68.24	.....

* Decrease.

† Includes compensation to city on account of loop. Reserve for maintenance has been kept at \$250,000.

Total expenditures for maintenance of way and structures and maintenance of equipment in the last year were \$192,083, or 10 per cent of the passenger earnings. The cost of conducting transportation was 36.6 per cent of the passenger earnings.

M. B. Starring, president of the company, says in his statement to shareholders:

"The gross earnings for the year were (including Loop and Evanston line net earnings) \$2,540,883, an increase of \$77,696, or 3.15 per cent.

"The rehabilitation of the lines of the surface railways, and the improvements in their rolling stock and schedules somewhat affected this company's gross earnings, not only upon its own lines but by reason of the effect upon the revenue of the other Loop lessees, correspondingly affecting the revenue from the Loop. The most serious effects have now been felt, and the business of the elevated railways as an entirety is improving.

"The total expenses were \$2,185,107, an increase of \$72,807, or 3.44 per cent.

"This increase was due: (a) To increase in car-miles from 10,316,296 in 1908 to 12,034,490 in 1909, occasioned by the opening of new lines, although the cost of operation per car-mile decreased 11.55 per cent. The opening of new lines has added materially to the length of the average haul for 5 cents per passenger.

"(b) To an increase in the disbursement for taxes caused by the increase in the tax rate in the towns of South Chicago, North Chicago and Lake View.

"(c) To accident on May 18, one of the most serious accidents in the company's history. The traction expert of the city of Chicago, after a thorough investigation, reported to the Mayor as follows: 'I am forced to conclude that the motorman must have been confused and he failed to apply his brakes in time to avoid the collision.' This accident has already cost the company \$10,602, which has been charged to 'general expenses' for the year. How much more this accident will cost is problematical.

"(d) To increased expenditures for maintenance.

"To provide in future for the accident of May 18 and other claims and suits which are pending and which arose from accidents which occurred in this and previous years, \$25,000 has been set aside as a 'reserve for damages.'

"The net income was \$355,776, an increase of \$4,888. The surplus at the close of the year was \$2,355,677.

"On May 31 the contract between the company and its employees, in force for the past two years, regarding their wage scale and working conditions, expired, and we are negotiating a new contract. At the close of the fiscal year settlement had not been attained; however, the relations between the men and the management are amicable and

no doubt an arrangement fair to all concerned will finally be agreed upon. Whatever contract is executed will result in an increase in the wage scale.

"The physical condition of the property has been properly and conservatively maintained.

"Of the 20 combination motor cars ordered from the Pullman Company, 19 have been delivered and placed in service. For comfort, beauty and convenience these cars are not excelled, if equaled, by those of any other railroad.

"The Evanston line, which has been in operation for over one year, has greatly enhanced values in real estate. The territory adjacent to it is rapidly filling up with high-class buildings, and when the tracks are elevated from Wilson Avenue to Central Street the line will show a good profit to both companies.

"At present our train schedules are much interfered with by the work of elevating the tracks from Howard Avenue to Church Street, Evanston, and the service is thereby rendered more or less irregular, resulting in loss of patronage, which must of necessity continue until this work is completed, which will probably be in December, 1909.

"The North Water Street terminal was duly completed from a junction with the main line at Wells Street to the terminal station at Clark Street, and opened for business Nov. 17, 1908—nearly two weeks ahead of time required by ordinance. From this station during the evening rush hours as high as 2141 passengers have been carried, thus affording that much more accommodation to our patrons, all of whom can obtain seats on the trains at that station.

"The radii of the curves at Michigan and Wells Streets and Michigan and Franklin Streets were changed so as to make them ride much easier for passengers, permit of trains being operated thereon at higher speed, and secure a longer life of rail, etc., and a corresponding reduction of maintenance charges. This work was completed and the first through train operated thereover May 5, 1909.

"The company has received from the Central Trust Company of New York \$334,000 of the first mortgage bonds of the Union Elevated Railroad Company, which are now in this company's treasury. The stocks of the Chicago & Oak Park Elevated Railway Company obtained pursuant to the plan of reorganization dated Nov. 9, 1903, of the Lake Street Elevated Railroad Company, as printed and published at that time, have recently been delivered to this company and are included in the item 'stocks and bonds.' The company's floating debt was reduced by the proceeds of the sale of \$3,000,000 bonds heretofore authorized, which have been sold and delivered.

"An initial dividend upon the preferred stock of the company will be paid in October, and it is the expectation of the management that the earnings of the company will warrant a continuance of dividends upon said stock and that the maximum rate provided therefor will be ultimately attained."

The total number of passengers carried in the year was 40,955,795, as compared with 37,419,286 in the previous year. The daily average was 112,207, an increase of 9969 passengers, or 9.75 per cent, over the previous year.

Camden & Trenton Railway, Camden, N. J.—The United States Circuit Court of Appeals at Philadelphia on Nov. 4, 1909, granted to Daniel Killian, a bondholder, permission to appeal from the judgment of foreclosure and sale, also a stay of the sale of the property of the company, which had been set for Nov. 12, 1909.

Chicago (Ill.) Consolidated Traction Company.—Charles G. Dawes returned to Chicago from New York on Nov. 3, after conferences in the East regarding the reorganization of the Chicago Consolidated Traction Company. It has since been announced that more than 90 per cent of the underlying bonds of the company have been deposited in favor of a readjustment, the terms of which have not been made public, and that practically all of the consolidated general mortgage bonds have been pledged. The first meeting of the reorganization committee of the company with the officers of the Chicago Railways for the purpose of arranging a traffic agreement between the companies was held on Nov. 2.

Halifax (N. S.) Tramway Company.—The Halifax Tramway Company has declared a quarterly dividend of $1\frac{3}{4}$ per cent. The previous quarterly disbursement was $1\frac{1}{2}$ per cent.

Lowell, Acton & Maynard Street Railway, Maynard, Mass.—The Railroad Commission of Massachusetts has authorized the Lowell, Acton & Maynard Street Railway to reduce its capital stock from \$45,000 to \$35,000.

New York Central & Hudson River Railroad, New York, N. Y.—The New York Central & Hudson River Railroad has applied to the Public Service Commission of the Second

District of New York for permission to issue \$44,658,800 of new stock, increasing the amount outstanding from \$178,632,000 to \$223,390,000. With the proceeds it is proposed to redeem \$25,000,000 of 3-year 5 per cent notes which mature on Feb. 1, 1910, and to use the balance to defray the expense of improvements which have been made, some that are under way and others in contemplation. Of the total this to be used for paying for improvements, \$6,000,000 will go toward electrifying the Harlem division to North White Plains, four-tracking the Hudson River division between New York and Albany and electrifying the line between Highbridge and Croton and for two-tracking the Rome, Watertown & Ogdensburg and the Pennsylvania divisions.

Pittsburg, McKeesport & Westmoreland Railway, McKeesport, Pa.—The Pittsburg, McKeesport & Westmoreland Railway has been organized to buy certain railways, including the Pittsburg & Westmoreland Railway, of which Manning Stires is receiver. The sale of these properties to the Pittsburg, McKeesport & Westmoreland Railway has been requested by a petition of the receivers of the Pittsburg & Westmoreland Railway to the court. The sale of the property of the Pittsburg & Westmoreland Railway will be held on Nov. 13, 1909.

Southwestern Traction Company, London, Ont.—The property of the Southwestern Traction Company was sold under foreclosure at London on Oct. 20, 1909, to J. E. McDougall and T. H. Purdom, representing a syndicate of London, Toronto and Hamilton capitalists. The purchase price was \$445,000 in cash, the purchasers agreeing to assume \$80,000 of indebtedness. C. C. Giles, Montreal, offered \$450,000 on behalf of the Royal Securities Corporation, representing a majority of the \$717,500 of outstanding bonds, including \$445,000 owned by the Electrical Securities Trust, Ltd. The London Street Railway, of which H. A. Everett, Cleveland, is president, bid \$350,000. The purchasers have applied to the Dominion Parliament for the incorporation of the London & Lake Erie Railway & Transportation Company with a capital of \$2,000,000, as the successor to the Southwestern Traction Company, and have asked permission to acquire the Woodstock, Thames Valley & Ingersoll Electric Railway as part of their through system and to construct lines from Brantford through Paris to Woodstock, Ingersoll, London, Strathroy and Glencoe, and from Delaware to Lambeth and from Ayler to St. Thomas. The new company will also run boats to Cleveland, Ohio, from Port Stanley, on Lake Erie. The provisional directors are: W. K. George, Sidney Jones and George B. Woods, Toronto; Dr. Angus MacKay, Ingersoll; F. G. Rumball and John Purdom, London, and Albert E. Thompson, Cleveland.

Spokane & Inland Empire Railroad, Spokane, Wash.—Negotiations are understood to be under way whereby the Northwestern Improvement Company, acting in the interest of the Northern Pacific Railway, is to take over the Spokane & Inland Empire Railroad.

Tarrytown, White Plains & Mamaroneck Railway, White Plains, N. Y.—Richard Sutro, of Sutro Brothers, New York, N. Y., representing the New York, New Haven & Hartford Railroad, purchased the greater part of the Tarrytown, White Plains & Mamaroneck Railway on Nov. 5, for \$825,000, under a foreclosure sale brought by the Knickerbocker Trust Company, New York, N. Y. The property of the company was sold in three sections, and the first two were bought by Mr. Sutro. They extend from Mamaroneck to Tarrytown and from White Plains to Scarsdale, a distance of $21\frac{1}{2}$ miles. The other successful bidder was Frederick J. Littlebrook, representing Franklin L. Babcock, secretary of the bondholders' committee of the Third Avenue Railroad, New York, N. Y. He purchased the third section for \$110,000. This line extends from Mamaroneck to Larchmont, two miles.

United Railways, St. Louis, Mo.—The voting trust for the \$24,913,800 common stock of the United Railways expired by limitation on Nov. 1, 1909. The voting trust was formed five years ago in connection with the reorganization of the St. Louis Transit Company, which was succeeded by the United Railways Company. The voting trustees originally were F. S. Smithers, Anson W. Hard, James Campbell, Murray Carleton, J. C. Van Blarcon, Eugene Delano and James Brown. When the North American Company acquired control of the United Railways through the purchase of a large part of its common stock, the personnel of the voting trust was changed and at the time of its dissolution consisted of F. S. Smithers, chairman; John I. Beggs, vice-chairman; Edwin M. Bulkley, Adolphus Busch, James Campbell, George R. Sheldon and Charles W. Wetmore. Steps will immediately be taken for the issue of stock certificates in exchange for the voting trust certificates.

Traffic and Transportation

Communications of Indiana Commission on High-Tension Lines and Trolley Guards

On Nov. 1, 1909, the Railroad Commission of Indiana addressed the following communication to the steam railroads and the electric railways in Indiana:

"Information has come to the commission that many telegraph and telephone wires crossing interurban and steam railway rights of way are so constructed as to be sources of danger by reason of the possibility of their coming in contact with high-tension wires of the electric line; and that many wires crossing steam railways are too low for safety. This hazard arises (1) either from the wires being originally stretched too low, (2) or from their being fastened to weak or rotten poles, (3) or from their being constructed of inferior material which quickly rusts out and breaks, especially when acted upon by the smoke from locomotives, or (4) because the poles are too far apart, causing the wires to sag.

"The commission proposes to take steps to correct these conditions, so far as possible. You are therefore requested to furnish to the commission at your earliest opportunity, a list of all such dangerous wires which cross your line, where the steam and electric lines run parallel to each other, and where they do not, indicating (1) the station upon your line, nearest to which the objectionable wire is located. (2) The number of the telegraph pole along your line nearest to which such wire is located. (3) The present height of the wire above your rails. (4) Why the wire is considered dangerous. (5) The name and address of the owner of such wire."

On the same date the commission also addressed the following communication to the electric railways in Indiana:

"The Railroad Commission is conducting an inquiry with respect to the installation of trolley guards at crossings of electric and steam lines. To assist it in its investigation, it solicits your answers to the following questions:

"1. Give number of crossings upon your line now protected by trolley guards; and give brief description of guard or guards so used, with name of manufacturer.

"2. Give approximate number of crossings upon your line not so protected.

"3. What is your opinion concerning the practical efficiency of trolley guards?

"4. What kind of guard do you consider the best?

"5. What is the approximate cost of installing a serviceable trolley guard?

"6. Do you propose installing guards upon your line in the near future? If so, to what extent?

"Prompt replies to the above are requested."

The commission has also addressed a communication to all interurban railways on the subject of continuous service by employees which it has concluded as follows:

"While the Attorney-General has decided that the Sixteen-Hour Law of 1907 does not apply to interurban railroads, nevertheless, inasmuch as Congress and the General Assembly of Indiana have enacted humane endurance laws, we think that the wisdom and experience of railroad men and legislators leading to such enactments should cause you not to require or permit employees, especially your trainmen, to work more than a reasonable length of time. Therefore the commission desires to impress upon interurban managers, whether or not the interurban railroads are amenable to the penalties of these Acts, that their trainmen and employees should not be required or allowed to remain on duty longer than 16 consecutive hours, or to go on duty without having had at least eight hours' rest, and the commission recommends that managers take prompt and efficient steps to limit the hours of service on their lines in accordance with the recommendation."

Celebration Traffic in New York

The Public Service Commission of the First District of New York has just made public a summary of the total passengers carried on each of the street railways within its jurisdiction during the Hudson-Fulton celebration in New York, which extended from Sept. 25 to Oct. 2. On page 887 of the ELECTRIC RAILWAY JOURNAL, of Oct. 16, 1909, a similar summary was published, but the figures were obtained direct from the companies solicited, and the summary was confined to the principal companies operating in Manhattan Borough, Bronx Borough and Brooklyn Borough. The compilation of the Public Service Commission, therefore, includes the Second Avenue Railroad, Central Park, North & East River Railroad, the Hudson & Manhattan Railroad operating between New York and New

Jersey and the Twenty-eighth & Twenty-ninth Street Cross-town lines in Manhattan Borough; the West Chester Electric Railroad, Yonkers Railroad, New York City Interborough Railway and the Southern Boulevard Company in Bronx Borough; the Long Island Electric Railway, New York & Long Island Traction Company, New York & Queens County Railway and the Queens Borough Bridge Operating Company in Queens Borough, and the Staten Island Midland Railroad and the Richmond Light & Railroad Company in Richmond Borough, none of which was included in the compilation in the ELECTRIC RAILWAY JOURNAL of Oct. 16. Thus the total of passengers carried as given by the Public Service Commission for the five boroughs of the greater city is 47,834,103, as compared with the total of 44,321,821 given in the ELECTRIC RAILWAY JOURNAL of Oct. 23, 1909, page 922, for the principal companies in Manhattan Borough and both companies operating in Brooklyn. The number of passengers carried by the companies arranged by boroughs as made public by the commission follows:

<i>Manhattan.</i>	
Metropolitan Street Railway.....	10,802,964
Second Avenue Railroad.....	417,483
Central Park, North & East River Railroad.....	363,312
Subway (Interborough).....	7,515,055
Elevated (Interborough).....	7,608,506
Hudson & Manhattan Railroad.....	1,052,915
Third Avenue Railroad.....	1,510,796
Forty-second Street, Manhattanville & St. Nicholas Avenue Railroad.....	1,119,967
Dry Dock, East Broadway & Battery Railroad.....	324,468
Twenty-eighth & Twenty-ninth Street Cross-town Railroad.....	9,126
	30,725,172
<i>Bronx.</i>	
Westchester Electric Railroad.....	144,920
Yonkers Railroad.....	170,913
New York City-Interborough Railway.....	152,400
Southern Boulevard Co.....	69,030
Union Railroad.....	1,357,030
	1,894,293
<i>Brooklyn.</i>	
Brooklyn Rapid Transit Company (Elevated).....	3,752,748
Brooklyn Rapid Transit Company (Surface).....	9,476,007
Coney Island & Brooklyn Railroad.....	805,017
	14,033,772
<i>Queens.</i>	
Long Island Electric Railway.....	78,469
New York & Long Island Traction Company.....	59,445
New York & Queens County Railway.....	570,193
Municipal Operating Queensboro Bridge.....	144,034
	852,141
<i>Richmond.</i>	
Staten Island Midland Railroad.....	125,926
Richmond Light & Railroad Company.....	202,799
	328,725
Grand total.....	47,834,103

Notwithstanding the fact that the surface, subway and elevated lines in Greater New York carried 47,834,103 passengers during the celebration, the commission reports that not a death resulted from accident in handling the enormous crowds. During the celebration, there were only 20 accidents resulting in injury to passengers, of which 7 occurred on Sept. 25, 7 on Sept. 28, 5 on Sept. 30, and 1 on Oct. 2. This is lower than the average number of accidents in ordinary traffic and, in the opinion of the commission, shows the attention and care exercised in the provisions made for the safe transportation of the people. In the accidents which occurred, there was nothing to indicate that any one of them was directly connected with the celebration.

Employees of Connecticut Company Rewarded.—The Connecticut Company, New Haven, Conn., recently made its fourth annual distribution of \$1,000 among conductors and motormen of its New Haven lines who operated their cars for a year with a clean record. About 200 men participated, the motormen receiving \$3.29 each, while the conductors received \$5.26 each.

Smoking Cars Discontinued on Chicago & Oak Park Elevated Railroad.—The Chicago & Oak Park Elevated Railroad discontinued the operation of smoking cars on Nov. 1, 1909. The notice of the company to the public, informing them of the change, follows: "On and after Nov. 1, 1909, the Chicago & Oak Park Elevated Railroad will not operate 'smoking cars' on any of its trains. Four-minute service except during 'rush hours' (when the 3-minute service still continues) will go into effect Nov. 1, 1909, from Oak Park and Austin. Running time, Oak Park to Loop, will be cut to 20 minutes, and Austin to Loop to 22 minutes."

Members of Pennsylvania Commission and Representatives of Railways Confer.—A series of important conferences between the members of the Railroad Commission of Pennsylvania and officials and attorneys of steam railways and electric railways regarding various matters affecting the companies was held at the offices of the commission at the State Capitol, in Harrisburg, beginning Nov. 1. Mayor

Magee, of Pittsburgh, reported to the commission concerning the service furnished by the Pittsburgh Railways in compliance with the recommendations of the commission following an inquiry into the transportation problems in Pittsburgh and its suburbs, and officials of the Philadelphia Rapid Transit Company were heard regarding the recommendation of the commission that the company comply with the previous order of the commission forbidding passengers from riding on the front platforms of cars, to which order attention has been directed by the commission, as noted on page 1001 of the *ELECTRIC RAILWAY JOURNAL*, of Nov. 6, 1909.

New Headlight Regulation in Washington.—The Commissioners of the District of Columbia have adopted the following amendment to the police regulations of the district: "No street railway company, motorman, conductor or officer or employees of a street railway company, operating street railway cars in the District of Columbia, shall use upon, or affix thereto, any street railway car any headlight which by reason of its excessive brilliancy is likely to dazzle, blind or otherwise endanger any driver or operator of any vehicle or any pedestrian, using the public streets, avenues or highways of the District of Columbia. Any person or corporation violating the provisions of this section shall upon conviction thereof be fined not less than \$5 nor more than \$40 for each offense."

Electric Railways at the Boston 1915 Exhibition.—An "uplift" exhibition is being held in Boston in the old Museum of Fine Arts building, with the object of improving living and commercial conditions in the metropolitan district with 1915 as a time limit for definite betterment. Among the exhibits is a display by the Pennsylvania Railroad which consists of a model of the New Jersey, Hudson and Long Island tunnels 33 ft. in length, models of electric locomotive, car, tug and lighter construction, photographs of the Washington terminal, views of the proposed Hell Gate bridge, and illustrations of a variety of steam locomotives, passenger and freight rolling stock. Plans and sections of the company's recent work are also shown. The Boston Elevated Railway shows a large number of photographs of its system and equipment, including views of places on its lines with historic and literary associations, cardboard models of subway and tunnel stations, plans of the surface and elevated lines, maps of the subway system, and a perspective drawing of all the trunk lines of the company. Views of surface and elevated cars are shown by years, and there are also motor-driven folding pictures of points of interest. The Boston & Northern Street Railway and the Old Colony Street Railway are distributing maps and folders of their territory, and exhibit photographs and 300 reflectograph views of points on the systems north and south of Boston. The Boston Transit Commission displays a model of the State station of the Washington Street tunnel, and photographs and blue prints of its subway and tunnel construction since the building of the Tremont Street subway in Boston, about 14 years ago.

Chicago Cars to Stop on Near Side.—At a conference of city and traction officials on Nov. 8, 1909, it was decided that on and after April 1, 1910, all street cars in Chicago shall stop on the near side of street crossings. Between now and April 1 a campaign of education will be conducted so that passengers will not be inconvenienced when the new rule goes into effect. One of the members of the conference said that the scheme of stopping on the far side of crossings, which is observed by many street railways, was a relic handed down from horse-car days. Another reason for stopping on the far side of the crossing has been that passengers boarding or alighting from the rear end of a car in the winter would be obliged to walk through the snow if the car was stopped on the near side of the crossing. With the large pay-as-you-enter cars having exits at the forward end, this objection is lessened, because only those boarding need walk to the rear platform. As the chief of police and his assistants, other representatives of the city and representatives of the Chicago City Railway and the Chicago Railways were unanimous in approving the change, no special ordinance was deemed necessary. The far-corner stop is blamed for a large measure of the street congestion within the crowded commercial district. Traffic regulation by crossing policemen requires that stops be made on the near side in practically every instance, and thus there are two stops where one would suffice. The delay incidental to the time taken by the second stop obstructs other cars and wagons and retards the schedule of the cars. It is stated that the railways plan to put a guard rail along the exit side of the front platforms of the cars, thus maintaining a free passageway between the exit door in the bulkhead of the car and the door in the platform vestibule immediately above the forward exit step. This should make the front door readily available for exit.

Personal Mention

Mr. A. S. Palfray has resigned as treasurer of the Mexico Tramways and the Mexican Light & Power Company, Ltd., Mexico City, Mex.

Mr. J. B. Ingersoll has resigned as electrical engineer of the Spokane & Inland Empire Railroad, Spokane, Wash., to engage in other engineering work.

Mr. A. C. Smith, who has been chief inspector of the Ogden (Utah) Rapid Transit Company, has been appointed assistant superintendent of the company.

Mr. F. E. Guthrie and **Mr. George W. Whysall** are receivers for the Columbus, Marion & Bucyrus Railway, Delaware, Ohio, and **Mr. Eli M. West** is sole receiver for the Columbus, Delaware & Marion Railway, Columbus, Ohio.

Mr. H. G. Welfare has resigned from the Chicago, Lake Shore & South Bend Railway, South Bend, Ind., to act as assistant engineer on the erection and installation of a new disposal plant which is being constructed for the city of Columbus, Ohio.

Mr. A. D. Miller has been appointed manager and superintendent of the Reno (Nev.) Traction Company. For the last two years Mr. Miller has been assistant engineer of the Reno Power, Light & Water Company and the Truckee River General Electric Company.

Mr. Henry Floy, having concluded the work he was doing for **Mr. B. J. Arnold**, in connection with the appraisals of the various street railway properties in Greater New York, for the Public Service Commission of the First District, has agreed to co-operate with certain bondholders of the Third Avenue Railroad, New York, N. Y., in valuing the property of that company.

Mr. W. H. Evans has entered the service of The Milwaukee Electric Railway & Light Company, Milwaukee, Wis. For the immediate future his particular work will be to assist in the development and supervise the construction and equipment of the comprehensive new general construction and repair shops which The Milwaukee Electric Railway & Light Company proposes to erect. He began his services in Milwaukee on Nov. 1. Mr. Evans was formerly master mechanic of the International Railway, Buffalo, N. Y., and at one time was master mechanic of the Indianapolis Traction & Terminal Company, Indianapolis, Ind. He entered street railway work with the Twin City Rapid Transit Company, Minneapolis. Subsequently he was connected for a short time with the Chicago City Railway. Mr. Evans is first vice-president of the American Street & Interurban Railway Engineering Association and acted last year as chairman of the committee on standards of that association. Mr. Evans also served for a time as chairman of the standardization committee of the Central Electric Railway Association.

Mr. C. E. A. Carr, managing director of the Quebec (Que.) Gas Company, has been appointed general manager of the Quebec Railway, Light & Power Company, to succeed **Mr. E. A. Evans**, who will continue with the company as chief engineer. Mr. Carr was formerly manager of the Helena Light & Railway Company, Helena, Mont. He was born in Thornton, Ont., in 1870, and was graduated from the high school at Barrie, Ont., in 1883, and studied at the British-American Commercial School, Toronto, until 1886. He was connected with the office of the city engineer of Toronto from 1888 until 1891 and from 1892 until 1894 was secretary to the general manager of the Toronto Railway, Montreal Street Railway and the Cleveland Electric Railway. From 1895 to 1905 Mr. Carr was secretary, treasurer and general manager of the London (Ont.) Street Railway. During his connection with the London Street Railway Mr. Carr also was general manager and secretary of the Montreal, Park & Island Railway, a 40-mile suburban property, and spent alternate weeks in London and Montreal until the Montreal, Park & Island Railway was sold to the Montreal Street Railway. His connection with the Helena Light & Railway Company extended from 1905 to 1908.

OBITUARY

Willis L. Bryant, a director of the Pottsville (Pa.) Union Traction Company and the Danville & Sunbury Transit Company, Danville, Pa., is dead. Mr. Bryant was also a director of several light and power companies and was prominent in banking circles in Pennsylvania.

W. W. Cargill, vice-president of the LaCrosse (Wis.) City Railway, is dead. Mr. Cargill was also president of the Vote-Berger Company, which manufactures telephone apparatus, and was connected with the LaCrosse Telephone Company and the LaCrosse Gas & Electric Company, LaCrosse, Wis.

Construction News

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

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

RECENT INCORPORATIONS

***Magnolia Spring Company, Groveland, Ga.**—Application has been made by this company for a charter to establish a street railway in Groveland. It also asks the privilege of building power plants. Principal office, Groveland. Capital stock, \$5,000. Applicants for charter: W. Elabee, M. E. Carter, L. Banks, E. A. Proctor, D. B. Warnell and W. C. Perkins.

London & Lake Erie Railway & Transportation Company, London, Ont.—Application has been made for the incorporation of this company as the successor to the Southwestern Traction Company. Permission has also been asked to acquire the Woodstock, Thames Valley & Ingersoll Electric Railway as part of its through system, and to construct lines from Brantford, through Paris to Woodstock, Ingersoll, London, Strathroy and Glencoe, and from Delaware to Lambeth and from Ayler to St. Thomas. The new company will also run a line of boats to Cleveland, Ohio, from Port Stanley on Lake Erie. Capital stock, \$2,000,000. Provisional directors: W. K. George, Sidney Jones and George B. Woods, Toronto; Dr. Angus MacKay, Ingersoll; F. G. Rumball and John Purdom, London, and Albert E. Thompson, Cleveland.

Carolina Traction Company, Rock Hill, S. C.—Incorporated in South Carolina to build a 30-mile electric railway connecting Rock Hill, Charlotte, Chester and Yorkville. It will connect the Seaboard Air Line Railway at a point in Chester County. Initial capital stock, \$150,000. Incorporators: J. M. Cherry, Rock Hill; W. S. Lee and George Stevens, Charlotte. [E. R. J., Sept. 25, '09.]

***Columbia River & Mt. Adams Railroad, Spokane, Wash.**—Incorporated to build an electric railroad from some point on the Columbia River in Klickitat County, northerly through parts of Klickitat, Yakima and Skomania Counties to a point in the vicinity of Mt. Adams. The company also plans to operate steamboats and ferries on the Columbia River, and to generate electric current for light and power purposes. Capital stock, \$2,000,000. Trustees: Adolph F. Suksdorf, Edward H. Suksdorf and Oswald N. Suksdorf, all of Spokane. Headquarters, Spokane.

FRANCHISES

***Eureka, Cal.**—George Henderson, through his attorney, Charles P. Cutlen, has applied to the City Council for a franchise for an electric railroad on F Street from the water front to the city limits.

Moline, Ill.—The City Council has granted to the Tri-City Railway & Light Company, Davenport, Ia., a 20-years' extension of the franchise covering its Fourth Avenue line, with permission to double-track the same.

Ottawa, Ill.—The Northern Illinois Light & Traction Company has petitioned the City Council for a 20-year franchise in order that it might continue operating and maintaining its railway and also furnish and distribute electrical current throughout the city for power and lighting purposes. The petition also requests that the company be empowered to carry its electric light wires and operate its cars over the new bridge.

Indianapolis, Ind.—The Commissioners of Marion County have granted a franchise to the Shore Line Traction Company for the construction of an electric railway in Churchmans Pike from Indianapolis to Beach Grove, a distance of 9 miles. The Commissioners refused to bear the expense of constructing a new concrete bridge 60 ft. wide over Bean Creek to replace the 12-ft. bridge now in use. Louis McMains, who is promoting this line, says it has not been decided whether the company will seek an independent entrance into Indianapolis and build a power house at Beach Grove. [E. R. J., Oct. 23, '09.]

Logansport, Ind.—The Commissioners of Cass County have granted a 75-year franchise to the Indiana & Northwestern Traction Company to build an electric railway through the county. The franchise provides for safeguarding the crossings over public highways, and stipulates that the charges for freight and passenger services shall be even throughout the county. [E. R. J., Nov. 6, '09.]

Chicopee, Mass.—The Board of Aldermen has granted to the Springfield (Mass.) Street Railway a franchise to extend its track for about three-fourths of a mile on East Street, Chicopee.

***Pittsfield, Mass.**—P. J. Moore has applied to the City Council for a franchise to construct and maintain a gasoline-electric railway in the eastern portion of Pittsfield.

St. Joseph, Mo.—The City Council has granted to the St. Joseph Railway, Light, Heat & Power Company a 35-year franchise for a street railway on Sixth Street from Messanie Street to Patee Street.

***Medford, Ore.**—John R. Allen, New York, N. Y., has applied to the Medford City Council for an electric railway franchise. Mr. Allen will apply for similar franchises in Grants Pass and Ashland and intermediate points. It is his intention to build an electric railway connecting all points in the Rogue River Valley.

***Uniontown, Pa.**—William A. Stone has been granted a franchise for an electric railway in Uniontown.

West Newton, Pa.—The City Council has granted the West Penn Railways, Pittsburgh, a franchise for the operation of its Sewickley Valley line through West Newton.

TRACK AND ROADWAY

Highland Pacific Railroad, Lakeport, Cal.—It is announced that this company, which was recently incorporated to take over the holdings of the Sonoma & Lake County Railroad, and which is now procuring rights of way from Lakeport via Cloverdale to Santa Rosa to operate an electric line over this district, is figuring on extending the line to Tidewater via McNear's Point. A movement is on foot to secure control of the Petaluma & Santa Rosa Railway, or to provide traffic transportation facilities over it. A feeder is to be used as a street railway system both in San Rafael, Petaluma, Santa Rosa and Healdsburg. A. Dickinson, president. [E. R. J., Oct. 9, '09.]

Shore Line Electric Railway, New Haven, Conn.—This company is said to have awarded a contract to Joseph Lyons, Marlboro, Mass., for the construction of the section of its proposed railway from New Haven to Irvington.

Meriden, Middletown & Guilford Railway, Meriden, Conn.—This company has decided to proceed with the final survey of its proposed electric railway from Durham to North Branford. As soon as this is done the work on that section will be started. The road will be standard gage and will be constructed with 70-lb. rails laid on steam road ties heavily ballasted. Francis Atwater, Meriden, president. [E. R. J., Oct. 23, '09.]

People's Railway, Wilmington, Del.—This company has opened its new extension between Brandywine Springs and Marshalltown, a distance of about 1 mile. Direct service is now operated between Wilmington and Marshalltown. It is proposed to eventually extend the line to Newark.

***Swainsboro, Ga.**—It is stated that Alfred Herrington, Monte Sano, is considering the advisability of building an electric railway around Swainsboro, also to extend to Monte Sano, a suburb of Swainsboro.

Indiana Union Traction Company, Anderson, Ind.—This company is said to be buying an additional 30 ft. of land along its track with a view of double-tracking the line between Anderson and Indianapolis. The company announces that the work will be begun next spring.

Des Moines, Council Bluffs & Western Railway, Des Moines, Ia.—It is stated that an agreement has been made by this company with the Red Oak & Northeastern Railway, Red Oak, whereby they will jointly construct the railway between Des Moines and Red Oak. It is the plan to consolidate the two companies in the near future. The Red Oak & Northeastern Railway is to build the line from Red Oak to Stuart, while the Des Moines, Council Bluffs & Western Railway will start its line at Des Moines and connect with the other company at Stuart. The combined capital of the two companies amounts to about \$500,000 at present. [E. R. J., Sept. 19, '08.]

Kansas City & St. Louis Electric Railway, St. Louis, Mo.—At a meeting of the stockholders and directors of this company on Oct. 29 the capitalization of the company was increased from \$5,000,000 to \$15,000,000. The following officers were elected: D. C. Nevin, president; John H. Berkshire, first vice-president; B. L. Dorsey, second vice-president; Charles A. Loomis, general solicitor; J. H. Reeder, assistant general solicitor; H. E. Insley, secretary and auditor, and H. V. Johnson, treasurer. It is the intention to build an electric railway between St. Louis and Kansas City. [E. R. J., Nov. 6, '09.]

St. Louis County Belt Railroad, St. Louis, Mo.—James D. Houseman, general manager, advises that it will be at least six months before this company will take up construction work on its proposed railway. It will be an electric belt railway, 30 miles long, extending through St. Louis County from north to south, and circling St. Louis.

It will also pass through Afton, Webster, Maplewood, Clayton, University City and Ferguson. The proposed railway will connect with nine steam railroads and thirteen electric railroads. Capital stock, \$300,000. Officers: Thomas M. Gallagher, St. Louis, president; B. H. Lang, St. Louis, vice-president; E. W. Rannels, Maplewood, secretary; James E. Hereford, Clayton, treasurer; James D. Houseman, St. Louis, general manager. Main office, 414 Roe Building, St. Louis. [E. R. J., Sept. 11, '09.]

***Laurel, Mont.**—W. R. Westbrook and L. A. Nutting, Laurel, are said to be considering a plan to build an electric railway to Billings and up Clark Fork and Rock Creek.

Public Service Railway, Newark, N. J.—This company has applied to the Board of Works for permission to extend its Mount Prospect Avenue line to the Forest Hill station of the Greenwood Lake branch of the Erie Railroad. The request will be considered at a public hearing to be held Nov. 18.

Vineland, N. J.—Herbert C. Bartlett, Vineland, advises that a company has not yet been formed to construct the proposed electric railway between Vineland and Bridgeton. [E. R. J., Oct. 30, '09.]

Fostoria & Fremont Railway, Fostoria, Ohio.—J. D. McDonel, secretary and treasurer, advises that construction is to be started within 30 days on this proposed electric railway, which is to extend from Fremont to Havens, Burgoon, Kansas, Amsden and Fostoria, a distance of 21.4 miles. The company has purchased the Fremont City Street Railway, now in operation between Fremont and Ballville, 2.5 miles, and will use it for an entrance to Fremont. It is intended to grade the line during the winter and complete it by July, 1910. Capital stock, authorized, \$300,000. Bonds, authorized, \$300,000. [E. R. J., Oct. 23, '09.]

Steubenville & East Liverpool Railway & Light Company, Steubenville, Ohio.—It is reported that this company will extend its interurban railway, terminals of which are now in Steubenville and Beaver, Pa., from Beaver over the Ohio River at that point and up the river to Alequippa, Pa. The new extension will give a continuous traction service from Moundsville, W. Va., up the Ohio River to within a short distance of Pittsburgh, likewise from Cleveland.

Oklahoma City, Lexington & Sulphur Springs Electric Railway, Lexington, Okla.—This company has presented a proposition to the people of Wynnewood to extend its electric railway through that town providing the sum of \$25,000 is taken in stock. The railway when completed will extend from Oklahoma City to Sulphur. Jas. Sherman, Lexington, president.

***Toronto, Ont.**—F. L. Fowke, M. P., will present a bill to the Dominion Parliament applying for authority and charter for the Toronto & Eastern Railway to build an electric railway connecting Cobourg and Toronto, passing through Port Hope, Newcastle, Bowmansville, Oshawa and Whitby.

Altoona, Hollidaysburg & Bedford Street Railway, Pittsburgh, Pa.—John G. Burns, president of this company, advises that plans and estimates are now being prepared and it is probable that by April 1, 1910, construction will be started on the electric railway which is to connect Altoona, Hollidaysburg, Everett, Bedford and Roaring Springs. Headquarters, Thirty-first Street and Liberty Avenue, Pittsburgh. Capital stock, authorized, \$1,200,000. Bonds, authorized, \$1,200,000. Officers: John G. Burns, president; J. Weidman Murray, vice-president; George W. Burke, secretary and treasurer. [E. R. J., Oct. 30, '09.]

Warren & Jamestown Street Railway, Warren, Pa.—This company is said to be considering the feasibility of extending its line from Jamestown, N. Y., to Dunkirk, running through the towns of Ellicott, Gerry, Ellery, Stockton, Charlotte and Pomfret.

South Dakota Interurban Railway, Centerville, S. D.—W. E. Miller, president, announces that this company proposes to build an interurban railway from Sioux Falls to Bijou Hills, 160 miles, and that the survey has been made as far as Parkston, which has donated \$50,000 toward the enterprise. The right-of-way has been secured as far as Freeman, and fully a third of the money required to promote the enterprise has already been subscribed. [E. R. J., Oct. 30, '09.]

Gallatin, Tenn.—C. H. Fidler, Gallatin, writes that he is promoting a railway, about 12 miles long, from Gallatin to a connection with the Tennessee Central Railroad, at a point 18 miles east of Nashville. This railway will also connect with a line of steamers on the Cumberland River. [E. R. J., Oct. 23, '09.]

Tennessee Traction Company, Memphis, Tenn.—George E. Bushnell advises that this company has been organized to construct an electric railway from Memphis to Nash-

ville and Jackson, a distance of 210 miles. Articles of incorporation were filed for the company on Nov. 1. It has not yet been determined what motive power will be adopted. Capital stock, authorized, \$50,000. Officers: W. K. Burton, president; W. R. Gilbert, vice-president; Horace N. Smith, secretary and treasurer; George E. Busnell, general manager, all of Memphis. [E. R. J., Nov. 6, '09.]

Bryan, Tex.—J. T. Maloney, Mayor of Bryan, recently held a conference with a committee of the board of directors of the A. & M. College in regard to the construction of the proposed 5-mile railway from Bryan to College Station. Two routes have been surveyed and estimates made of the costs of construction. The people of Bryan have put up a bonus of \$10,000 and will take \$10,000 in stock. The committee representing the board of directors of the college agreed to subscribe \$10,000 in aid of the new line. [E. R. J., Oct. 30, '09.]

Twin City Light & Power Company, Chehalis, Wash.—This company has awarded to A. J. McCabe the contract for the grading of this proposed railway which is to connect Chehalis and Centralia. Arrangements are pending with the Northern Pacific Railroad to build a 600-ft. viaduct over its tracks in the north end of the city, so as to cut out the dangerous grade crossing leading to Sitka Street. [E. R. J., Oct. 30, '09.]

La Crosse & Winona Traction Company, La Crosse, Wis.—W. J. Ferris, president, is said to have announced that the construction of this proposed electric railway between Winona and La Crosse will be started early next spring. Mr. Ferris says the money required, approximately \$1,000,000, is now available, and that the company is making preparations to commence building as soon as terminal rights are secured. Concerning the request of the company for a franchise to enter Winona, Minn., the business men have adopted a resolution favoring the construction of railway between the two cities by the way of Galesville. [E. R. J., Oct. 30, '09.]

SHOPS AND BUILDINGS

Northern Indiana Railway, South Bend, Ind.—This company is building a new fireproof carhouse and repair shop in South Bend on the site of its power plant, which has been dismantled. The brick walls of the power house will be used but the new structure is to be much longer than the old and work on the new foundation is now well under way. The interior of the building is to be divided into three sections. One will be used for cleaning, painting and washing cars, another will be entirely for interurban cars and the third will be for repair work.

Worcester (Mass.) Consolidated Street Railway.—The Worcester Consolidated Street Railway has closed its car house on East Main Street, Westboro, and will move it to Northboro and the cars handled from there. The present car house at Westboro will be used only for storage of closed cars in summer and open cars in winter.

Buffalo & Lackawanna Traction Company, Buffalo, N. Y.—This company is said to be considering plans for the erection of a one and two-story brick carhouse and general office building at Swan Street and South Cedar Street and Myrtle Avenue. The two-story structure will face on South Cedar Street and will be 35 ft. x 52 ft. The carhouse, which will have entrances on Myrtle Avenue and Swan Street, will be 178 ft. x 50 ft. The estimated cost of the structure is \$13,500.

New York & North Shore Traction Company, Mineola, N. Y.—This company has purchased a tract of about four acres of land on Alley Creek, Bayside Meadows, where it will erect a carhouse.

POWER HOUSES AND SUBSTATIONS

Worcester (Mass.) Consolidated Street Railway.—The Worcester Consolidated Street Railway will discontinue operating its power plant on Brigham Street, Westboro. The plant will be dismantled and the equipment installed in the Westfield power station on the system of the Woronoco Street Railway.

New York & North Shore Traction Company, Mineola, N. Y.—This company has bought a tract of land on Alley Creek, Bayside Meadows, where it will erect a power plant. The power to be generated at this plant will supply the new line from Whitestone Landing to Flushing, and the line connecting Nassau and Queens Counties.

Salt Lake & Ogden Railway, Salt Lake City, Utah.—This company has begun work on its new power station near Lagoon. This main power plant will be built of brick and concrete measuring 141 1-3 ft. x 106 ft., one story high. The estimated cost of the building with complete equipment is \$200,000. At Stockdale, Lagoon, Clearfield and Ogden the company will build substations costing \$25,000 each.

Manufactures & Supplies

ROLLING STOCK

Hagerstown (Md.) Railway is reported to be in the market for rolling stock.

Schenectady (N. Y.) Railway, it is reported, expects to buy 12 cars early next spring.

British Columbia Electric Railway, Vancouver, B. C., recently purchased six cars from the Ottawa Car Company.

Huntington (N. Y.) Railroad has purchased one Russell snow plow from the Wendell & MacDuffie Company, New York, N. Y.

Edmonton Radial Railway, Edmonton, Alta., Can., has recently placed an order with the Ottawa Car Company for four passenger cars.

Des Moines (Ia.) City Railway has purchased a single-truck sweeper from the McGuire-Cummings Manufacturing Company, Chicago, Ill.

Rochester (N. Y.) Railway has placed an order with the Wendell & MacDuffie Company, New York, N. Y., for two McGuire-Cummings snow sweepers.

Cedar Rapids & Marion City Railway, Cedar Rapids, Ia., has ordered a single-truck snow sweeper from the McGuire-Cummings Manufacturing Company, Chicago, Ill.

People's Railway, New Hamburg, Ont., contemplates purchasing, some time in January, the 10 combination passenger and baggage cars, and an electric locomotive, mentioned in the *ELECTRIC RAILWAY JOURNAL* of May 8, 1909.

Grand Forks (N. D.) Street Railway is in the market for a second-hand snow sweeper in good condition, and two second-hand or rebuilt single truck, closed motor cars, complete and ready for operation; to be painted as required.

Quebec Railway, Light & Power Company, Quebec, Que., has purchased six 18-foot closed vestibule cars, 10 nine-bench open cars, two large suburban cars, two heavy double-broom sweepers and two wing plows from the Ottawa Car Company.

Fresno (Cal.) Traction Company, mentioned in the *ELECTRIC RAILWAY JOURNAL*, Aug. 28, 1909, as being in the market for 10 double-truck cars of the California type, has ordered this rolling stock from the American Car Company. These cars will be equipped for pay-as-you-enter service.

Rock Island-Southern Railway, Monmouth, Ill., has just placed an order with the Niles Car & Manufacturing Company, Niles, Ohio, for eight interurban passenger cars with smoking compartments. These cars are to be 62 ft. long and 92 in. wide, mounted on Baldwin class 90-40 trucks, with standard 37½ in. steel-tired wheels. The company has also purchased two Niles 50-ft. express cars mounted as above.

Peoria (Ill.) Railway Terminal Company has placed an order for one combination passenger and baggage car with the McGuire-Cummings Manufacturing Company, Chicago, Ill. This car is to have the following dimensions: Length over buffers, 56 ft.; over corner posts, 46 ft. 2 in.; width, 9 ft. The following special equipment has been specified: Allis-Chalmers motors and air brakes, Nichols-Lintern sanders, Hale & Kilburn seats, Safety car heaters, Earll retrievers, Pantasote curtain material with Acme friction rollers, McGuire-Cummings 20-A trucks, steel wheels, and McConway & Torley radial drawbars.

Aurora, Elgin & Chicago Railway, Chicago, Ill., mentioned in the *ELECTRIC RAILWAY JOURNAL* of Oct. 30, 1909, as contemplating the purchase of five single-truck city cars and one interurban car, has placed an order for five single-truck city car bodies, 22 ft. 8 in. over all, with the Niles Car & Manufacturing Company, Niles, Ohio. These cars will have eight side windows and vestibules at each end, and will be finished in quartered oak. They will be furnished with Hale & Kilburn No. 99-A rattan seats. The company is also having the Niles Car & Manufacturing Company build a 46-ft. interurban express and baggage car of the standard type used on this road.

Ft. Wayne & Wabash Valley Traction Company, Ft. Wayne, Ind., mentioned in the *ELECTRIC RAILWAY JOURNAL* of Oct. 30, 1909, as having ordered four combination passenger and baggage cars, 20 single-truck semi-convertible city cars, four trailer freight cars, and two interurban freight cars, has drawn the following specifications for the four combination passenger and baggage cars:

Seating capacity 52
 Weight 45,000 lb.
 Bolster centers...length 31 ft.
 10 in.
 Length of body.....55 ft.

Width over posts at belt 8 ft. 6½ in.
 Sill to trolley base...9 ft.
 Height, rail to sills....43 in.
 Body Wood

Length over vestibule 53 ft. 8 in.
 Width over sills...8 ft. 5¼ in.
 Manufacturers of Special Equipment.
 Air brakes...General Electric
 Bolsters, body, Cincinnati M. C. B.
 Bolsters, truck.....Curtis
 Brakeshoes..A. B. S. & F. Co.
 Bumpers Cincinnati
 Center bearingsCurtis
 Control system...G. E. L-4
 Couplers .McConway-Torley
 Curtain fix...Curtain S. Co.
 Curtain material...Pantasote
 Destination signs Ft. W. & W. V. T. Co.
 Fenders or wheelguards Pilots
 Gears and pinions General Electric
 Gongs E. S. S. Co.'s pneumatic
 Hand brakes.....Peacock
 Heating system Peter Smith No. 1-C
 Headlights....G. E. Form B
 Journal boxes....Symington

Interior trim...Mahogany
 Underframe Composite

Four G. E. 205 interpole
 Registers Ohmer
 Roofs Cincinnati
 Sanders...Knight & Yergens
 Sash fixtures.....Edwards
 Seats..H. & K. non-reversible
 Seating material Plush and Quiride
 Side bearings....Cincinnati
 Springs..Ry. Steel Spring Co.
 Trolley retrievers Knutson No. 2
 Trolley poles General Electric
 Trolley base General Electric No. 3
 Trolley wheels General Electric
 Trucks.....Curtis J-669
 Ventilators, Hart's ratchets, swing transom
 Wheels..Schoen rolled steel

The details of the four trailer freight cars are as follows:

Weight..... 25,000 lbs.
 Bolster centers.....28 ft.
 Length of body.....38 ft.
 Length over vestibule.40 ft.
 Width over sills.8 ft. 4½ in.
 Width over posts at belt 8 ft. 6½ in.
 Manufacturers of Special Equipment.
 Air brakes...Westinghouse
 Bolsters, body Cincinnati M. C. B.
 Bolsters, truck, Diamond frame trucks M. C. B.
 Brakeshoes..A. B. S. & F. Co.
 Bumpers Cincinnati
 Couplers Janney

Sill to top of roof.....9 ft.
 Height, rail to sills 12 ft. 9 in.
 Body Wood
 Underframe Composite

Tower freight car
 Journal boxes.....M. C. B.
 Side bearings Cincinnati M. C. B.
 Springs Simplex
 Trucks, type, Diamond frame truck M. C. B.

The following are the specifications covering the two freight cars:

Weight 45,000 lbs.
 Bolster centers, length.37 ft.
 Length of body.....60 ft.
 Length over vestibule.59 ft.
 Width over posts at belt 8 ft. 6½ in.
 Manufacturers of Special Equipment.
 Air brakes...General Electric
 Bolsters, body Cincinnati M. C. B.
 Bolsters Curtis
 Brakeshoes..A. B. S. & F. Co.
 Bumpers Cincinnati
 Center bearings Curtis
 Control system...G. E. L-4
 Couplers..McConway Torley
 Destination signs Ft. W. & W. V. T. Co.
 Fenders or wheelguards Pilots
 Gears and pinions General Electric
 Hand brakes..... Peacock
 Heaters.....Caboose stove

Sill to trolley base.9 ft. 3 in.
 Height, rail to sills....43 in.
 Body Wood
 Interior trim...Plain finish
 Underframe Composite

Headlights...G. E. Form B
 Journal boxes....Symington
 Motors.....G. E. No. 205
 Sanders Knight & Yergens
 Springs..Ry. Steel Spring Co.
 Trolley retrievers Knutson No. 2
 Trolley Poles General Electric
 Trolley base General Electric No. 13
 Trolley wheels General Electric
 Trucks.....Curtis J-669
 Wheels....Schoen rolled steel

TRADE NOTES

Duplex Metals Company, New York, N. Y., has moved its offices to the thirty-second floor of the Singer Building, 149 Broadway.

General Electric Company, Schenectady, N. Y., has moved its branch offices in Cincinnati from the Perin Building to the Providence Building.

John A. Roebling's Sons Company, Trenton, N. J., has removed its Cleveland office from 88 Superior Street to its own new building at 701 St. Clair Avenue, N. E.

Dearborn Drug & Chemical Works, Chicago, Ill., have removed their Milwaukee office, which is in charge of E. T. Ward, from 183 Fourteenth Street to 340 Twenty-fourth Street.

Willett Press, New York, N. Y., announces that C. N. Manfred has become its secretary. Mr. Manfred was formerly advertising manager of the H. W. Johns-Manville Company, New York, N. Y.

Perry Ventilator Corporation, New Bedford, Mass., has received a contract to equip with Perry ventilators the 12 city and six interurban cars being built by the Niles Car & Manufacturing Company for the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.

Wonham, Magor & Sanger, New York, N. Y., are supplying the Chicago (Ill.) Railways Company with H.-B. life guards with which to equip all of its cars which will approximate 2000 in number, when the rehabilitation of the property of the company shall have been completed.

Western Electric Company, Chicago, Ill., reports that Western Electric telephone apparatus and Gill selectors are used throughout on the telephone train dispatching circuit which the Atlantic Coast Line is constructing from Richmond, Va., to South Rocky Mount, N. C., a distance of 121 miles. There will be 32 selector way stations and two local telephone stations in the chief dispatcher's office and the superintendent's office at Richmond. These stations will be called by means of a buzzer. The Western Electric Company reports that within the last six weeks, the Chesapeake & Ohio Railway, Richmond, Fredericksburg & Potomac Railroad and the Seaboard Air Line have placed orders for telephone train dispatching circuits leading out of Richmond.

Dodge Manufacturing Company, Mishawaka, Ind., power transmission engineer and manufacturer of Dodge transmission machinery, maintains large stores and warehouses in Boston, New York, Brooklyn, Pittsburgh, Philadelphia, Cincinnati, Chicago, St. Louis, and London, Eng., in connection with expert engineering departments, which makes possible immediate deliveries and the solution of transmission problems without delay. From time to time the company has enlarged and extended this service and now announces the addition of Minneapolis, Minn., and Atlanta, South Ga., to the list of cities in which it maintains branch establishments. These two branches will serve as local stores and distributing stations for the Northwest and the South. The Minneapolis store is located at 202-204 Third Street, South and the warehouse at 312 to 320 First Street, North. The agency arrangement with the Minneapolis Steel & Machinery Company has been discontinued. Burke Richards, former resident salesman at Cleveland, Ohio, has been made manager of the Minneapolis branch. The Atlanta branch and warehouse is located at 54 Marietta Street, and S. L. Dickey, resident salesman at that place, has been appointed manager. No change has been made with any of the agency connections in the South.

ADVERTISING LITERATURE

McCord & Company, Chicago, Ill., have issued a booklet in which the McCord journal box is described and illustrated.

C. J. Coulter Company, Hammond, Ind., describes and illustrates the Coulter track wrench and rail weld in a four-page circular.

Western Elaterite & Roofing Company, Denver, Col., has issued a folder illustrating the uses of Elaterite paint and Elaterite roofing.

Duplex Metals Company, New York, N. Y., is sending out a folder pointing to the merits of copper-clad steel trolley wire, especially for use on curves.

Electric Railway Equipment Company, Cincinnati, Ohio, describes its tubular iron and steel poles in an 18-page booklet. Tables are presented giving the features of the different poles.

Emery Pneumatic Lubricator Company, St. Louis, Mo., has issued catalog B, which has for its subject "Automatic Lubrication for Air Brake and Pneumatic Multiple Control Systems."

Buckeye Electric Company, Cleveland, Ohio, has issued Bulletin 5-B, entitled "Modern Street Railway Lamps," in which the application of tantalum lamps to street railway service is described.

Underfeed Stoker Company of America, Chicago, Ill., sole manufacturer of the Jones underfeed mechanical stoker, has issued an elaborate folder in which the Jones stoker is described and illustrated.

Cooper Heater Company, Dayton, Ohio, has issued an 8-page folder in which 19 reasons for the superiority of the improved Cooper heater are given. Exterior and interior views of the heater are shown.

Valentine-Clark Company, Chicago, Ill., has issued a circular entitled "Doubling the Life of Cedar Poles," in

which the application of C. A. wood preserver is described and the scientific reasons given for its use.

Barber Car Company, York, Pa., has issued a publication illustrating and describing the Barber car. A feature of the booklet is a large double-page illustration of the Barber car with arrows pointing from the printed description to the features in the illustration.

Gulick-Henderson Company, Pittsburgh, Pa., has issued bulletin No. 80, in which the address "Engineering Responsibility," made by Dr. Charles B. Dudley, president of the American Society of Testing Materials, at Atlantic City on June 29, 1909, is reprinted.

Cleveland Ventilator Company, Cleveland, Ohio, has issued a catalog illustrating and describing the construction and operation of the R. T. L. automatic exhaust ventilator. This new device is specially designed for ventilating steam and electric railway passenger cars, and can be quickly and easily inserted in the deck sash frames.

Electric Service Supplies Company, Philadelphia, Pa., and Chicago Ill., has issued an 8-page circular describing and illustrating the pay-within cars as operated by the Capital Traction Company in Washington. A feature of the publication is a letter from D. S. Carll, second vice-president and general manager of the Capital Traction Company, commending the cars.

T. H. Symington & Company, Baltimore, Md., have issued a publication entitled "Journal Boxes," in which the Symington journal boxes are described and illustrated. Six important factors in journal-box design and construction are tabulated, and it is pointed out wherein the Symington boxes meet these requirements. The publication is concluded with a supplement showing various types of rolling stock equipped with Symington journal boxes.

Wisconsin Engine Company, Corliss, Wis., has begun issuing a series of bulletins on its manufactures in such form that they can be readily bound in a neat, flexible cover furnished by the company. The first bulletin issued under this plan is No. C-4, on heavy duty Corliss engines of belted type. It is well worth a place in the steam engineer's library, as it contains far more detailed and well-illustrated information than is customary in publications of this kind.

Standard Motor Truck Company, Pittsburgh, Pa., is distributing three new sections for its loose-leaf catalog, which are intended to be inserted in the binder previously distributed by the company. The sections show Standard truck No. C-80, for trunk-line service, under a car of the Ohio Electric Railway, standard truck No C-100-A as arranged for quill suspension motors mounted under a steel passenger coach of the New York, New Haven & Hartford Railroad and the Standard automatic brake slack adjuster.

E. R. Barnard, Philadelphia, Pa., is distributing a circular in which an interesting comparison is made of the consolidated 5 per cent bonds of the Rochester Railway & Light Company, Rochester, N. Y., when first issued and the first and refunding 5 per cent bonds of the Chattanooga Railway & Light Company, Chattanooga, Tenn., which E. R. Barnard offers for subscription at 96½ and interest. E. W. Clark & Company, Philadelphia, Pa., and Hodenpyl, Walbridge & Company, New York, N. Y., were responsible for the organization of both the Rochester Railway & Light Company and the Chattanooga Railway & Light Company.

C. & G. Cooper Company, Mt. Vernon, Ohio, under the title "Seventy-five Years of Engine Building," has published a beautifully printed and illustrated memento of its diamond anniversary which is being celebrated this year. It was in the spring of 1834 that the first foundry of the C. & G. Cooper Company was put in operation at Mt. Vernon, Ohio, by Charles and Elias Cooper, under the firm name of C. & E. Cooper. The business prospered and in 1836 the company built its first engine which was of the slide-valve type with a piston 6 in. in diameter and 24 in. in stroke. In 1852 the company built its first blowing engine and some of the engines built at that time are still in operation. In the early fifties also, the company constructed a number of steam locomotives, which were the first to be built west of the Allegheny Mountains and for many years ran on the western division of the Baltimore & Ohio and on other railroads. In 1869, the concern was known as C. & G. Cooper & Company and in 1895 it was incorporated under the present name. Although the company began building Corliss engines in 1869 this type of machine did not become the principal product of the works until about 1886. Since that time, the company has devoted its attention and facilities almost exclusively to the building of this type of engines and has enjoyed a large business among electric railway companies as well as in other lines of industry. The pamphlet contains many views of the works and products of the company and portraits of the officers.