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CONTENTS.

Annual Reports of Commissions

Reports of two of the principal commissions of the country having jurisdiction over electric railways are presented in abstract in this issue. The most important feature of the report of the New York Public Service Commission, First District, is the recommendation as to legislation concerning the railroad law and the public service commissions law. Concerning the existing railroad law the commission would evidently like an amendment that would give it clear authority over the subject of transfers on surface lines. The commission appears to believe that amendments of the Public Service Commission's law are necessary in order to accomplish the original intent of the law. It states that the phraseology employed in several important respects has nullified the general purposes of the enactment. The completion of 40 years of service by the present Massachusetts Board of Railroad Commissioners is made the occasion for a brief review of the increase of mileage, capitalization, etc., of the properties over which jurisdiction is exercised. It is suggested by the board that power be given to order the installation of safety devices or other changes that promise increased safety in operation. This would substitute mandatory for recommendatory powers in respect to the questions of operation involved.

The Proper Type of Car for Short Interurban Roads

In theory, the type of car chosen by an interurban line is supposed to be the outcome of a long study of speeds, stops per mile, power equipment, schedules, seating capacity, etc. In practice the problem often is solved summarily by taking a group of well-worn cars from some allied system or going to the other extreme of purchasing a lot of luxurious over-powered cars, the chief merit of which is their advertising value. At this time there are quite a number of interurban lines ranging in length from 20 miles to 40 miles which give a similar service, yet the rolling stock embraces everything from the ordinary city car to the 60-ft. interurban. Usually if the interurban railway is built as a branch of the city system, the management naturally will give the larger city cars a trial on the new road before investing in strictly interurban coaches. Experience has shown in many of these cases that a well-built city car is perfectly capable of running 30 to 40 m.p.h. on good track and is certainly more economical than the large cars in current consumption per passenger carried. No good is to be gained in running big cars unless they are really needed, and in any event heavy travel could be handled by operating more cars, either singly or in trains.

The folly of using big cars for many short interurban railways is illustrated by the case of a certain Eastern line which is about 25 miles long. The road was opened as a cut-off between two large towns and the management hoped to secure all the commercial travelers then using the more expensive and

roundabout steam line. The great reduction in distance and cost via the new route would have attracted this class of riders in any event, but the promoters thought it necessary to buy the finest type of interurban rolling stock. Under these conditions the company bought only enough cars to maintain an hourly schedule which has easily sufficed to carry all the through business offered. On the other hand, the company could have worked up a fine suburban development within the first 10 miles of its line if it has bought smaller cars and given a 15-minute service on that section alone. With the present large, high-powered cars it cannot afford to encourage a short-haul, frequent-stop service and hence will be obliged to change its rolling stock standards entirely if it desires to get the full earning value of the line.

Trespassing on Private Right-of-Way

Special efforts are made occasionally by various railways, both electric and steam, to overcome the extensive and dangerous use of their private rights-of-way by trespassers. The practice of trespassing is so liable to result in death or serious injury that the action of the railways, designed to lessen the unwarranted use of their tracks, is laudable, not only from the standpoint of their own interest, but from those of the community. Efforts of this nature, however, represent the expenditure of considerable time and money on the part of the companies, and it is therefore discouraging to find that when an attempt is made to measure the results of such movements, it is difficult, and sometimes impossible, to trace them satisfactorily. One interurban company tried recently the experiment of having its motormen throw circular letters of warning to trespassers on private right-of-way, but subsequent inquiries among the trainmen made it uncertain whether sufficient notice was taken by the trespassers to compensate for the effort. It may be stated that if the movements of this nature deter any number of people, no matter how small, from following the dangerous habit of walking on private rights-of-way, some good will have been done, but it is evident that steps of this character, when initiated by railways, deserve the cordial support of newspapers and influential organizations. The Railroad Commission of Indiana has not lessened the activity of its campaign to eliminate this source of trouble and its work has been effective in directing wide-spread attention in that State to an evil which should be abolished.

Sectionalizing Distribution Lines

We discussed in these columns recently the question of the practical value of insurance against breakdown by duplication in substation switchboard and machinery, and expressed doubt as to whether the costly methods frequently employed were warranted from an economic or engineering standpoint. The same question arises with duplication to insure against breakdown in the case of the distribution system and has a present application because of a suggested arrangement for sectionalizing the trolley and high potential transmission lines of a proposed long interurban single-phase road. On this road the trolley wire is divided into eight sections which are connected in series by time limit relay circuit-breakers. The trolley sections, grouped in four pairs, will be fed at the common points by duplicate stepdown transforming and switching apparatus. Each station will in turn be connected with the power house by an independent single-phase transmission line. The separate transmission lines for feeding the four stepdown transformer stations will probably be equipped at suitable points with line switches so that in event of breakage or leakage on one circuit its load may be transferred to a neighbor and thus it will rarely be necessary to cut the current off the line when making repairs to the high-tension transmission system. It should be stated that the road is designed for 24-hour traffic and these elaborate precautions may be necessary in the opinion of the consulting engineers for this reason, but we believe local conditions must be more than usually imperative to make such a plan as that outlined justifiable.

The plan emphasizes the fact, however, that engineers can well give greater attention to the efficient performance of the distribution systems of their railways than is often the case. While we are somewhat sceptical of the value of great refinements in sectionalization, we have no doubts as to the importance of careful design in laying out a distribution system, or of the economy of having plenty of feeder capacity. A reenforcement or a reorganization of the distribution system is one of the first matters to be undertaken after a revival of traffic, such as many roads are now enjoying, but too often it is the last. The necessity for it is perhaps not quite so apparent as in the case of overloaded generators and cars or worn-out track, or perhaps it would be more correct to say that improvement to the distribution system can be more easily postponed without immediately disastrous results. But an overloaded feeder, or an inadequate return system, constitutes a continuous drain upon the power station and throws a burden upon the motors, which they ought not to be called upon to bear, besides dissipating energy in the final form into which it has been transformed in the power station.

Loose Ends in Maintenance Work

In the maintenance of apparatus having a multitude of detail parts constant vigilance is necessary to avoid the occurrence of operating troubles arising from defects in minor features of the equipment. This is forcibly emphasized in the case of electric railway rolling stock. One particular "loose end" in maintenance work which often causes repeated trouble is the failure of car-house employees, inspectors and others in close touch with the causes of car defects on the tracks to make sufficiently detailed reports of the conditions surrounding each trouble observed. For instance, a simple report "coil grounded" is an inadequate one in a case where the insulation of such a coil shows that the covering is injured more at the middle than at the ends. The natural inference in such a case would be that trouble existed between the core and the motor pole pieces, and if an armature rubs and is then grounded, a proper report should state the cause of the faulty clearance. The tendency is always for a busy maintenance man to make his report as brief as possible, but unless all the important facts are supplied, the repair work done may have to be repeated and the company may find it difficult to study in close detail the fitness of specific apparatus for its service.

Another small matter which is often the source of trouble is the detachment of traveling records from armatures, car bodies or other equipment. In some companies whenever an armature is removed from a motor for repairs and sent from a car house to a shop, a card is also sent with the armature giving the history of it with reference to repairs and defects for a period of many months. Wheel mileage may be tab-

ulated in the same manner. Unless cards so used are kept in close association with the equipment which they cover, judgment on the qualities of apparatus becomes inaccurate through the lack of quantitative data, and the determination of costs suffers.

Two other points may be mentioned in illustrating the importance of the little things in operation. Before gears are bored out and finished they are put together with small pieces of tin between the halves, later being bored out to the axle size with as close a fit as possible. If the pieces of tin are left between the halves through oversight in the shop or on account of haste it is impossible to get a proper clamping fit when the gear goes upon the shaft, and the resulting looseness is most objectionable. In boring out a gear, a feathery edge is usually left between the halves as a result of the action of the tool, and unless this edge is cleaned off it militates against the halves coming properly together and may lead to misadjustment and troubles in service. The second point relates to the inspection of sign lights on single-color cars. When in the interests of economy and interchangeability a company decides to paint all its cars alike the sign question becomes of even more importance than in cases where different colors indicate destinations and routes. Whenever a single color car leaves a car house, therefore, it is of paramount importance to ascertain that the sign lights are clean and free from burned-out filaments; that their working is not interefered with by the handling of the trolley cord and that the destination indication is in every way unobscured. These points are obviously unrelated, but they suggest the importance of perpetual vigilance in keeping car equipment up to the highest pitch of efficient service.

Membership in the Association

The personnel of the members of the different committees of the American Street & Interurban Railway Association are announced in this issue, and the names themselves are a surety that valuable work will be accomplished by the association during the coming year. We could discuss at length the importance of the topics to be considered by the different committees and the ability of those to whom their investigation has been intrusted, but mean in this issue to refer only to the work of the two largest committees and the facts which their appointment indicate. We refer to the committee on active and associate membership.

The number of members on both of the committees on membership is much larger than that on any committee previously appointed by the association, and in their selection a geographical plan has been followed. This will facilitate the work of each member, because he will know in advance just the field for which he is responsible, and all companies and individuals in that territory will understand to whom they can apply for information as to the benefits which they will derive from membership in the association. No such comprehensive plan has ever before been adopted by the association for increasing its membership and good results should be expected.

A plan of this kind would not be warranted if the association was not giving value received for membership, but a record of the past four years since the association was reorganized is ample warrant that the benefits of both company and individual membership are worth the membership fee, whether the member is a large company and is paying large annual dues or is a smaller company or an individual and the dues paid are nominal. It is true that it is also desirable for the association to increase its membership, partly because of the dues received, but still more because of the larger number of individuals which it thereby enlists in the general work. A vigorous campaign for membership, therefore, indicates not weakness, but strength in the merit of the proposition made to those who are not associated with the association. In the first place it shows that at least the members of the committee believe they have a good proposition to submit to others, and from their standing in the industry their opinion is well worth consideration. They have no ulterior object to gain; their only purpose is the good of those to whom they suggest membership and the betterment of the industry at large. In the second place, the fact that a considerable number will undoubtedly join the association this year is in itself an argument for others to join now, because the larger the association and its revenues, the greater its value to its members.

A novel feature of the organization of the committee on associate membership is that a similar committee with the same number and same territorial distribution is being organized by the Manufacturers' Association, so that there will be a representative in each territorial subdivision to whom members of railway companies or outside firms and corporations can apply if they wish to join the association as associate members.

The question is sometimes raised, and it is a legitimate one, as to the advantages which officials of a member-company secure by joining as associate members. It might appear at first sight that because they already have the privilege of attending the conventions of the various associations and because their company receives one or more copies of the proceedings of the association there is not the same reason for their joining the association as if their company was not a member. In a sense this is true, but it does not tell the whole story. There is a satisfaction in the individual recognition of each associate member by the association, which does not come from company membership, and there are also more substantial benefits which, in the opinion of a great many officials, are worth more than the fee of $5 per year required for associate membership. One of these, of course, is the receipt and individual possession of the bound copy of the proceedings of the association with which the associate member has allied himself. The second is the privilege of wearing the pin of the association. This is confined to associate members of the association. The pin not only is a badge of personal loyalty to the members of the association, but, like the pin of any fraternal body, gives a sense of comradeship with others who wear it. It also shows to the outsiders who know the significance of the badge the fact that the wearer is allied with the electric railway industry, and to those who are not acquainted with it, gives the person who possesses it an opportunity of discussing the objects and purposes of the association.

We have purposely confined these remarks to a discussion of the benefits to be derived by officials of member-companies in joining the association as associate members. Undoubtedly still others could be given than those mentioned above, but the question is raised so often on this point that it is worth while to speak of it at the time of the announcement of the committee on associate membership. To those who are interested in the industry, but are not connected with member-companies, there are many other advantages.

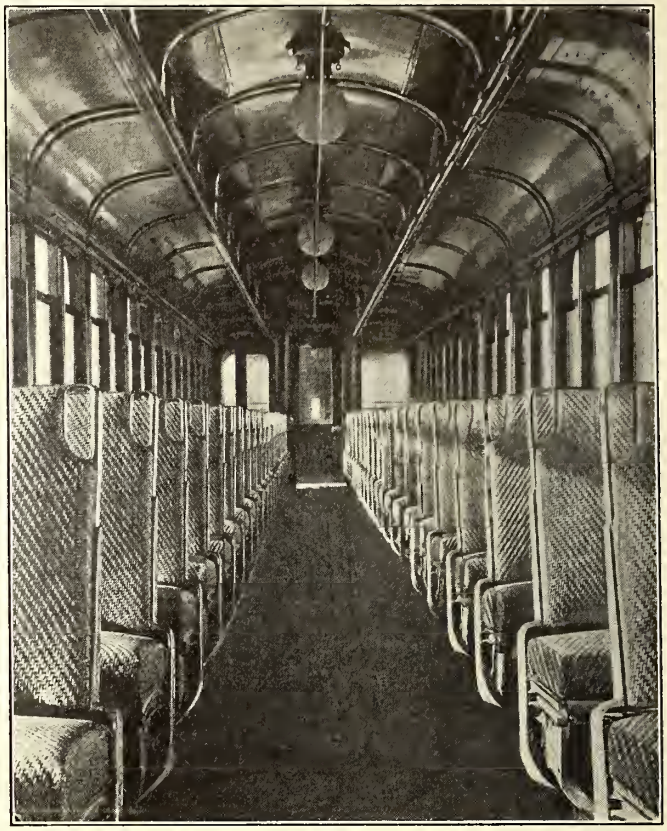
LARGE CARS BUILT BY THE KEY ROUTE, OAKLAND, CAL.

A brief account of 16 unusually long cars being built by the San Francisco, Oakland & San José Consolidated Railway, popularly known as the "Key Route," was presented in the twenty-fifth anniversary issue of the Electric Railway Journal, dated Oct. 2, 1909. At the time this article appeared these cars were in process of construction in the railway company's shops. The new cars have been completed recently, and are now operating very satisfactorily. Probably the most interesting feature of these new cars is their extreme length of 70 ft. over couplers. The service of this road is operated with trains of from 5 to 10 cars, each running on short headway between Oakland and several nearby cities located on the east side of San Francisco Bay and a ferry terminal at the west end of a pier extending 3 miles from Oakland into the bay toward San Francisco. At morning and night it is necessary to handle especially heavy peak loads, and therefore long cars with generous standing room space are desirable. The standard motor car operated in the suburban service of the Key Route is 60 ft. long, built largely according to steam-railroad coach design. At first the new cars will be operated as trailers mixed in trains with motor cars handled with type M control. The trains are made up so that there is never less than the capacity of one GE-66 motor per car.

The new cars, including the trucks and all castings, were designed and built in the Oakland shops of the Key Route. As shown in the accompanying plan and elevation, the body length of these cars is 55 ft. 10 in. over bulkheads. The vestibules are 6 ft. long and built practically as a part of the main body structure. End doors are provided for passage from car to car, and the platforms are equipped with Gould steel buffers and standard M. C. B. couplers. The underframing of the car body comprises 7-in. channel-iron side sills filled and reinforced with 8 in. of wood; 7-in. 20-lb. I-beam center sills blocked 6 in. between flanges and 4½-in. x 5¾-in. wooden intermediate sills reinforced with steel plates. The underframing is tied together with cross-ties spaced 3 ft. 2 in. on centers. The width over sills is 8 ft. 8½ in.

Platforms with step openings 4 ft. 4⅜ in. wide in the clear are provided at both ends of all cars. The platforms are supported by the center and intermediate sills, and the principal members are substantially reinforced with plates at the points of maximum stress. The platform floors are on a level with the car floor, and are reached by three steps of 11 in. rise each and a rise of 15 in. from the level of the top of the rail to the top of the first step. The top of the bumper is 3 ft. 11⅛ in. above the rails, and the curved headblocks are formed of 3-in. plank sheathed with ½-in iron.

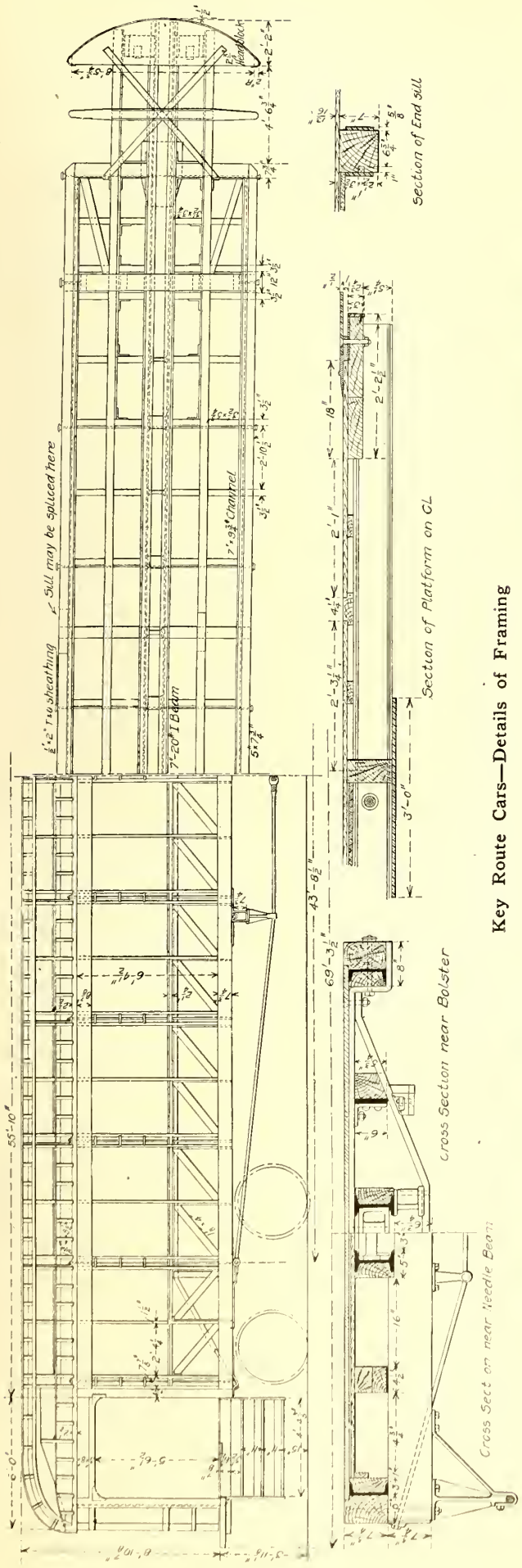
The means of coupling and the arrangement of the buffers used on this road are worthy of mention. In practice the cars are coupled so that they operate very satisfactorily, running steadily at high speeds without undue shocks at starting and stopping. The close coupling of the cars does away with the usual discomfort experienced by passengers on loosely coupled trains, and passage from car to car is rendered safe. An accompanying illustration shows the ends of two car platforms as coupled. In addition to the spring buffer platforms and the M. C. B. couplers, the other coupling connections include two safety chains, motor control cables, bus cable and hose for the brake reservoir, air-brake, train and air signal line.



Key Route Cars—Interior View

The sliding gate used at the step opening is another detail that has been carefully worked out. After experience with heavy gates a light wire mesh carried in an iron frame has been adopted. This gate is supported from below by rollers which ride on an angle iron under the edge of the step and the top is guided by means of a channel held against the side of the car. The gates do not lock shut, but in the closed position drop into depressions in the carriers and at the same time engage V-shaped fittings at the corner vestibule posts. These fittings are a part of the grab handles. Illumination of the

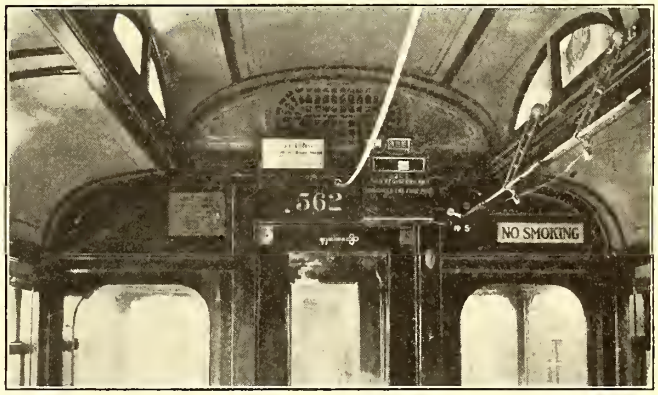
Key Route Cars—Exterior View



Key Route Cars—Details of Framing

steps is provided by incandescent lamps carried under the stanchion which divides the steps midway. Additional illumination is provided by lamps supported under the headblock. These lamps serve to illuminate the ground about the steps and are favored as a means of reducing boarding and alighting accidents, as well as facilitating night traffic by making it possible for passengers to see where they step when leaving the car.

The 16 new car bodies are mounted on trucks built in the company's shops. These trucks are of the M. C. B. type, with 36-in., 912-lb. Midvale rolled steel wheels. A saving in weight



Key Route Cars—Ventilating Duct in End of Deck

of 536 lb. per car is said to have been made by the use of this wheel in place of steel-tired wheels with cast-iron centers, which are used on some of the other cars. The truck center distance is 43 ft. 8½ in., and the overhang from bolster to face of bumper is 12 ft. 3 in. Westinghouse standard steam railroad passenger train brake equipment is used. A 350,000 circ. mil power bus is installed from end to end of each car, and all cars are provided with bus couplers, so that all the motors in a train may receive power from the trolley on any car.

Because of the comparatively short run from the ferry terminal to the end of any of the five branches of this road, it was deemed unnecessary to build the side framing so that the windows would raise. The omission of this feature in connection with the windows made possible a considerable saving in weight in the car body and economy in the cost of construction. The side framing also is narrower than it would be if the windows

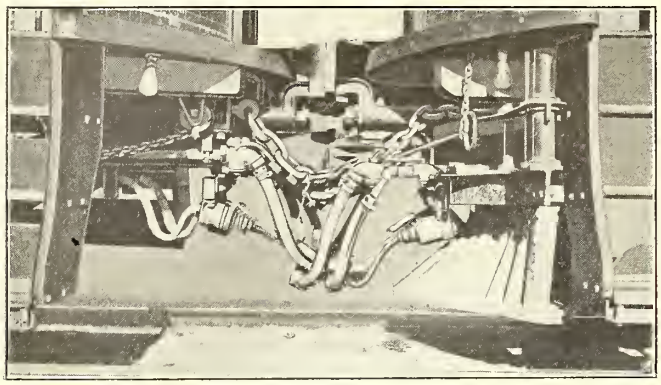
Key Route Cars—Sliding Platform Gates

were movable, and thus the overall width of the car was reduced somewhat without decreasing the available interior space. The interior of the car-body is finished in natural mahogany. Illumination is provided by four arc lamps in the body of the car and a series of six incandescent lamps on each platform, which series includes two lamps in the vestibule deck, two directly above the steps and two under the bumper block.

VENTILATION

The ventilation of these cars, which have stationary deck sash as well as stationary windows, is effected by four Globe

ventilators. One ventilator is installed in the side of the extended monitor over each corner of the car. These ventilators are 10 in. in diameter and are connected by sheet-steel ducts with ornamental openings in the ends of the clerestory. While the train is moving the ventilators draw the vitiated air through the openings in the ends of the clerestory and discharge it outside. To insure circulation, two deck sash at the center of the car are made adjustable. The use of stationary deck sash

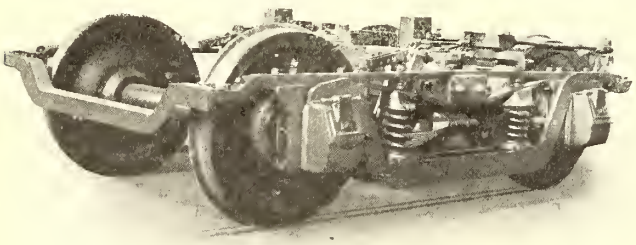


Key Route Cars—Train Connections

reduces the breakage of glass and largely prevents any damage that might be caused by the leakage of rain.

These 70-ft. cars with bodies 55 ft. 10 in. long have a seating capacity for 88 passengers and a generous amount of standing room. An idea of the capacity of one of the cars for handling peak loads is obtained from the statement that on one occasion 300 passengers were carried on one car. It is said that 200 passengers are not an exceptional load. As these cars were completed they were weighed, and the average of the actual weight was found to be 58,800 lb., or 668 lb. per passenger seat. This figure, of course, does not include any motor equipment. If the amount of electrical equipment necessary to operate one car as usually connected for train service is considered as 9000 lb., the weight per passenger is 770 lb., which is thought to be low for the class of service in which these cars operate. The large amount of standing room afforded by large aisles and platforms reduces the weight per passenger carried to a very low figure.

Acknowledgment is made to J. Q. Brown, assistant general manager and engineer, San Francisco, Oakland & San José Consolidated Railway, for information used in the preparation of this article. Mr. Brown has stated that these cars, although of unusual length and capacity, are proving to be successful, and are much appreciated by the public on account of the convenience and comfort which they afford. Their fine appearance will be noticed from the illustrations.



Key Route Cars—M.C.B. Type Truck

The Toronto National Exhibition Association has been successful in inducing Louis Brennan, inventor of the monorail car, to make an exhibition of his system at the Toronto Exposition to be held in September, 1910. A short section of track will be constructed and a nominal fee charged for riding on the railway.

ANNUAL REPORT OF THE MASSACHUSETTS RAILROAD COMMISSION

The annual report of the Massachusetts Railroad Commission for the year ended Sept. 30, 1909, was submitted to the State Legislature which convened on Jan. 5. An abstract of some of the features of the report follows:

The present commission has completed 40 years of service in the State. The report briefly reviews some of the more important tasks of the commission during this period. When the board commenced its duties, in 1869, 22 horse railroads were operated in the State, with a paid in capital of $4,649,930 and debts of $962,573. There are now 2,869 miles of street railway single track with a total capital of $80,728,880, and a total funded and floating debt of $87,899,271.

The original members of the board were embarrassed for means of enforcing their decisions. Forty years of service have proved, however, that while on many occasions an exercise of the recommendatory powers of the board is quite sufficient to secure needed changes in facilities and operation, there are certain cases, such as the equipment of railroads and railways with safety devices, where the power should be and has been given to the board to directly order the installation of such devices or other changes which look to the safety of the traveling public or of employees. The powers placed in the hands of the board in relation to the issue of stock and bonds are of the broadest character, and are to-day possessed by the commissions of less than six States in the Union. In the first year of the board's service 140 cases occupied its attention. Last year 709 cases were heard.

The board has acted favorably upon five petitions for issues of preferred stock by street railway companies. The attorney-general of the State was requested to give his opinion whether a street railway company organized under the laws of Massachusetts could issue preferred stock under the provisions of this act, and his report was affirmative. The board states that if peculiar reasons exist for the passage of special legislation permitting a company to issue bonds in excess of its capital stock (as in the case of the Connecticut Valley Street Railway Company), it is reasonable to assume that similar conditions may arise in the case of some other company, and that the passage of general rather than special laws is to be desired.

The actual construction of the Cambridge subway by the Boston Elevated Railway was begun in August, 1909, according to plans approved by the board. The work is now in full progress and on Dec. 20 the company reported that 1575 ft. of the subway had been completed. The Forest Hills elevated extension in Boston was opened by authority of the commission in November. Revised plans for the Malden extension of the Boston Elevated system are now before the board.

In its last annual report the board called the attention of the Legislature to the fact that the constitutionality of the act relative to the transportation by street and elevated railway companies, of pupils of the public day and evening schools and private schools had been put in issue by the Boston & Northern Street Railway, and that the board had referred the matter to the attorney-general of the State. During the present year a further question has arisen with respect to the application of the half-fare provisions to both day and evening pupils of the industrial schools, so-called. In the opinion of the board such pupils are not within the provisions of this act.

Special reports to be made by the board to the Legislature of 1910 will cover a number of important transportation matters not dealt with in the annual report. Among these are the proposed consolidation of the West End and Boston Elevated Railway companies; proposed tunnels and subways in Boston; the Boston & Eastern Electric Railroad tunnel and subway plans; and public improvements in the Boston metropolitan district.

Annual returns were received from 81 companies, three of which—the Natick & Cochituate, the Westborough & Hopkinton, and the Newton—were absorbed into the Middlesex &

Boston system. Of the 78 companies at the end of the year, 59 operated their railways; 16 were operated under leases or contract agreements, and three had organized and paid in a portion of their capital stock, but had not begun construction. The net increase in new mileage during the past year in Massachusetts electric railway lines was 4.656 miles of track and 6.05 miles of second track, making 10.706 miles of additional main track. There was also a net increase of 16.764 miles of side track, making a total net increase of 27.47 miles of single track. The Massachusetts companies now own 2,238.501 miles of street railway line, 447.092 miles of second main track, and 183.464 miles of side track, making a total single track length of 2,869.057 miles, exclusive of 3.2 miles of the Rhode Island Company, from which no return was received. All the track owned is surface street railway track, with the exception of 9.983 miles of elevated line and 9.809 miles of elevated second track. There are 4.295 miles of elevated side track. All the elevated track in the State is located in Boston.

The Boston & Northern Street Railway now leases the Nashua company, having 14.898 miles of track located in New Hampshire; and the Old Colony leases and operates the Newport & Fall River, having 20.632 miles, located in Rhode Island. There are now 35.530 miles of track operated outside the State. There was a gain of 27.47 miles of single track during the year.

The gross receipts of the street railways on Sept. 30 last were $177,745,988, an increase of $7,591,079 over 1908. The gross liabilities, including capital stock but not sinking and other funds, were $168,628,151. The surplus was $9,117,837, or 11.29 per cent of the capital stock. The aggregate capital stock of the 78 companies was $80,728,880. The total amount of dividends declared was $4,120,223—an increase of $432,570 over 1908. Forty out of the 81 companies paid dividends ranging from 2 to 10 per cent, and 41 companies paid no dividends. The average rate of dividend was 5.1 per cent.

The average cost of the street railways of the State per mile of main track, was: Construction, $31,746.92; equipment, $11,076.17; lands, buildings, parks, power plants and other permanent property, $15,757.48; total, $58,580.57, compared with $57,676.62 a year ago. The total income of the companies for the year was $33,657,478, and the total expenses, including dividends, were $33,250,154, giving a net surplus of $407,324. The cost of operation alone was $20,915,728.

The total number of passengers carried, computed on a 5-cent fare basis, was 624,532,753, compared with 602,400,874 in 1908. The total car mileage was 117,493,499, compared with 116,982,089 a year ago.

Operating expenses amounted to 65.45 per cent of the gross earnings, representing a reduction in the operating ratio of about 1.3 per cent over the previous year.

Gross earnings per mile of track were $11,899, and the net earnings, $4,111, compared with $11,507 and $3,828 a year ago.

Gross earnings per car-mile were 27.19 cents and the operating expenses 17.8 cents, leaving net earnings of 9.39 cents. The net earnings in 1908 per car-mile were 8.75 cents.

The average gross revenue per passenger was 5.12 cents and the operating expense, 3.35 cents, leaving net earnings of 1.77 cents.

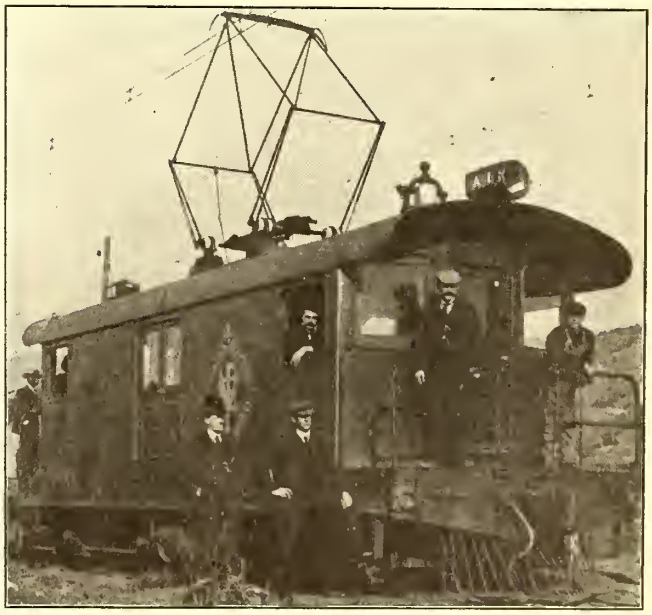
The number of employees increased from 17,267 in 1908 to 17,575 in 1909. The number of cars decreased from 7618 to 7546, and the motors owned were 16,649 in 1908 and 16,526 in 1909.

The number of persons injured was 6,003, of whom 89 received fatal injuries. The number of passengers injured was 4,360, of whom 17 were fatally hurt. The number of employees injured was 292, of which 21 were fatal injuries. The number of injuries to travelers and others on the street was 1351, of which 51 were fatal. These figures include a very large number of injuries of a trivial character which have been returned by the companies. Altogether there have been injured, fatally and otherwise, 25 less passengers, 7 less employees, and 158 less travelers and other persons, making 190 less accidents in 1909 than in the preceding year.

THE VISALIA FIFTEEN-CYCLE SINGLE-PHASE RAILWAY

The first purely single-phase, 15-cycle railway in the United States is the Visalia Electric Railroad, running from Visalia to Lemon Cove, in California, which has now completed two years of successful operation. For 10 miles, between Visalia and Exeter, the electric railway traverses the main track of the Southern Pacific Railroad, which has been electrified over this section by the addition of rail bonds and the 3300-volt trolley. Twelve miles farther, from Exeter to Lemon Cove, a new roadbed has been constructed, making the total length of the Visalia-Lemon Cove electrified route 22 miles. The road is single tracked throughout, with the exception of the switching and freight yards at Visalia, Exeter and Lemon Cove. The trolley construction is of the single catenary type, suspended from brackets on poles spaced 120 ft. apart.

Ground was broken for the Exeter and Lemon Cove extension in March, 1905, and the road was operated by steam locomotives in December, 1905. In March, 1908, the steam service was discontinued, and since then the road has been operated by electricity. From Visalia to Exeter the country is practically level. Between Exeter and Lemon Cove the land is of a rolling nature, but the maximum gradient on the road has been kept down to 0.9 per cent, and the curves are of long



Visalia Single-Phase Railway—Locomotive

radius. The worst conditions are met on a combined 10-deg. curve on a 0.9 per cent grade.

TRANSMISSION AND CONVERSION APPARATUS

For this electrification three-phase, 60-cycle power is purchased at 35,000 volts from the Mt. Whitney Power Company, which operates a hydro-electric generating plant on the Kaweah River. At the Exeter substation, located nearly at the center of the present railway line, the 60-cycle power is stepped down to 2200 volts, and then converted to 15-cycle, 11,000-volt, single-phase current by a synchronous motor-generator set. From the main frequency changing substation at Exeter the 15-cycle, 11,000-volt feeder lines, made up of a pair of No. 4 bare copper conductors, transmit 8 miles in each direction to the substations on the Lemon Cove and Visalia divisions. Transformers in these stations reduce the 15-cycle, 11,000-volt, single-phase supply to the trolley pressure of 3300 volts.

The frequency changer substation contains six 150-kw oil-insulated, water-cooled, 35,000-2200-volt, 60-cycle transformers and two two-bearing motor-generator sets, each composed of a 540 hp synchronous motor wound for 2200 volts, 60 cycles, with an induction motor for starting, direct connected to a 375-kw rotating field, single-phase alternator, delivering 11,000 volts, 60-cycle current. The 60-cycle incoming transmission

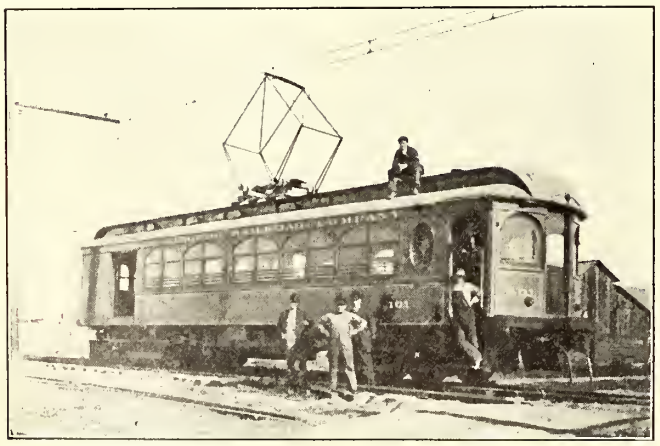
line is protected by low-equivalent lightning arresters, complete with oil-insulated choke coils and disconnecting switches. Three 15-kw, 2200-200-volt, 60-cycle transformers are supplied for lighting service and for operating the motor-generator exciter set. On the extended shafts of each motor-generator set are mounted 125-volt d.c. generators, which furnish excitation current, in addition to a similar d.c. exciter driven by a three-phase, 60-cycle induction motor supplied from the incoming transmission lines. The outgoing 11,000-volt, 15-cycle feeder circuits are protected against lightning discharges by complete arrester apparatus, and are controlled by oil switches. The Exeter substation also feeds the trolley wire through two 300-kw, oil-insulated, self-cooling, 15-cycle, single-phase transformers, reducing the potential from 11,000 to 3300 volts.

The two 15-cycle transforming substations, each located about 8 miles from Exeter in the direction of Lemon Cove and Visalia, respectively, contain a 300-kw, oil-insulated, water-cooled, 15-cycle, single-phase transformer, reducing from 11,000 volts to the trolley pressure. Lightning protective apparatus, choke coils and high-tension circuit breakers are included in the 11,000-volt apparatus, while the 3300-volt trolley feeders are controlled by oil circuit breakers. All the conversion apparatus was furnished by the Westinghouse Electric & Manufacturing Company.

LINE AND ROLLING STOCK

The 15-cycle, 3300-volt, single-phase trolley construction is of the single catenary bracket type, comprising a 7/16-in. steel messenger suspended from poles 120 ft. apart, and supporting No. 000 trolley wire. The redwood poles, 36 ft. long, are set 6 ft. in concrete.

The rolling stock comprises a 47-ton Baldwin-Westinghouse electric locomotive equipped with four 125-hp, series, compensated motors; four 40-ton passenger cars, each equipped with four 75-hp motors; two 28-ton trailer cars of construction similar to the motor cars. The cars and locomotives are all supplied with unit switch control and automatic air-brake equipment. The trailer cars as well as the motor cars are fitted with brake valves and master controllers, so that three-car trains can be operated from a trailer car at the head of the train if desired. The motor cars and locomotives are supplied with power through pantograph trolleys, and carry auto-transformers arranged with taps for reducing the trolley pressure to voltages suitable for supplying the motors, car lighting and air compressors. The motor cars have oil-insulated, self-cooled auto-transformers, while that on the locomotive is air-cooled

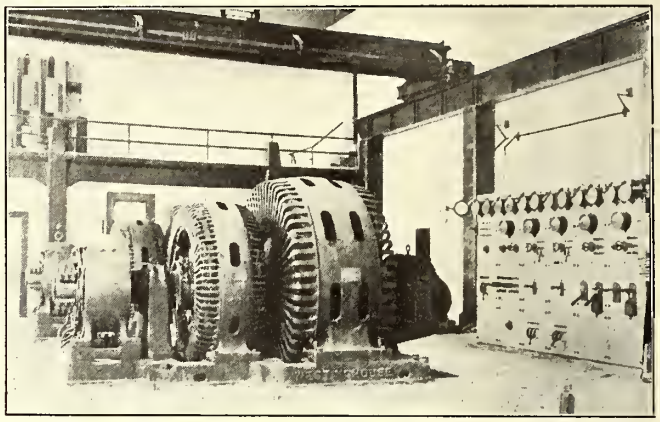


Visalia Single-Phase Railway—Combination Passenger and Baggage Car

from the motor-driven blower equipment furnished for the forced ventilation of the motors.

The 45-ton electric locomotive is of the double swivel truck class, provided with car type of cab, and has the following general over-all dimensions: Length over bumpers, 29 ft.; extreme width, 9 ft. 6 in.; height, rail to top of cab, 11 ft. 7 in.; rigid wheelbase, 7 ft. 4 in. With its four 125-hp motors connected to 36-in. wheels through a gear reduction of 66 to 17, this locomotive is capable of developing a continuous drawbar pull of 4500 lb. at 20 m.p.h. on level track. The full-load drawbar pull is 9000 lb. at 17 m.p.h. on the level. The maximum starting drawbar pull is 17,000 lb.

The capacity of each substation was designed to take care of the electric locomotive fully loaded, or one train of two motor cars and one trailer. In general service only single-motor cars are operated, without trailers; but when crowds



Visalia Single-Phase Railway—Frequency Changer and Exciter

are to be handled or the traffic conditions warrant, three-car trains are run. As an operating test, a six-car train has been successfully operated over the entire system. The maximum regular operating speed is 45 m.p.h., although a single-motor car has developed 62 m.p.h. The fast cars of the system run from Visalia to Exeter in 23 minutes, and from Exeter to Lemon Cove in 21 minutes, equivalent to a schedule speed of 31 m.p.h.

A recent incident provides evidence of the ample tractive power of the locomotive. While doing some switching around the yard at Exeter, in order to get hold of a certain car it was necessary for the electric locomotive to move a train of 40 standard refrigerator cars standing in the way. Twenty-eight of these were loaded, making the total weight of the train 1044 tons, which was handled and switched around the yards by the electric locomotive without special effort.

POWER CONSUMPTION

The following figures will afford some idea of the economy with which this single-phase road is operating. During a period of 40 days over which readings were taken the average power consumption of the locomotive was 72.4 watt-hours per ton-mile. During 60 days the average output of the frequency changer substation was 70.25 watt-hours per ton-mile, although during another period of 30 days, when operating conditions were better, the average station output was 66.6 watt-hours per ton-mile. During 60 days of operation of the motor cars the actual power consumption at the car was found to be 55.9 watt-hours per ton-mile.

ACCIDENTS REDUCED BY PAY-AS-YOU-ENTER CARS IN CHICAGO

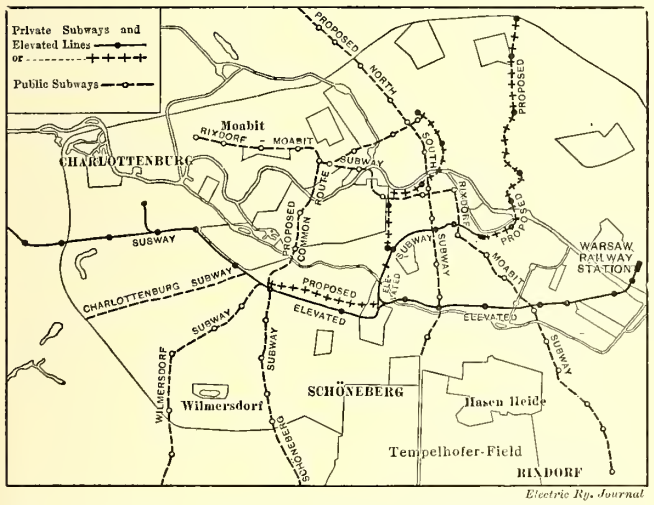
The Chicago City Railway has compiled comparative statistics of accidents before and after the introduction of pay-as-you-enter cars on its principal lines. Comparing the period from Nov. 24, 1906, to Jan. 31, 1908, which included but two months' operation of pay-as-you-enter cars on one line only, with the period from Nov. 24, 1907, to Jan. 31, 1909, during which pay-as-you-enter cars were in service on all trunk lines, the number of boarding and alighting accidents, accidents due to falling while the cars were rounding curves and accidents to persons stealing rides on cars was reduced 31.9 per cent.

PRESENT AND PROPOSED BERLIN SUBWAYS

The wonderful growth of Berlin in the last decade has led to the formulation of a bewildering array of rapid transit schemes. The situation is rendered extremely complicated in a political sense also because the suburbs of Berlin are self-governed while the royal government itself cannot act in an entirely unbiased manner since it is the owner of the local steam lines. Hence, even if the municipalities agree upon a certain plan of construction and operation, the routes may have to be changed if the steam lines would be seriously affected. Furthermore, the Berlin municipality would have to reimburse the Great Berlin Street Railway Company for any traffic losses incurred through the building of competitive lines.

PRESENT RAPID TRANSIT

Outside of the Government's steam lines, known as the Stadtbahn, which passes through the center of the city on an elevated structure, Berlin now has but one railway system besides the surface lines. This is the combined underground and elevated, owned and operated by a company known as the Gesellschaft für elektrische Hoch-und-Untergrundbahnen. The line runs as a double-track route practically east and west, except for a one-station stub in the western end of the city and a northern branch in the central business district. Of the total route length of 17.8 km (11 miles) only the eastern, or working, district section is elevated throughout. Through trains are operated over the triangular junction shown on the map between the western stations to the northern terminal at Spittelmarket and the eastern terminal at Warsaw Bridge; and also between Spittelmarket and Warsaw Bridge. No transfers, therefore, are necessary. In any event, there is little likelihood of boarding the wrong cars as the destination of the next train is always indicated by sliding metal signs hung out by the station despatcher. Each car also contains a conspicuous map of the system, so that a passenger can quickly rectify his mistake should he be on the wrong car.



Map of Berlin, Showing Present Elevated-Subway Line and Other Routes Proposed or Under Construction

The cars, which have longitudinal seating throughout, have no platforms, but are entered by two side doors which usually are opened by the passengers and closed by station platform men. This door-opening practice is not as dangerous as it would be in the United States, as the German passenger has acquired the habit from traveling in the compartment cars on the steam railroads. Nevertheless, the absence of train guards makes the stops appreciably longer than they would otherwise be, especially in periods of heavy service. The drawback of the custom was very apparent on Aug. 28, 1908, when the expected arrival of Zeppelin's airship at Berlin brought out vast numbers of people to coigns of vantage. On this occasion there were considerable delays in starting the trains and even the well-drilled Berliner was in danger of riding second-class on a third-class ticket. Another drawback to the rapid handling of large crowds arises from the system of zone fares, because every passenger must stop to have his ticket punched on entering the platform and to have it collected when leaving his terminal station.

The use of the zone-fare system on the Berlin rapid transit lines is in direct contrast to the practically universal 2½-cent fare of the street-railway company. As a result it has been necessary to give a frequent service with two- to four-car trains, and even to include smoking cars or smoking compartments to induce the public to patronize the service. The fares are based on the number of station stops made after the first station has been left. When riding third class, the fares are as follows: Four stops, 2½ cents; seven stops, 3¾ cents; 10 stops, 5 cents; 13 stops, 6¼ cents; 16 stops, 7½ cents. The corresponding second-class fares are: 3¾ cents, 5 cents, 7½ cents, 8¾ cents and 11¼ cents. The only reductions from these fares are made on certain early trains, on which the highest third-class fare is 6¼ cents and the highest second-class fare 7½ cents. As it has been found that these fares are rather high for Berlin conditions, it is proposed to modify the zone system in such a way that instead of charging 1¼ cents more for every three stations, the additional charge will include more stations the further out the passenger rides. For instance, this addition could cover three stations in the first extra fare zone, four in the second, five in the third, etc. One of the regulations of the company permits passengers to have their money refunded for any delays exceeding 10 minutes.

The experiment of having two classes of cars in city service was introduced because it was already in vogue on the local steam lines or Stadtbahn. While this provision satisfies the caste feeling of a portion of the public, it is hardly a financial success, for not more than 15 per cent to 20 per cent of the passengers pay the higher fare. As a matter of fact, the second-class cars on the eastern or workmen's section are practically empty, so that the second-class cars have a great deal of dead mileage. Both classes of cars are clean and comfortable and offer no material difference except in the seating, which is of wood in the third-class and of leather in the second-class. During 1908 the company carried 44,639,029 passengers, an increase of about 3,000,000 over 1907. The income for the later year was 5,763,396 marks ($1,440,849), an increase of $125,646. The heaviest traffic on any one day was 200,000 passengers. The total number of train-miles in 1908 was 1,980,830, made up chiefly of three and four-car trains. According to Councillor Kemmann (retired), of Berlin, the density of travel was 4½ passengers per car-kilometer (2.79 per car-mile), exceeding that of most of the London underground railways. The rolling stock at the end of the year 1908 comprised 114 motor-cars and 87 trailers, but 25 cars more were recently placed in service.

It may be interesting to mention that about one-sixth of the cardboard fare tickets are sold through slot machines similar to the American chewing-gum delivery devices. Although the machines will respond to slugs or to other coins of like weight, the losses from this source do not amount to more than $37.50 a year out of 7,500,000 sales. In one instance, where many slugs were being used at a certain station, the petty swindlers were caught in the following ingenious manner: The coin tube of the machine was prolonged so that the inserted piece would fall into a small room behind occupied by a watchman. As soon as a false coin or slug appeared, the watchman rang a bell and the malefactor was promptly captured by the nearest station guard.

PROPOSED EXTENSIONS AND MUNICIPAL SUBWAYS

The northern or Spittelmarket extension of the underground railway was opened in October, 1908, and permission has been obtained to extend this route northwesterly, as shown on the map previously mentioned. The authorities have also requested the company to four-track the section between the triangle and Wittenberg Platz, thereby changing the triangle into an ordinary crossing.

This project is intimately connected with the recently started subway of the Wilmersdorf municipality for the tracks of the latter to join the underground railway company's extension from Wittenberg Platz to Nürnberg Platz, as shown on the map.

The Wilmersdorf line is to run underground for 3.1 miles to Rastatter Platz, whence a shuttle service will be operated for 1.6 miles. Thus this line will work in harmony with the present underground system and the tunnel and car dimensions will be practically alike.

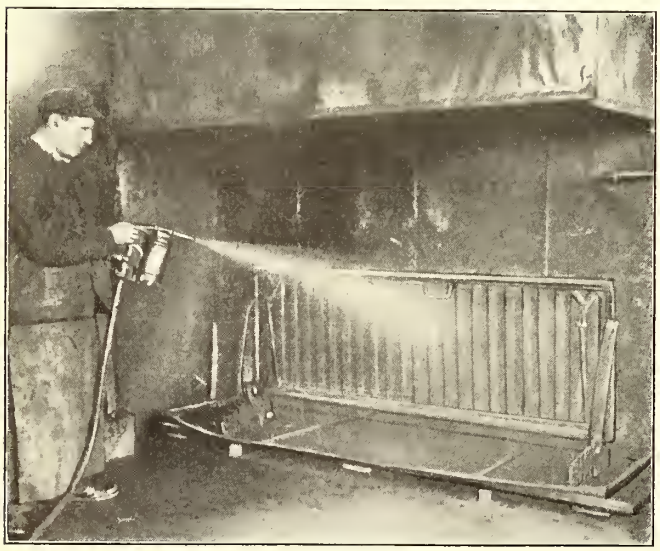
The municipality of Schöneberg is building a subway 2.17 miles long which will run at first only to Nollendorf Platz, where there is an elevated station of the present rapid transit company. Should Schöneberg build a station at this site, passengers who desired to go down town would have to ascend over 32 ft. No provision has been made for transfer or interchange of traffic at this point because the municipality could not be made to understand that the introduction of a connection point so far downtown would necessitate an extra charge by the private subway company on account of the mileage lost in bringing empty cars from the end of the line.

The suburb of Charlottenburg also desires to have a subway, but is undecided whether it shall have a shuttle service or join the Schöneberg line at Nollendorf Platz and thence proceed downtown over a new and common route, which would terminate at Friedrichstrasse, a main thoroughfare.

The Berlin municipality has received approval to build a north-south underground railway, which will be 5.11 miles long. It is proposed to have a wider tunnel than those used in the other projects. The cars will also be wider, and it is quite possible that they will be furnished with automatic doors. The design of the Illinois Central car is being studied in this connection. The Berlin municipality is also planning a subway 6.01 miles long to join the working districts of Rixdorf and Moabit.

PAINTING FENDERS AND TRUCKS WITH AN AIR-BRUSH

The accompanying illustration shows an economical method of painting fenders by coating them with a tar varnish as sprayed from an air brush at 80 lb. to 90 lb. pressure. The fender is set up under a hood which is provided with air-blowing connections for drawing up the varnish vapors. The air brush enables two men to paint 16 fenders an hour, as against three fenders painted by hand in the same time. The air



Painting Car Fenders a Varnish Color with Compressed Air

painting is also superior to the old hand method as there is no tendency for the paint to gather in lumps. The varnish which gets by the grids is caught in catchpans, the contents of which are afterward removed for re-use.

The same method has been applied to truck painting without using an exhaust hood. First the trucks are thoroughly scraped and cleaned with compressed air. By using the air brush, one man can coat a truck with a mineral quick-drying paint in one hour or about one-fourth the time required by hand.

TESTIMONY ON VALUATION OF CONEY ISLAND & BROOKLYN RAILROAD

Statements showing the deficits from early operation of the Coney Island & Brooklyn Railroad have been presented before the New York Public Service Commission, Second District, by Frank R. Ford, in the case involving valuation of the property of the company. These statements supplement the testimony of Mr. Ford, of which an abstract was given in the Electric Railway Journal for Dec. 25, 1909, page 1263. At the hearings intervening between the completion of his direct testimony and the present time Mr. Ford has been cross-examined by G. H. Backus, assistant counsel for the Commission. The cross-examination, however, has brought out few points that were not covered in the direct testimony.

A statement published in this issue shows the net income of the company as stated in reports to State engineers from 1862 to 1882, to the State Railroad Commission, from 1883 to 1906, and to the Public Service Commission from 1907 to 1909. Against the net results for these years there is charged the actual interest paid on funded and floating debt. Dividends on the capital stock were deducted at what Mr. Ford assumed to be a reasonable rate, 8 per cent from 1862 to 1884, and 6 per cent after 1884. The larger rate assumed prior to 1884 was based on the fact that before that year the bonds of the company bore 7 per cent interest and it was Mr. Ford's opinion that 8 per cent would represent the usual rate during that period for stock of the character under consideration. With these interest and dividend charges a deficit was shown for every year of operation of the horse period. The total deficit for the period was $846,856. In applying the same process to the transition period from horse to electric power, a net deficit was shown of $74,161, making a cumulative deficit of $921,017. During the electric period the surplus over the assumed reasonable rate of dividend was $783,119, so that at the end of the electric period the cumulative deficit as of June 30, 1909, was reduced to $137,898. If the argument was carried a little further and it was assumed that as the rates of dividend stated had not been paid and the stockholders therefore had not received the use of the dividends, an additional deficit could be added. If the use of the dividends was assumed at 7 per cent interest compounded annually up to 1884 and 6 per cent interest after that date the cumulative deficit with interest for the horse period amounted to $2,945,085, increasing to a total of $3,799,246 at the end of the transition period and to $7,663,654 at the end of the electric period.

Other statements presented by Mr. Ford showed that for the period of horse car operation the average rate of dividend was 1.2 per cent on the capital stock; for the transition period 3.7 per cent and for the electric period 8.6 per cent, giving an average for all the periods from 1861 to 1909 of 5.9 upon the outstanding stock.

Mr. Ford had been unable to find the original contract for the construction of the road, but checked the amount of the property account at the end of the year 1862, $501,364, by an estimate of the probable cost of construction of the amount of property which the records showed the company had on hand at the time. The physical property then consisted of 15 miles of track, of which approximately 6 miles was a graded right-of-way; 20 cars; approximately 80 horses and 30 sets of harness; barns, shops, office and real estate. By applying the unit costs of construction of horse railway and equipment, allowing a reasonable contractor's profit, costs of engineering and superintendence, interest and taxes during construction and costs of organization and obtaining franchises, an approximate estimate of $516,900 was made, comparing with $501,364, as shown in the statement.

The development of the property account, as shown on one statement, included a reduction of the total to the cost per mile of track owned. Starting with the initial cost of $501,364, or $33,400 per mile of track owned, the cost per mile reached $47,400 in 1890, the end of the horse period. During the transition period the cost rose to $63,800 per mile, standing at

that figure in 1894. From that time, with electric operation, the cost increased rapidly, reaching $112,100 in 1898 and $164,000 on Aug. 1, 1909.

A statement was presented by Mr. Ford to show that no large street railway company in America had accumulated a depreciation or renewal reserve fund covering both wear and tear and obsolescence of more than approximately 3 per cent of the cost of property. B. J. Arnold's estimate of obsolescence of the Coney Island & Brooklyn Railroad property was about 20 per cent of the cost of the property. Mr. Ford desired to fiscal year was that of the Milwaukee company, $2,641,707, or 7.8 per cent of the total cost of the property, but the cost of property in this case included the lighting and heating business and the fund represented largely reserves for fire insurance, injuries and damages and miscellaneous, so that but a small part of this fund was represented by the reserve for obsolescence of the street railway property. The Twin City Rapid Transit Company, of Minneapolis, showed the largest street railway depreciation reserve of 2.75 per cent of cost of property.

CONEY ISLAND & BROOKLYN RAILROAD INCOME ACCOUNT BASED UPON A REASONABLE RETURN ON CAPITAL, SHOWING DEFICIT FROM EARLY OPERATION.—Presented by MR. FORD.

	Net income	Interest paid on funded and floating debt	Dividends—Reasonable rate—8 per cent to 1884, 6 per cent after 1884	Total charges for capital	Deficit for year	Cumulative deficit	Annual interest on cumulative deficit—7 per cent to 1884, 6 per cent after 1884	Cumulative deficit with interest
HORSE CAR OPERATION.								
1862	$6,874	.....	$39,504	$39,504	$32,630	$32,630	.....	$32,630
1863	—4,233	.....	39,541	39,544	43,777	76,407	$2,284	78,691
1864	9,148	.....	39,792	39,792	30,644	107,051	5,508	114,843
1865	4,127	$10,781	40,000	50,781	46,654	153,705	8,039	169,536
1866	—3,638	10,777	40,000	50,777	54,415	208,120	11,868	235,819
1867	—236	12,570	40,000	52,570	52,806	260,926	16,507	305,132
1868	—18,049	12,054	40,000	52,054	70,103	331,229	21,359	396,594
1869	13,067	16,635	40,000	56,635	43,568	374,597	27,762	467,924
1870	12,897	17,320	40,000	57,320	44,423	419,020	32,755	545,102
1871	10,144	17,280	40,000	57,280	47,136	466,156	38,157	630,395
1872	27,699	18,888	40,000	58,888	31,189	497,345	44,128	705,712
1873	20,567	22,555	40,000	62,555	41,988	539,333	49,400	797,100
1874	43,094	22,377	40,000	62,377	19,283	558,616	55,797	872,180
1875	25,091	22,893	40,000	62,893	37,802	596,418	61,053	971,035
1876	24,427	22,483	40,000	62,483	38,056	634,574	67,972	1,077,063
1877	35,713	21,411	40,000	61,411	25,698	660,172	75,394	1,178,155
1878	48,980	21,021	40,000	61,021	12,041	672,213	82,471	1,272,667
1879	43,176	20,230	40,000	60,230	17,054	689,267	89,087	1,378,808
1880	43,782	20,157	40,000	60,157	16,375	705,642	96,517	1,491,700
1881	53,640	19,462	40,000	59,462	5,822	711,464	104,419	1,601,941
1882	56,800	19,980	40,000	59,980	3,180	714,644	112,136	1,717,257
1883	60,393	21,013	40,000	61,013	620	715,264	120,208	1,838,085
1884	53,650	20,192	40,000	60,192	6,542	721,806	128,666	1,973,293
1885	10,100	17,235	30,000	47,235	37,135	758,941	118,398	2,128,826
1886	35,357	16,860	30,000	46,860	11,503	770,444	127,730	2,268,059
1887	36,306	15,375	30,000	45,375	9,069	779,513	136,084	2,413,212
1888	28,234	15,000	30,000	45,000	16,766	796,279	144,793	2,574,771
1889	20,073	15,000	30,000	45,000	24,927	821,206	154,486	2,754,184
1890	20,080	15,730	30,000	45,730	25,650	846,856	165,251	2,945,085
Total	$717,263	$465,279	$1,098,840	$1,564,119	$846,856	$846,856	$2,098,229	$2,945,085
TRANSITION PERIOD—HORSE TO ELECTRIC OPERATION.								
1891	$33,968	$30,908	$30,000	$60,908	$26,940	$873,796	$176,705	$3,148,730
1892	60,185	34,104	30,000	64,104	3,919	877,715	188,924	3,341,573
1893	59,570	37,169	44,994	82,163	22,593	900,308	200,492	3,564,658
1894	66,861	27,582	59,988	87,570	20,709	921,017	213,879	3,799,246
Total	$220,584	$129,763	$164,982	$294,745	$74,161	$921,017	$780,000	$3,799,246
ELECTRIC OPERATION.								
1895	$105,536	$28,208	$59,988	$88,196	$17,340(A)	$903,677	$227,955	$4,009,861
1896	119,319	32,500	60,000	92,500	26,819(A)	876,858	240,592	4,223,634
1897	99,017	35,000	60,000	95,000	4,017(A)	872,841	253,418	4,473,035
1898	324,721	151,723	120,000	271,723	52,998(A)	819,843	268,382	4,688,419
1899	408,776	175,024	120,000	295,024	113,752(A)	706,091	281,305	4,855,972
1900	470,639	190,078	120,000	310,078	160,561(A)	545,530	291,358	4,986,769
1901	536,473	196,079	120,000	316,079	220,394(A)	325,136	299,606	5,065,981
1902	527,044	198,702	120,000	318,702	202,342(A)	116,749	303,959	5,161,598
1903	489,083	200,221	120,000	320,221	168,862(A)	52,068(A)	309,696	5,302,432
1904	471,914	206,144	120,000	326,144	145,770(A)	197,838(A)	318,146	5,474,808
1905	424,750	230,656	120,000	350,656	74,094(A)	271,932(A)	328,488	5,729,202
1906	397,605	249,040	120,000	369,040	28,563(A)	300,497(A)	343,752	6,044,389
1907	273,649	253,450	120,000	373,450	99,801	200,696(A)	362,663	6,506,853
1908	164,735(B)	248,003	149,398	397,401	232,666	31,970	390,411	7,129,930
1909	323,813	250,825	178,916	429,741	105,928	137,898	427,796	7,663,654
Total	$5,137,074	$2,645,653	$1,708,302	$4,353,955	$373,119(A)	$137,898	$4,647,527	$7,663,654
SUMMARY.								
Horse car operation	$717,263	$465,279	$1,098,840	$1,564,119	$846,856	$846,856	$2,098,229	$2,945,085
Transition period—horse to electric operation	220,584	129,763	164,982	294,745	74,161	921,017	780,000	3,799,246
Electric operation	5,137,074	2,645,653	1,708,302	4,353,955	783,119	137,898	4,647,527	7,663,654
Total	$6,074,921	$3,240,695	$2,972,124	$6,212,819	$137,898	$137,898	$7,525,756	$7,663,654

(A) Surplus. (B) After including in operating expenses the following renewals shown as betterments in company's balance sheet: 1908, $86,498; 1909, $101,316; total, $187,814.

NOTE.—The first two columns of this statement were prepared from reports to State Engineers from 1862 to 1882, to State Railroad Commission from 1883 to 1906 and to Public Service Commission, 1907 to 1909.

show that the deduction of an allowance for obsolescence in a rate case was purely a theory and one that had never been substantiated by the current practice of the industry in this country. Of the 20 largest companies in the United States and Canada, seven showed the accumulation of depreciation funds from earnings, the systems of Minneapolis, St. Louis, Milwaukee, Montreal, Buffalo, Brooklyn and Boston. The largest amount of credit to depreciation or renewal reserve shown on the balance sheet at the end of the

During the cross-examination, Mr. Ford reiterated his testimony that sooner or later fares would have to be determined on a passenger mile or length of ride basis. He said that provision was made for obsolescence in the manufacturing industry in the selling prices of the products sold, but that the rates charged for street railway service had never been high enough to provide for this element of depreciation. The retirement of obsolete equipment was always accompanied by increased economy or efficiency through the adoption of im-

proved standards, but the great transitions from horse to cable and cable to electricity had to be made by increase in the property account, as the earnings were not large enough to provide the necessary funds for such improvements.

EFFECT OF IMPROVEMENTS IN OLD TYPES OF ELECTRIC RAILWAY EQUIPMENT ON MAINTENANCE

At the December meeting of the Boston section of the American Institute of Electrical Engineers, Paul Winsor, chief engineer of motive power and rolling stock, Boston Elevated Railway Company, gave a talk on improvements in old types of equipment. Mr. Winsor stated that the company was one of the first in the country to be equipped with electric traction, and this gave it experience with the earliest forms of railway motors, including the F-30, S.R.G., W.P.'s, etc. The company still has many W.P. motors in operation, and it now has 500 GE-800 motors, with later types which have superseded the older machines. In the power station work of the company the first machines used were the old Thomson-Houston D-62 type, and some of these are still in actual operation every night during the peak load at the Allston power station. Later the company used some 300-kw machines, replacing them by 500-kw multipolars. Some of the latter are in use at present in the East Cambridge station. One is running as a booster with series fields only. Engine type machines followed and the latest generators are of the interpolar type.

Referring briefly to the system of analyzing car defects in Boston Mr. Winsor stated that in the past three years these have been cut down from about 50 per day to 17 per day. The details of this system have been fully described in the Electric Railway Journal. Passing to power station questions, the speaker spoke of a 1500-kw generator which had given trouble from sparking and was improved somewhat by slowing down the engine. Special care was taken to secure proper brush-holder operation. On some of the older machines the company has entirely changed the type of brush-holders to conform with the practice in later-designed generators. Emery cloth is no longer used in dressing down commutators and very little sandpaper is employed. One thing which helped is the method of cleaning a machine in shutting down. The company had a d. c. turbine machine which was very sensitive on the commutator, and it learned much from that. Before shutting down the machines are thoroughly cleaned, all the oil and lubrication being taken off the commutator, so that when the machines cool off the oil does not harden and injure the commutators. Without thorough cleaning there will be gum on the commutator, which is blotchy, and which starts sparking as soon as operation begins again. The 1500-kw machine was tested for distribution of voltage around the commutator. In some cases the balancing rings were disconnecting entirely; in other machines tested it was found that the brushes should not be set on the diameter—that the machine was enough out of balance on the different poles to require brushes not to be placed an equal number of bars apart. Again, in handling the machines, it was the tendency of the operator to adjust too much for the load, and the result was that instead of getting the spark from the top of the brush, there would be a spark under the brush, which tended to honeycomb the brush and give a bad-running commutator. The company has also gone carefully over the equalizing and compounding of its generators, so that the machines are very much more in harmony, which has been strikingly evidenced this winter in the loads which have been carried with much more ease than in past years.

Taking up the car equipment problem, Mr. Winsor stated that the older apparatus is not being used in as hard service as formerly, but it is still actively employed. The single item of broken car glass has been greatly reduced by holding somebody responsible for broken panes. It was found that the motormen had been breaking the glass by dropping the windows, largely because of the absence of proper latches, and this has been remedied to a great degree. Motormen do not now report as many cars as being defective when there is nothing the matter with them, as formerly, for if they report that the brake is out of order, for example, the motormen are required to show wherein the trouble lies.

The defects per 10,000 motor miles with the W.P. motors have dropped from 4.5 to 0.7 or 0.8. The company has improved this type of motor. The commutator has been undercut, and where the life of the commutator was formerly nine months, it now promises to be four or five years or over. This is partly due to slotting the mica bars, partly to a more satisfactory quality of brush, partly to turning the commutators often to keep them in good condition, and also because the motors are used on more suitable runs. These motors were originally equipped with thirteen-turn armatures, which gave a speed of 15 m.p.h. The demand for higher speed led to the removal of two turns, and when the second was taken off the motors became overloaded. They have since been put on lighter service, with better results. These motors were not very well bolted together in the frames, and they rub and pean each other out. The company has had to throw shells away because they were peaned out and did not give room for the armatures between the pole pieces. It was found that the foremen had put washers on the bolts in some cases, and this gave a considerable air gap. The motormen liked such equipments on account of their high speed. Mr. Winsor said that better results were obtained from the GE-800 motor than from the W.P.-50's, but the latter was improved poroportionately. The Westinghouse 12-A and the 68 were next used. The GE-58 is by no means a modern motor, but two years ago the company bought another thousand of these motors. The reason was that such good results were obtained from the GE-58 that, although their efficiency was not so high as might be expected from the most modern machines, it was desirable to install the older ones. Mr. Winsor stated that the company had 1000 Westinghouse-121 motors, and that the latest that has been in service any length of time is the GE-202 motor.

About two years ago the company started to put in Westinghouse-301 motors in the elevated service in place of some of the old types. Certain troubles were experienced with those first received, but for the last 18 months not one winding has been lost and but one armature. The latter was lost shortly after being installed on account of some fault under the pan. The latest motors which the company is installing are the GE-68, which is not an interpole motor, and the Westinghouse-312, which is of the interpole type. One thing which helped these motors was to go over the resistances and control connections. The equipments bought from time to time were originally set as the manufacturers advised, and in other instances the company made its own setting. A reduction in power required during acceleration was secured in several instances by modifications of the resistance setting made by the company.

The traveling armature tags used in Boston help a great deal. If an armature is reported to a car house foreman for flashing and the tag shows that the armature gave long service in another car house without trouble, the man who has it last is more likely to overhaul the armature and try to locate the trouble himself rather than to send it into the shop. The question of fields is a very important one in connection with armature trouble. It is very easy to take an armature out because it is burned or flashes, put another one in and have the same trouble. A few years ago that happened repeatedly. The same car would change armatures perhaps three times in one week. It is doubtful if that would happen to-day under the system of maintenance records and their study which is in vogue. Certainly after the second time the car house foreman would know there was something wrong with the motor, probably with the fields, and he would try to find what the field situation was. The old cotton fields charred out with the service which the company gave them. Within the past two years the company has had over 2000

motor fields on which the cotton was charred, and the coils would have been condemned under the old arrangement. The company now fills these with compound and has not lost one of the reclaimed fields. It has no impregnating plant. In winding the new coils very much the same result is obtained by using a mixture of japan and French chalk, and really filling the space up and making a solid field, so that, although the cotton chars, the wires cannot come together. The first mixture the company used was japan, simple varnish, and ordinary portland cement; but it was found that the portland cement had no effect except as a filler, and japan and French chalk are now being used. The japan divides the chalk up into thin layers so that it dries and the whole makes a very solid mass.

In the company's efforts to teach its men how to handle the cars in a better manner some interesting demonstrations have been made. One of these was to show the proper way to speed up, without skidding the wheels. The temptation on a bad rail is to speed up, and if the wheels spin, to speed up more. A car was put on a short piece of track, and the instructor then asked the men to see how quickly they could move that car from one point to another 150 ft. away. Invariably they all spun the wheels. One of the company's engineers then took the car and made the quickest time of all without spinning the wheels, simply feeding the controller handle slowly. Mr. Winsor said that one might talk all night to the motormen on the theory that as long as one spins the wheels progress cannot be made, but that it would not appeal to them as it does to see the actual result tried out on the track. Within six months the company has put an instruction car on the road, with a schoolmaster. It is too early to see the results, but it is expected to be of benefit to the company. The schoolmaster understands thoroughly that his whole business is personal work with the men. He cannot give them lessons to learn, but he must get them interested, and in this he is succeeding very well. A recent experience with a motorman who had been on the road for many years is representative. The motorman had been reported for using too much power at electric track switches. These switches are operated by current from the trolley wire. To throw the switch in one direction the car passes under it with the power on, and to throw it the other way, the car coasts under the switch. The motorman had been sent to the schoolmaster for instruction, and had declared that the switch could not be thrown short of three notches of power. The schoolmaster went out on the car with this motorman on his last trip, and demonstrated on the spot that the switch could be thrown with a single notch, and the lesson was thus driven home in a practical way.

In conclusion the speaker described the monthly meetings of the car house foremen in Boston and showed how the records in the car defect analysis system are transcribed on large sheets, and curves plotted, showing on a large scale the variation in defects from different causes from month to month and year to year. The car house foremen have complete record blanks starting with a daily log sheet on which troubles are put down. If a car misses a trip because of some fault it is called a defect. The car houses also keep mileage records. All their repairs are kept on a mileage basis. A certain kind of equipment has to be inspected every 1000 miles, etc. These log sheets come to headquarters and the information is posted there, so that finally the company establishes its records for the entire system. Tabulations are made on cards for different classes and types of equipment and the most accurate information concerning troubles is thus constantly at hand. Thus, there is a motor card for each type of motor, 50-C, 202, etc. The number and kind of failures each day are tabulated and these are footed up for the month. From the monthly records the company knows what is the most frequent kind of trouble and goes after it. Sometimes the trouble can be remedied and sometimes not. These monthly meetings have done a great deal of good. Sometimes a man gets "hauled over the coals" and does not have a happy time that evening, but most of the meetings are not of that nature. The men talk over things and tell their experience. Very good results have come from giving a man a certain subject to post himself on and have him give a talk. It is surprising how many of the foremen have risen to that point. These talks are often very interesting and have done a great deal toward making the men interested in their work. At first the meetings were considered a great hardship, but as time went on the results began to be clear. The men see the results of their past two or three years' work and are becoming more and more interested. Mr. Winsor closed with a brief reference to the company's standardization of brake shoe heads. These now take in practically every case a standard shoe, instead of having a large variety of shoes which had to be bolted on. Before, it was often necessary to break the bolt in order to take off the shoe. It is now held in place by a key. The number of resistance grids has been cut down from 14 to 3. These old equipments cannot be made as good as new ones, but much can be accomplished in the way of improvement with a little care and knowledge of what one is doing.

DISCUSSION

In the discussion of Mr. Winsor's remarks, M. V. Ayres, electrical engineer of the Boston & Worcester Street Railway Company, stated that the work of the Boston Elevated Railway Company well illustrated the saying that a problem once stated was half solved. By finding out what the matter was and the nature of the particular troubles the company has enormously reduced their frequency. Thus, tests on the car resistances showed that much motor trouble was due to the comparatively simple matter of irregularly adjusted resistances. Mr. Ayres said that the causes of motor troubles in his opinion fall into three classes: overheating, which is due to continuous overload; commutator troubles, which are due in a considerable degree to momentary overloads; and vibration, which is principally due to the way in which the motors are mounted on the cars. Commutator trouble is the thing which has been particularly remedied in Boston by resistance adjustment. Simply by cutting off the high peaks the trouble is greatly reduced. Overheating due to continuous overload can be reduced only by using a larger motor or using blowers to cool off the motor. The latter is not common practice except in the case of certain large locomotives. In the future it will probably be done frequently. The tendency is likely to be in the direction of using smaller and lighter motors cooled artificially.

Mr. Ayres stated that in his opinion vibration is responsible for a large portion of modern motor troubles, since stationary motors last much longer without repairs than car motors, even if the latter have the best of treatment. This is due largely to carrying the weight of the motor on the axle. It may be possible to devise some method of suspending the motor without mounting it directly on top of the car axle, perhaps spring-mounting it so that the present severe pounding will be decreased. Something of this sort with artificial ventilation will result in greatly reduced size and weight of parts and a greater life with less trouble.

Mr. Hamill, Schenectady, voiced his surprise at the success of the Boston Elevated Railway in modernizing the old "WP" motors, which have been obsolete for some 15 years. He stated that a railway motor has a remarkable life in the face of its conditions of operation. The armature trouble is often found to originate from something wrong with the fields and commutator trouble more often than anything else indicates brush-holder difficulties. Excess of lubrication may cause sticking of brushes or holders. All this appears at the commutator and not at the brush-holder, so troubles are very much isolated. Defects may also arise from the springs.

Prof. A. S. Richey, Worcester Polytechnic Institute, stated that the three most important things relating to the maintenance of car equipment and the reduction of cost, outside the shop, are the proportioning of resistances, the selection of proper gear ratios, and the proper instruction of the motormen. The matter of gear ratios deserves more attention and there are undoubtedly many cases where 50 hp motors are pretty well loaded which could be handled by 40-hp motors equipped with

gears of the proper ratio. Properly instructed motormen can save a great deal of power, perhaps more than in certain fine power station economies. A saving of a fraction of a kw-hour per car-mile is better than saving a fraction of a cent per kw-hour in the station, and it can be done by teaching the motormen. On one road about 10 recording wattmeters were installed to each 100 cars. It was at first planned to switch these wattmeters around from car to car, but the motormen became interested and the cars were switched around to different runs instead. The motormen paid no attention to the constant of the meter, but called the plain figures watts, reporting that they had made a certain run on 231 watts where they used to take 245. The officials of the company did not care how the figures were read so long as the power consumption was cut down. There was a good deal of rivalry between the motormen to see who could make the runs with the least power.

DISCUSSION ON POWER PLANT ECONOMY

The address by Paul Winsor was followed by a short talk by Prof. I. N. Hollis, of Harvard University, on Power Station Economy. Professor Hollis commented upon the transition state in which prime movers now find themselves, and passed to a broad discussion of the evils of underload operation. He reviewed the conditions surrounding the exhaust steam turbine installation of the Interborough Rapid Transit Company, New York, as discussed before the Boston section of the American Society of Mechanical Engineers recently, and abstracted in the Electric Railway Journal. The importance of a good load factor in relation to station economy was the principal theme, the desirability of cutting down the stand-by losses in the boiler room being specially emphasized.

Jas. D. Andrew, Boston Elevated Railway Company, referred to the importance of having apparatus of high quality installed in a plant with plenty of working space. Equipment should be kept up to its guarantees after it is put into permanent service. All equipment will degenerate if not kept up, and no company should hesitate to put all the improvements it can into the older machinery. Improvements in electrical apparatus are largely matters of detail, and these details can frequently be applied to old machines. Mr. Andrew did not consider the exhaust steam turbine applicable to Boston Elevated plants at present on account of their use of direct current. The company has found it impossible to run a turbine-driven generator at 550 volts direct current. An alternating current machine could not be put on the system to act as an independent unit without a governor, and even then it would not work out at all well, as it would have to be tied to the rest of the system through substations. In the Interborough installation, spoken of by Professor Hollis, the conditions were ideal for exhaust turbine operation.

M. V. Ayres, Boston & Worcester Street Railway Company, called attention to the difficulties of securing operation of generators at rated load. Hardly anybody has this load upon his plant. In the Boston & Worcester work the most economical load has been found to be the largest load which can be put upon a single unit, the machines being of the alternating current type, and the load fluctuating. The greatest station economy on this road is obtained when the engines are slowing down every little while on the peak of the load and simply carrying all they can. It does not pay to start another engine until the engines running are repeatedly slowing down under the load. This could not be done in lighting service. In regard to power station equipment, Mr. Ayres stated that he no longer favors the general installation of electrical auxiliaries. They should never be used in any place where the failure of an auxiliary will cause the shut-down of the main machines. Small steam turbines are preferable, notably in the driving of circulating pumps for condensers.

In order to comply with the terms of the recent concession to electrify the tramway system in Constantinople, the entire trackage is being completely rebuilt at a cost of $1,000,000. The cost of new cars, overhead lines and power distribution network is estimated at an additional $1,400,000.

ANNUAL REPORT OF NEW YORK PUBLIC SERVICE COMMISSION, FIRST DISTRICT

The report of the New York Public Service Commission, First District, for the year ended Dec. 31, 1909, has been submitted to the Legislature. An abstract of the features of the report relating to street railways discussed in the preliminary chapter follows:

"During the year the commission has considered 271 formal cases, of which 57 were not yet determined at the end of the year.

"The applications relating to securities concerned principally the issue of stock and bonds. The largest amount involved was in connection with the pending reorganization of the Third Avenue Railroad. Due application of the committee of bondholders of this company was denied and another application, asking the approval of $54,916,000 of securities, is now before the commission.

"Experience has shown that most matters relating to conduct of employees, minor defects of cars or tracks, and even deficiencies in service, will be determined satisfactorily by the companies when their attention is called to them, without the necessity of a hearing and a formal order. During the year 1335 informal complaints relating to railroad, street railway and express companies have been handled, of which 73 were not concluded at the end of the year.

EQUIPMENT AND SERVICE

"The equipment of the railroad systems in the City of New York is now in better condition than ever before. The cars are less noisy and they are cleaner and better heated, and, because of the thorough overhauling of the cars, required by the commission, there are fewer breakdowns and blowouts of motor boxes and fuses. A great reduction of such accidents on the Brooklyn Bridge has made possible considerably better service on that structure.

"The Brooklyn Union Elevated Railroad, under the direction of the commission, is changing the type of air brake on its elevated cars; the New York & Queens County Railway has been ordered to double-track its system and all the companies in the city have been required to adopt fenders and wheelguards of an approved type. Good equipment well maintained not only makes better service possible, but also reduces the number and seriousness of accidents. The following figures are of interest:

	1908.	1909.
Total number of accidents on street, "L" and subway and steam railroads within New York City	56,481	52,618
Number of persons killed	444	325
Number of persons and vehicles struck by cars	11,405	11,426

"The service rendered by transportation companies is also now better than ever before in proportion to the physical conditions and the volume of travel. Due to the orders of the commission, the maximum service is continued for a much longer period that heretofore, and the rush-hour service has been increased. Upon the Manhattan surface lines, for example, as to which service orders have been issued, a comparison of service rendered before and after the orders shows an increase varying from 11 per cent to 57 per cent.

"The matter of adequate service is a serious problem, for during each 24-hour period passengers equal in number to about 85 per cent of the entire population must be carried. Fully one-third of all the passengers traveling in one direction during the day are carried in two hours out of the 24; that is, one-third of the traffic comes in one-twelfth of the time.

"An annual count is made of the number of persons who cross the East River between Brooklyn and Manhattan and return during a 24-hour period. The following schedule shows the figures of travel in both directions for three years:

Routes.	Travel to and from Long Island, 1907.	Travel to and from Long Island, 1908.	Travel to and from Long Island, 1909.
Brooklyn Bridge	423,000	309,783	323,006
Williamsburg Bridge	163,000	183,233	206,606
Queensboro Bridge	Not open for traffic	Not open for traffic	26,300
Ferries	120,000	175,749	120,841
Interborough subway	Not open for traffic	159,708	193,784
Total	706,000	827,473	870,537

"The following figures indicate the extent of the transportation problem in New York City:

Year ending June 30.	1907.	1908.	1909.
Number of operating companies:			
Street or electric railway.....	29	30	33
Steam railroad (Staten Island)	2	2	2
Miles of (single track).....	1,597	1,636	1,646
Number of passenger cars.....	10,062	11,049	11,623
Number of officers and employees	*34,113	39,839	37,609
Miles run by passenger cars.....	252,783,198	273,788,406	272,369,956
Revenue passengers carried.....	1,322,816,965	1,365,169,472	1,409,132,118
Revenue passengers per day.....	3,624,156	3,729,971	3,860,635
Revenue for transportation.....	66,838,721	68,461,349	70,732,928
Total revenue from rail operations	68,318,881	69,941,968	73,646,417
Total expense of rail operations.	37,779,099	43,087,446	44,022,578
Net revenue from rail operations.	30,539,782	26,854,522	29,623,839
Operating ratio, per cent.....	55.3	61.6	59.8
Per car mile, cents:			
Revenue	26.1	25.3	26.8
Expenses	14.1	15.6	16.0
Net revenue	12.0	9.7	10.8

*An average for the year.

RAPID TRANSIT

"A number of additions to the subway now in operation have been constructed or are under construction under Contracts Nos. 1 and 2, under authorization by the commission. The shuttle service between the Bowling Green and Battery Park stations has been completed and is now in satisfactory use. The work of enlarging the Ninety-sixth Street subway station has not been completed, because the company has been required to develop a speed-control system which promises to afford the necessary relief to the train congestion at this point. On the upper portions of the lines the rapid growth of population and travel has necessitated additional station facilities. The company, under orders from the commission, is equipping its subway express service cars with side doors. This improvement is affording material relief, for a gain of four seconds in reducing station stops means the possibility of an extra 8-car train per hour. With 17 side-door trains in operation, the company's general manager states that there has been a 20-second saving. In addition, the station platforms on both express and local tracks are being lengthened at an expense of $1,500,000. This will allow a 25 per cent increase in the size of trains, that is, allowing 10-car express trains instead of 8 cars as at present.

"The commission has given exhaustive attention to plans for additional rapid transit routes.

RECOMMENDATIONS AS TO LEGISLATION

"Railroad Law.—The subject of transfers on surface lines in cities cannot be rightly adjusted until the railroad law is amended. Out-of-date provisions in the railroad law regarding changes are entirely discordant with the rate-making provisions of the later law.

"Without going into detail at this time regarding the many needed amendments to perfect the railroad law, the commission desires to call especial attention to the imperfections of the grade-crossing provisions.

"Public service commission law.—The ability of the commission to prescribe reasonable joint rates, including transfers, should be made clear and effective, especially since transfers have been so largely abolished by the various operating companies in Manhattan. Experience has shown that numerous improvements can be made in the law which will be equally beneficial to the public and the public-service corporations.

"Apart from such particulars as can now be adjusted in the light of actual experience, it has been found that in three most important features the phraseology employed fails to carry out the general purposes of the enactment. This has been brought about by the interpretation placed upon the law by the State courts.

"1. It seems to have been the intention of the law that the commission should be an administrative body with power to prescribe rates and facilities in accordance with a rule laid down for guidance in each case. For instance, rates should be just and reasonable; service and facilities should be safe, adequate and in all respects just and reasonable. This commission considered that, when it made a careful inquiry into the facts of each case and gave a fair hearing to all interested parties, its conclusion embodied in an order should go into effect the same as an enactment of the Legislature. The State courts have declared, however, contrary to the holding of the United States Supreme Court, that the words employed in the act make the commission a judicial or quasi-judicial body in respect to rates, and it would seem to follow in respect to service and facilities. Accordingly, the courts have declared that the propriety of an order of the commission in these respects can be considered and decided by the courts, which thus become substituted for the commission just as if the acts of the Legislature could be reviewed by the courts, and set aside because the record of evidence was not sufficient to support or validate a statute. The result is that orders of the commission which are contested do not go into effect at once, but can be kept in litigation for a long time, their efficacy thus being made to depend, not upon their correctness, but upon a written record of evidence.

"2. The public-service commissions law requires that, before construction or operation of a railroad under a franchise can begin, the approval and permission of the commission must be granted. As all franchises proceed directly or indirectly from the State, it was understood and expected that the commission would perform a useful State function in preventing franchises that disregarded the public interests. It is of the greatest importance that franchise terms should be harmonious in the cities of the State, and that extravagant and perpetual rights should not be granted to public-service corporations. The courts have held, however, that, inasmuch as the section in question provides that the commission shall determine whether a railroad is convenient or necessary, it is limited to a consideration of the present convenience and necessity of a railroad, quite regardless of the franchise terms that may be inserted by the city, and which may be considered by the commission as hostile to the public interests. The result is that the public-service law does no more than the railroad law, which has for many years required the State railroad board to pass on the question of public convenience and necessity.

"3. One of the main purposes of the law was supposed to be the prevention of stock-watering. The courts have held, however, that the words used in the section relating to this subject only require the commission to determine whether stock and bonds sought to be issued come within one of the four purposes stated in the section, i.e., the acquisition of property, construction of its facilities, improvement and maintenance of its service, or the discharge or refunding of its obligations. The result is that this construction of the words used in the act deprives the commissions of power to stop stock-watering, for it is easy for the companies to bring within the four legal purposes sums that never should be capitalized, as, for instance, expenses of operation, taxes, replacements, or even dividends. Capitalization except for proper capital purposes should not be allowed, but the present section as interpreted by the courts leaves the law ineffective in this regard.

"Although these decisions of the court have devitalized the public service commissions law, they serve to indicate the changes which should be made by the Legislature to bring the law back to its original intention. Powers in the commissions to regulate rates and service, to prevent construction under franchises that do not safeguard the public welfare, and to prevent stock-watering, have been considered the main advantages of the new law. Without them the commissions can hardly touch foundamental evils. It is highly desirable that the essential purposes of the law be re-established."

The Western New York & Pennsylvania Traction Company, of Olean, N. Y., recently announced that the 46-trip monthly commutation ticket books, good to the purchaser for passage between any two local points in New York State where the regular one-way fare is 10 cents or more, will be sold to persons between the ages of 5 years and 20 years at one-half the regular one-way fare. Heretofore the use of these books has been restricted to scholars. Monthly commutation books containing 52 coupons each good for passage between Portville and Olean, sold at $3.25 per book, are good for passage to the purchaser only; heretofore the use has not been restricted to purchaser.

OFFICIAL VALUATIONS OF PRIVATE PROPERTY*

BY FREDERICK W. WHITRIDGE, RECEIVER, THIRD AVENUE RAILROAD OF NEW YORK

Some years ago a very rich man who proposed to found a great institution of learning in one of the Far Western cities went to Cambridge to see what was being done at Harvard. He passed a day or two looking at its buildings, libraries and museums, and inquiring into the courses of study and the work carried on. At the end of that time he turned to those who were showing him about, and said: "Well, gentlemen, what is your whole plant worth?" They looked blank, and the millionaire reiterated: "What is the value of it—how much did it all cost?" The notion that Harvard University, the product of two centuries of time and of the lives and labors of thousands of good men, could be valued in money was strange; but the millionaire was insistent upon an answer, and one official finally said: "I suppose it cost perhaps so and so many millions"; and the plutocrat turned to his wife, who happened to be with him, and said: "Well, mother, I guess we can do better than that," and went away quite confident that it was within his power, by the mere expenditure of money, to at once produce an institution more valuable than Harvard University.

The Harvard representative at this conversation could not have been more aghast at the millionaire's question than I was when, some months ago, I received from the Public Service Commission of this district notice that it had undertaken the valuation of the property, tangible and intangible, of the street railways of this city, including one of which I happen to be the custodian.

I asked how it was proposed to make the valuation and what was the purpose for which it was to be made. In various forms I repeated these questions for more than a year, without any answer, until one of the commissioners, perhaps inadvertently, said that the purpose of the commission was, in brief, "to secure reliable information as to the value of the physical properties of the company for the purpose of being in possession of the facts necessary or important for its discharge of the duties devolving upon it in connection with issues of securities, passenger rates, etc.," and that I must be aware of it. That statement, if you please, being made with reference to a company of which all the securities had already been issued, and to a railroad and a community where the most widely known and universally accepted fact in respect to street service is that the fare of every passenger is fixed at 5 cents! This statement did not enlighten me, and for a long time I could not conceive what the commission was driving at. I have, however, now discovered what I suppose the most of you knew long ago—that the notion of a valuation of public-service properties originated in the State of Wisconsin, although it was first attempted to be applied in Texas, and that in Wisconsin there is a statute which provides for such valuation, primarily for the purpose of enabling the State to fix rates on the steam railroads, which would be more acceptable to the shippers; and in a recent address by Mr. Roemer, a member of the Wisconsin commission, I find the whole philosophy of a State valuation of public utilities expounded.

The New York commission for this district has apparently swallowed the Wisconsin doctrine whole, and is undertaking to apply it in a State where the Wisconsin statutes do not run. Mr. Roemer says that the duty of the valuation imposed upon the commission is the gravest and most important of all its functions, and asserts that "the value of every security of a public-service corporation in this State will be determined and perhaps irrevocably fixed by the appraisal made by the commission of such corporation, upon the credit of which such security will be issued. There can be no escape from this conclusion. Fair and reasonable as such appraisal may be, it will signify to the world that, in the future, public utilities in this State will cease to be a subject for speculative investment. It will also indicate that which is more important, to wit, that actual bona-fide investments in such concerns, when providently made, will be secure under State supervision, and the adequacy of the security will be maintained by strict enforcement of the law." These views I shall not undertake to discuss. Anybody who holds them is as much beyond the reach of any argument at my command as were those persons who some years ago believed that the relative value of two metals could be fixed by act of Congress. Mr. Roemer, however, goes on, as I understand him, to point out that the method of valuation—as if there were no other—is to have the engineering staff determine the "cost of reproduction."

*Abstract of an address presented before the American Economic Association, New York, N. Y., Dec. 30, 1909.

VARIOUS MEASURES OF VALUE

But Mr. Roemer omits to notice that besides the "cost of reproduction" there are other measures of value, such as market price, original cost, the rental value, all quite as efficient as the cost of reproduction. The salient fact about all but one of these methods of valuation is that, after all, they rest upon the testimony of experts. It is all very well to talk of a valuation by the State. That has an august sound, but when we come to examine the statement it shrinks, so that your State valuation is only the unsifted judgment or guess of one or more individual experts.

Now, with every respect in the world for science of every kind, and for those who are expert in it, I cannot but recall a remark made to me by Professor Huxley, of whom I was asking an expert opinion of our Government on a subject of which he had studied profoundly, and he said to me: "My dear Whitridge, there are, you know, three kinds of liars—liars, damned liars and experts."

I remember, also, in my early days at the Bar, I was directed to prepare a brief, based wholly upon expert opinions, to show that the Brooklyn Bridge would fall down, and in that brief I *proved* that the molecular rearrangement caused by the impact of the heavy traffic on the steel of which the bridge was constructed would result in a disintegration of that metal and the collapse of the bridge. If the theories of molecular action which then prevailed still hold true, that bridge may fall down at any moment, but fortunately I did not fix a date for the catastrophe.

I am personally quite unable, therefore, to look upon any valuation of anything with the complacency with which Mr. Roemer and his school regard a valuation of public utilities which rests entirely upon the judgment of experts. Assuming, however, that experts are to be depended upon absolutely, and that it is possible for a public body, speaking in the name of the State, to be willing to shelter itself behind expert opinion, it is quite evident, from the merest enumeration of the methods of valuation, that the conception of value is a very complex one, and it is easy to point out the inadequacy of any particular abstract method of reaching it.

The State has thus far generally undertaken to make a valuation of private property only for the purposes of various kinds of taxation, and it is important to note how it is made. In the first place, take the valuation of land, of real estate generally. In this country and in others where land is freely sold, valuations not only for the purposes of taxation, but for the purposes of sale, are very common; but such valuations are, so far as I know, invariably made with reference to the supposed present or prospective market value.

In the second place, take the valuation of personal property, for the purposes of transfer, inheritance and direct personal property taxes or the collection of duties. I believe that valuation for the purposes of the first three of these taxes is invariably fixed by reference to the market price ascertained from the dealers or published quotations, and for the purposes of customs duties the valuation is almost invariably fixed by the cost price, although in the case of personal effects where the cost price obviously no longer represents present value, our Government makes itself ridiculous at least 1,000,000 times a year—or would do so if it complied with the law—in the endeavor to have an official value such effects on the dock or in the public stores.

In the third place, take the State valuation of intangibles like franchises and good-will—for if competition in public utilities can be conceived under the Wisconsin doctrine, good-will must be recognized as an element of value—and it appears plain that the attempt to make such a valuation of franchises for the purpose of taxation has resulted in this State—and I know nothing of it elsewhere—in nothing short of a monstrous scandal. We have a State board of three persons whose sole duty it is to appraise franchises for taxation, which has been at work for 10 years.

The appraisals by this board of the street railway franchises in this city have been in litigation for nine of these years. The valuations have been reduced by the courts about 50 per cent. The board has gone gallantly on making its appraisals year after year, as if the courts had not spoken, and the courts will doubtless continue to perform their appointed task of correcting those appraisals. The theory on which this board of valuers proceeds I do not know, because they have not announced it, but I know of one instance in which the value of the franchises of a railroad was appraised by it as $40,000. Just after that appraisal was made the railroad, franchise, cars, roadbed and all appurtenances sold at auction for $500. The board of appraisers was furnished with an affidavit of the sale at that price, and a copy of the decree confirming it, and they thereupon reduced the value of the franchise, not to nothing, but from $40,000 to $20,000. The labors of this particular body of State functionaries instead of fixing values irrevocably, as Mr. Roemer dreams the State will do, have only opened a vista of litigation, apparently as long before as it is behind.

All the cases I have so far touched are comparatively simple, but when we come to the valuation of a public utility containing so many different elements as a street railway, an electric light, power or water plant the problem is vastly complicated and it is not surprising that the Wisconsin philosophers have frankly "funked" the whole thing and sought shelter for themselves behind the experts, and those gentlemen have in turn taken the line of least resistance, and say the value of a public utility is what it would cost to reproduce it. Is it? Is it?

If all experts agreed there would be less difficulty in accepting that measure of value, but I see no reason to suppose that experts in the employ of the State are any more nearly infallible than the experts in the employ of the great contractors, and the merest tyro in affairs knows that if bids were asked for the construction of a large public utility to-day the best contractors you could find would vary from 10 per cent to 50 per cent in their bids, and in this city I doubt if you could get any bid except for a percentage on cost. Nor is this remarkable in respect to railways, for the actual cost of a mile of underground electric trolley has varied from $64,000 in Washington to about $1,000,000 in New York.

"IRREVOCABLE" COSTS

Let us suppose, however, that the present cost of reproduction can be got at, it would obviously be unjust, either to the investors in the enterprise or to the public, unless it could be shown that the march of science had been stayed, and the prices of materials and the cost of labor had been as "irrevocably" fixed as they are in Mr. Roemer's vision of the world that is to be, and had not, therefore, changed since the date of production. The cost of reproduction, moreover, takes no cognizance of obsolete portions of a plant which contributed to its earning capacity and, therefore, as I contend, to its present value. The Third Avenue Railroad, for instance, was a horse railroad, then it was a cable railroad, now it is an electric railroad, and its security holders paid their money to construct those roads. The first two served their purpose and have ceased to exist. The Western Union has, I am informed, several millions of bonds outstanding which were issued for the money wherewith to lay cables, some of which have been lost in the primeval ooze at the bottom of the sea.

Now, if the cost of reproduction is the measure of the value of a property, and the aggregate of its securities is to be contained within that valuation, I suppose it must be a corollary of that proposition that the $5,000,000 of bonds issued by the Third Avenue for its cable plant and the other millions of Western Union bonds issued for its extinct cable should be surrendered by their owners, and perhaps filed with the statisticians of the Public Service Commission.

Finally, if we suppose that all the proposed valuations have been satisfactorily made, we must also suppose that civilized society has crystallized, as Mr. Roemer with his irrevocability would have us believe or Mr. Bellamy in his romance long ago imagined. If we do not so suppose, it must be conceded that the expiration of valuable patents, a decrease in population, bad times, increased prices of commodities or competition which might lead to the building of a new public utility alongside of an old one, may entirely alter the position of a public-service corporation and change every kind of value it may have except that fixed by the State.

Above all things, science must be chained, otherwise after the Public Service Commissions have got everything comfortably and "perhaps irrevocably" valued, somebody like Mr. Brennan with his monorail and gyroscope car—the most wonderful thing I have ever seen—may come along and, so far as railways are concerned, upset the whole official edifice by revolutionizing the business.

Notwithstanding all these considerations, it is urged as a general principle that it is essential to have an authoritative valuation of public-service corporations, first, to determine the reasonableness of the price paid by the public for services rendered, i.e., to fix rates; second, to enable the laws for the control of the issue of securities to be equitably administered; third, to determine the amount to be paid over to the public by way of taxes, which cannot be reached without an analysis of the value of the industry considered as a commercial concern. Professor Adams, who states these propositions fairly and moderately, unblushingly dodges the details and the methods of valuation, but rests his case upon the necessity for an authoritative valuation for the purposes specified. This view of the matter rather suggests the reply of Lord Chesterfield to the quack who was explaining by way of apology that "he must live," and Lord Chesterfield answered cheerfully: "I do not recognize the necessity."

Certainly the necessity for valuation for any of those purposes is as yet far from general recognition. Only two or three States have authorized it, and I had supposed the notion that valuation of a common carrier, however it might be measured, or the notion that capitalization, based upon such valuation, was a factor in fixing rates, was now an expiring delusion. It is the demand for a commodity and the price of it which mainly determine the freight rate for it, and thus, as a distinguished economist has said, the market price of wheat in Liverpool has more to do with fixing the freight on wheat between St. Paul and New York than the capitalization of the railroads between those points. It is quite possible that in a virgin land rates might be fixed with a view in part to a return on the cost of a newly constructed railroad, or to paying interest on the securities which represented that cost; but in this country there is no longer any such case, and a moment's reflection is sufficient to show that if two points are connected by two railroads, one of which cost or is capitalized at $10,000,000 and the other at $25,000,000, the rates must be the same on each railroad between those two points.

THE ORIGINAL COST

As respects the second necessity for a valuation mentioned by Professor Adams, I agree that in the case of a new enterprise the laws in respect to the issue of securities cannot be administered without regard to the value of the property, but the measure of value in that case is the original cost—there can be no other. To undertake, however, to apply that standard to a public utility with a long history and a demonstrated earning capacity is absurd and impracticable. The measure of value in such case is the income or yield, having regard to its permanence and possible increase, and it is the proved or probable income of a property also which, in the long run, establishes its market price, and, for that matter, the market value of everything else in the world, except merchandise and works of art,

as to which the demand, together with considerations of rarity, beauty and taste or sentiment intervenes.

If the value of a property measured by the cost of reproduction is less than the value of a property measured by its fruit or its income, any attempt to limit the securities to the amount shown by the first method is tantamount to confiscation, which our Constitution and laws do not yet allow. Furthermore, any proposal to limit the amount of the income of a property, by cutting down the amount of its securities on which the income is to be paid—and this, I am informed, is the theory of the arch and senatorial Wisconsin philosopher—appears to me to be undiluted nonsense.

As to the valuation of a public service industry for purposes of taxation, I understand that Professor Adams's "analysis of the value of the industry considered as a commercial concern" means exactly what I mean by saying that the value of an industry is measured by its product or income, and I only wish the laws in respect to taxation recognized that principle. They do not. These are the three purposes for which Professor Adams says we must, as a matter of general principle, have a system of valuation, and the Interstate Commerce Commission solemnly asked for an appropriation of $3,000,000 with which to "value" all the interstate railroads in the United States!

There is something fascinating about general principles, and I can understand how a man may persuade himself that, as a matter of principle, there must be a valuation to save the courts and officials trouble in doing what he thinks they ought to do. It certainly would be a convenience to have a bureau of values, like the standard measures in the mint, to which you could go and find out what everything was "perhaps irrevocably" worth. But the individual must wither indeed before the State can be sufficiently reorganized to offer such conveniences. I can only say here, "Beware of general principles." They can only be attained through patient and laborious years. They cannot be reached merely by the expression of vague desires. They are not to be promulgated by every weakling who wants them to lean upon. And remember that one of the things which most clearly marks the transition from youth to maturity is the willingness to formulate offhand "general principles."

The whole problem of the possibility and desirability of making a valuation of a public service corporation resolves itself into questions of the method of the valuation and the purpose for which it is made. I regret that it should be gravely discussed merely as necessary for the accomplishment of other purposes, because that appears to me to be a result of the un-American and, I hope, temporary tendency which now prevails, to run to the Government with every project and every conceivable grievance, like my landlady in Berlin 30 years ago, who cried out: "The price of meat is frightful, and the police ought to do something about it."

The people of this country have, I think wisely, made up their minds, in consequence of great corporate abuses, that public service corporations should be subject to regulation and, in some respects, control by the State; but when I see the laws showered from the Legislatures, and the indiscriminate volleys of rules and general principles from public officials, usually fired through an intellectual fog, I cannot help thinking that the heads of the commissioners, State and interstate, are addled by power, or the lust for it, as much as the head of the millionaire who wanted a price on Harvard University, was addled by his money.

These officials have great powers and most useful functions. They are trying to exercise them with zeal and honesty, and so far, I believe, desire nothing but the public good. As I consider their labors, however, I remember that the great Mommsen once said to me: "Your people play pranks in politics and would excuse them by their youth"; and really, in many of their endeavors, particularly in this matter of valuation, with its irreverence for facts, they seem to be singing the song of the Banderlog who dreamed of

"Something noble, grand, and good
Won by simply wishing we could."

UNITED STATES SUPREME COURT DECISION NULLIFYING MINNEAPOLIS LOW FARE ORDINANCE

The decision of the United States Supreme Court upholding the 5-cent rate of fare stipulated in the ordinance passed by the City Council of Minneapolis, Minn., on July 9, 1875, was mentioned in last week's issue. A full copy of the decision, which was delivered by Justice Day on Jan. 3, 1910, is now available. It discusses a number of points bearing on the relations of the municipality and the Minneapolis Street Railway, the subsidiary property of the Twin City Rapid Transit Company which was directly involved in the case.

The Court says in its decision:

"This is an appeal from a decree of the Circuit Court of the United States for the District of Minnesota, enjoining the city of Minneapolis from enforcing, as against the Minneapolis Street Railway Company, appellee, a certain ordinance of the city of Minneapolis, passed Feb. 9, 1907, prescribing the rate of fare for the transportation of passengers over any street railway line, or lines, of the company in the city of Minneapolis.

"The case was tried upon amended bill and answer. The ground alleged for injunction in the amended bill was in substance that the ordinance of Feb. 9, 1907, violated the terms of a previous and subsisting contract, prescribing the rates of fare to be charged by the company in the city of Minneapolis. It appears in the record that the railway company was organized on July 1, 1873, and that its alleged contract arises from an ordinance of the city of Minneapolis passed July 9, 1875, ratified by an act of the Legislature of the State of Minnesota passed March 4, 1879.

"It is sufficient for the present purpose to say that it is the contention of the company that by the ordinance of July 9, 1875, and the ratifying act, it became the owner of an irrepealable contract for the term of 50 years from the date of its organization, by the terms of which it had the right to charge a fare not exceeding 5 cents for each person carried on any continuous line which might be designated by the city council of the city, such continuous line, however, not to exceed 3 miles in length. The contract, it is alleged, is violated by the ordinance of Feb. 9, 1907, requiring the sale of six tickets for 25 cents.

"The existence of the alleged contract is denied by the city upon several grounds. It is urged that the complainant company was so organized that its charter, and consequently its corporate life, expired 30 years after the date of its incorporation, that is, on July 1, 1903, and, therefore, its contract rights ceased and terminated at that time. This contention is based upon the incorporation of the company, which, it is insisted, could only be under Title II of the laws of Minnesota, which includes transportation and other lawful business, and limits corporations organized thereunder to a continuation for not more than 30 years."

The decision discusses the contention of the company that it was organized under Title I of the laws of Minnesota for a term of 50 years, stating:

"Much of the elaborate briefs of counsel in this case is devoted to a discussion of the question of the organization of this corporation, and as to whether it was under the one title or the other. This is not a proceeding in *quo warranto*, and the jurisdiction of the Federal Court rested upon the contention that the company has a contract right protected from impairment by a legislative act of the State. It is only necessary to examine the question of the incorporation and organization of the company so far as is required to determine whether or not this alleged contract right exists, and whether it has been violated by the ordinance of the city of Minneapolis, attacked in the amended bill.

"There can be no question that the attempted incorporation of this company was under Title I of the statutes. * * * The corporation has continued to act since the expiration of the 30 years which would have been its corporate life had it been organized under Title II. There have been no proceedings, so far as the record shows, to inquire into its corporate existence since the expiration of the 30 years, and this record discloses

that a number of ordinances have been passed by the city of Minneapolis since July 1, 1903, requiring of the corporation the construction of additional lines of railway upon certain of the streets of the city of Minneapolis, and to otherwise discharge its duties as a continuing corporation.

"This record therefore shows that the company undertook to organize under Title I, for the period of 50 years, has continued to act as such corporation, and was so acting at the time of the passage of the ordinance of Feb. 9, 1907."

The Court then proceeds to examine the question, Did the ordinance of July 9, 1875, together with the ratifying act of 1879, make a contract between the city of Minneapolis and the street railway company, which would endure for the period of 50 years? Sections I, VIII and XVII of the ordinance of July 9, 1875, are quoted, and it is stated that the city filed its acceptance in writing of the ordinance on Aug. 18, 1875. The decision continues:

"In considering the terms of this ordinance and what it undertook to accomplish on its face, we are to bear in mind that public grants of this character are not to be extended by implication, and that all that is granted must be found in the plain terms of the act. This principle has been so frequently and recently announced in this court that it is unnecessary to cite the cases which have established it. Recognizing this principle, it must also be remembered that grants of the character of the one under consideration here, when embodying the terms of a contract, are protected by the Federal Constitution from impairment by subsequent State legislation, and, notwithstanding the principle of strict construction, whatever is plainly granted cannot be taken from the parties entitled thereto by such legislative enactments. Statutes and ordinances of this character are not to be extended by construction, nor should they be deprived of their meaning, if it is plainly and clearly expressed.

"Examining this ordinance in the light of these principles, there is no ambiguity in section VIII, which gives to the city the right to regulate the fares to be charged, provided the same are not reduced below 5 cents for each passenger over any one continuous line, to be designated by the city, of not more than 3 miles in length. By section 1 of the same ordinance the right and privilege of constructing and operating a railway line subject to the terms, conditions and forfeitures named in the ordinance is granted to the street railway company 'during the term of its charter.'

"What did this mean? The company had undertaken to organize, and filed its certificate of incorporation—which is its charter under the laws of Minnesota—and had therein stated its term of existence to be for 50 years from July 1, 1873. There was a positive requirement of the law that this period of duration should be stated in the certificate filed for the purpose of procuring incorporation, and it was there found, and was duly filed, recorded and published as required by law.

"It is unreasonable to suppose that the city and the company at that time entered into any inquiry or controversy as to whether the company could lawfully incorporate for more than 30 years. The charter referred to in the ordinance could not have been anything else than the certificate of incorporation required by law. Of this the city was bound to take notice, and when it granted the privilege 'during the term of the charter,' it could have meant nothing less than during the period named in the charter."

Referring to the terms of the ratifying act passed by the Minnesota State Legislature on March 4, 1879, the court holds:

"It has not been suggested in the elaborate briefs presented by the learned counsel for the city that the State Legislature at that time had not the constitutional right to pass this ratifying act.

"Looking to the terms of the act of March 4, 1879, we find that the right to construct and maintain the street railway upon the streets of the city, with the rights and privileges as set forth and qualified in the ordinance, is 'legalized and granted to said company.' Language could scarcely be plainer, and, if we are correct in construing the ordinance, as granting the right and privilege of maintaining railways in the streets of Minneapolis, for the charter term of 50 years, upon the terms therein mentioned, a vital part of which concerns the right of the company to charge a certain fare for passengers carried, it follows that this privilege, with the others, was vested in the company by the Legislature of the State of Minnesota.

"We may note in this connection that the mere fact that a contract may extend beyond the term of the life of a corporation does not destroy it.

"The ratifying act, being within the power of the Legislature, vested this contract right in the company, notwithstanding the want of power in the city to make it at the time it was entered into.

"But, it is contended, if a contract is found to exist, its rights were lost by virtue of the ordinance of Sept. 19, 1890, authorizing the street railway company to change its mode of operation from the use of horse power to electricity. It is insisted that by the acceptance of the electrical power ordinance the company abandoned any rights it had under the ordinance of 1875 and the ratifying act of 1879; and, furthermore, that by the express terms of the ordinance of Sept. 19, 1890, the right to control the future rates of fare was thereby vested in the city to an extent unlimited, except by constitutional inhibitions against confiscatory legislation.

"As to the termination of the rights of the company by reason of the substitution of electricity for horse power, is there such abandonment of the rights originally secured that they no longer exist? It is contended that the original ordinance was limited to the right to operate street railways by horse or pneumatic power, and that when the ordinance of Sept. 20, 1890, was passed conditions were entirely changed, and a new and different mode of operation was substituted, and rights existing under the original ordinance were terminated and abandoned."

The court then takes up the ordinance of 1875 to see if the company was limited to the use of animal or pneumatic power. It holds:

"There can be no doubt that, in the then state of the art, the use of electric power as the means of operating the cars of the company was not specifically in contemplation. While pneumatic power is also suggested, there does not seem to be any means of operation by that method. That the use of other motive power might be developed in the progress of street railway operation, we think, was clearly indicated in the ordinance itself. For, while animal or pneumatic power is named, it is provided that no propelling power shall be used after it shall be proved a public nuisance, and that the company might connect with other street railroads upon which power is used similar to that authorized to be used by street railways by the city council, but steam-power cars, such as are in common use, should not be used upon the city tracks, unless so authorized by the city council.

"In these terms of the ordinance it is evident that the parties had in mind that other propelling power might be developed, and it was the purpose of the city council to keep control of its use so as to prevent it from becoming a public nuisance in the streets. There was no positive limitation to animal power, and the possible progress and improvement in the means of propelling cars contemplated by the parties was carried into effect when the city passed, and the company accepted, the ordinance of Sept. 19, 1890. By that ordinance the railway company was authorized to operate all its existing lines, and all its lines to be thereafter constructed in the city by electricity as the motive power.

"It is the contention of the city that by the terms of this ordinance the street railway company became subject to regulation by the ordinances of the city then in force, or thereafter adopted, including the right to regulate and control the amount to be charged for fares for the transportation of passengers.

"In construing this section we must bear in mind that the company then had, as we have heretofore said, a contract upon the subject of fares, which limited the city in its right to regulate the same to a reduction not below 5 cents per passenger upon any one, continuous line. It needs no argument to dem-

onstrate that the right to charge passenger fares is of the very essence of the contract, essential to the operation and success of the enterprise."

Section VI of the ordinance of Sept. 19, 1890, is then discussed as follows:

"This is the only section which mentions the subject of fares, and it is therein provided that transfer checks may be issued at certain points to persons paying 'one full fare,' the transfer check to be used only by the person receiving the same for one continuous passage.

"The rate of fare had been fixed in the ordinance of July 9, 1875, and if it was intended to change it it would seem clear that the parties would have entered into new negotiations concerning it, and would have adopted, if that was desirable, some definite measure concerning it. The ordinance of July 9, 1875, was not attempted to be repealed, and is referred to in section VIII of the ordinance of Sept. 19, 1890, 'as the same as has been amended, and as now in force,' and adopted, 'so far as applicable,' concerning the things mentioned in section VIII.

"It is true that by the ordinance of July 9, 1875, there was no right to reduce the passenger fare below 5 cents over any one continuous line not more than 3 miles in length, to be designated by the city council. By the terms of the ordinance of Sept. 19, 1890, transfers were to be allowed, so that, for one full fare, a passenger might receive a continuous trip very considerably exceeding 3 miles in length—it is stated in one of the briefs to include a trip of 11 miles. But we do not understand that the acceptance of this regulation had the effect to abrogate the contract as to the right to charge a fare of 5 cents over one continuous line, that is, for one continuous passage. Acquiescence in a regulation which may not have been deemed injurious, and may have been deemed wise and expedient, does not preclude a contest against the enforcement of regulations which are injurious and violative of contract rights."

Concerning Section VIII of the ordinance of Sept. 19, 1890, the court says:

"The right to future control under Section VIII was to include the 'construction, maintenance and operation' of the lines of the street railway company. Did this undertaking have the effect to abrogate the contract right already existing, and to subject the company for the future as to the right to charge fares, to the discretion of the city council? Or, do the terms 'construction, maintenance and operation' have reference to the manner of carrying on the business of the road, the laying of its tracks, the use of the streets, the keeping up of the equipment, the safety of the passengers and the public, and similar matters not involving the right to charge fares? We think these terms refer to the latter class of rights and privileges. Such as the import of the words used, and the subject of rates of fare is not mentioned. The case, Detroit vs. Detroit Citizens Railway Co., 184 U. S., 368, is an instructive one upon this point. In that case it was held that a street railway company having a valid contract, giving it the right to charge 5 cents for the transportation of each passenger, did not lose that right by accepting the terms of an ordinance reserving the right to make such further rules, orders and regulations as to the city council may seem proper.

"We therefore reach the conclusion that when the ordinance complained of, that of Feb. 9, 1907, was enacted by the city council, the company was the owner of a valuable contract right secured to it by the ordinance of July, 1875, ratified by the enactment of the Legislature of the State of Minnesota on March 4, 1879, which secured to the company for 50 years from July 1, 1873, the contract right to charge 5 cents per passenger for one continuous trip. We think that the requirements of the ordinance, that the company should operate its roads by the sale of tickets six for a quarter, as required by the ordinance of Feb. 9, 1907, was an enactment by legislative authority which impaired the obligation of the contract thus held and owned by the complainant company. We therefore reach the conclusion that the decree of the Circuit Court enjoining the execution of the ordinance, for the reasons stated, should be affirmed.

"An examination of the decree, however, shows that it goes beyond the necessities of the case in specifically decreeing that the complainant company is a corporation organized under Title I of chapter 34 of the Statutes of Minnesota for the year 1866, with charter rights as alleged in the amended bill. It also decrees that the contract under the ordinances of July 9, 1875, and July 18, 1878, as ratified by the act of March 4, 1879, constituted a contract for and during the term of complainant's charter, as alleged in the amended bill. In the amended bill it is alleged that the charter rights of the company were extended to March 1, 1937; this is undoubtedly averred because of the amendment to the charter which appears in the record, extending the term of the company's corporate life until that time. The decree as it stands might be construed as establishing a contract to endure until March, 1937.

"All that was necessary to adjudge was that the company, by virtue of the ordinance of July 9, 1875, as amended in July, 1878, as ratified and confirmed by the act of the Legislature of the State of Minnesota of March 4, 1879, constituted a valid contract for the term of 50 years from July 1, 1873, which is still so far in force as to prevent the City Council from reducing the rate of fare below the sum of 5 cents for each passenger for one continuous passage, and enjoining the city from publishing and enforcing the ordinance of Feb. 9, 1907, because the same impaired the obligation of the subsisting contract aforesaid. The court therefore directs that the decree of the Circuit Court should be modified so as to meet these requirements."

MEETING OF EXECUTIVE COMMITTEE OF ENGINEERING ASSOCIATION

A meeting of the executive committee of the American Street & Interurban Railway Engineering Association was held at the offices of the association, 29 West Thirty-ninth Street, New York, on Jan. 10. Those present were: F. H. Lincoln, president, Philadelphia; J. S. Doyle, New York; John Lindall, Boston, Mass.; E. O. Ackerman, Columbus, Ohio; Martin Schreiber, Newark, N. J., and John W. Corning, secretary, Boston, Mass. Past-presidents H. H. Adams, of New York, and Paul Winsor, of Boston, were also present. The meeting was called to determine the work and personnel of the committees during the coming year and also to consider the resignation of Mr. Lincoln as president of the association.

Mr. Corning reported that the chairmen of the various committees had accepted their appointments, and that he had heard from most of the gentlemen appointed on the different committees, accepting their assignments, but not from all. The chairmen of the committees for 1910 are as follows:

Committee on standardization, Paul Winsor, Boston, Mass.

Committee on maintenance and inspection of electrical equipment, John Lindall, Boston, Mass.

Committee on way matters, E. O. Ackerman, Columbus, Ohio.

Committee on power generation, W. S. Twining, Philadelphia, Pa.

Committee on power distribution, James Heywood, Philadelphia, Pa.

Committee on heavy electric traction, J. S. Doyle, New York.

Joint committee on shop accounts to act in conjunction with a similar committee from the Accountants' Association, W. G. Gove, Brooklyn, N. Y.

The first subject considered by the executive committee was the extent to which the different committees should include in their reports papers from persons not members of the committees. It was decided to leave this matter to the discretion of the chairman of each committee. In this connection there was also some discussion in regard to the proper treatment of written communications sent in by members on subjects considered at the convention. One of those present stated that the general practice in other national engineering societies was to encourage written communications, but that the manner of their presentation was left entirely to the discretion of the presiding officer or the executive committee of the organization. In some cases the entire communication might be read by the secretary,

or only such parts of it as the president thought would be of interest to the members present, or if the time did not permit of this, an announcement was made, simply that a communication had been received. The same degree of authority extended to the inclusion of these communications in the printed proceedings of the societies.

The next subject discussed was the resolution presented at the last meeting of the association by W. H. Evans, Milwaukee, suggesting the establishment of an apprentice course for electric car repair men. Mr. Evans' resolution, as presented at Denver, was as follows:

"Resolved, That the Engineering Association take up and investigate the question of a desirable system for the government and instruction of regular apprentices in the mechanical trades in connection with the maintenance of the equipment of electric railways. A regular apprentice, it is understood, is one who has had no previous shop experience and is not a graduate of a technical institution, and is between the ages of 16 and 19 years. This should apply not only to the regularly established trades, such as machinists, car builders, blacksmiths, electricians, painters and the others now well known and employed in the electric railway field, but should also include a new trade, which for the want of a better name could be designated as an electric car repairer. This apprentice course should combine practical experience and some knowledge of a number of the regular trades, and should be well defined and of such a character as to greatly improve the ability and efficiency of the class of men to be depended upon in the future to take care of electric railway equipment, both in the general shops and in the car houses."

A number of those present stated that, in their opinion, the subject was of great and increasing importance. Apprentice courses had been established on some roads for technical graduates leading up to responsible positions in the transportation department, and in most of these courses some time was spent in the various engineering departments. The need for electric repair men, however, was quite different, and few companies had any systematic method of developing men for this work. Mr. Winsor stated that by arrangement with the Boston Edison Company Professor Ashe, of Brooklyn, had been delivering a series of lectures this year to the employees of that company, and that the Boston Elevated Railway Company had arranged for the attendance at this course of 16 of its power station and wire men. Mr. Lindall said that a series of weekly meetings had been commenced in the shop department of the Boston Elevated Railway Company to discuss equipment matters, and that these meetings were in charge of the equipment inspectors. Mr. Lincoln said that Professor Ashe was conducting certain courses on electrical matters in Philadelphia under the auspices of the municipality, and that he himself was heartily in sympathy with the plan to have the association take up the subject of education and the establishment of apprentice courses, or at least to have a committee investigate the subject. Upon motion, the committee authorized the president to appoint a special committee to report at the next annual meeting on the education of engineering apprentices and co-operate in this work with the committee on education of the American Street & Interurban Railway Association.

The next subject considered was that of specifications for wrought-iron bars and for axles, as presented in the report of the committee on standards at Denver. The subject was referred back to the committee on standards, and at the same time the province of the committee, so far as specifications were concerned, was more clearly defined. It was decided that the specifications to be standardized should first be thoroughly worked out by the proper committee having in charge matters relating to the department in which the material specified is used, and that the work of the committee on standards should be judicial in character. It will pass on the specifications thus submitted and will not be under obligation to initiate this work.

A letter from W. H. Evans was then read by the secretary, suggesting that closer relations be established between the Engineering Association and the American Society for Testing Materials, so that the two societies could work along co-operative lines in standardizing specifications. The president and secretary of the association were requested to see what arrangements could be made to this end.

The secretary then reported that, as requested at the last meeting, he had taken up with the American Railway Engineering & Maintenance of Way Association the subject of the design of rail-joint plates to allow sufficient clearance space for bond wires.

The standard section of No. 0000 copper trolley wire and the table of sizes of wires included in the report of the committee on power distribution last year were referred to the committee on standards.

Mr. Schreiber called attention to the fact that one very important department in electric railway engineering work was not covered by any committee of the association. This was the department of buildings and structures, and he suggested that a standing committee of the association be appointed to be known as the committee on buildings and structures, and having the same organization as the other standing committees of the association; that is, with one-, two- and three-year members. This committee could take up the subject of bridges, elevated structures, shop design, power-station design, car-house design, trestles and other structures, and he suggested that this year the committee might give special attention to the design of urban and interurban terminals and the economical maintenance of buildings and structures. After discussion of the province of this committee the executive committee decided to authorize its formation and Mr. Schreiber was appointed chairman. The other members of the committee will be announced after their appointment has been made.

The executive committee then went carefully over the subject of expense for the coming year and decided that the plans under way would call for an expenditure of about $2,500, exclusive of the cost of publication of the *Proceedings*. It was decided to ask the executive committee of the American Association for this amount.

Mr. Lincoln then presented the following letter:

THE AMERICAN STREET & INTERURBAN RAILWAY ENGINEERING ASSOCIATION.

PHILADELPHIA, PA., Jan. 1, 1910.

TO THE EXECUTIVE COMMITTEE, AMERICAN STREET & INTERURBAN RAILWAY ENGINEERING ASSOCIATION:

GENTLEMEN.—Having severed my connection with the Philadelphia Rapid Transit Company, and having arranged to take up a commercial line of work, now, in accordance with the by-laws of the Engineering Association, it is necessary that I tender you my resignation as president.

In accordance with this understanding, I hereby resign the office of president of the American Street & Interurban Railway Engineering Association. Yours truly,

(Signed) F. H. LINCOLN,
President.

The resignation was received with regret and the following resolutions were adopted by unanimous vote:

"Whereas, Mr. F. H. Lincoln, the president of the Engineering Association, has offered his resignation, the executive committee of the association regrets to state that in following the established precedent, it now falls within its province to accept the resignation, and

"Whereas, the committee appreciates in every sense the earnest and faithful endeavors of Mr. Lincoln and his past work in the association and the electric railway field and, anticipating his further co-operation in the future work of the association,

"Resolved, that the position of president be not officially filled, but the duties of the office be assumed by the first vice-president as acting president."

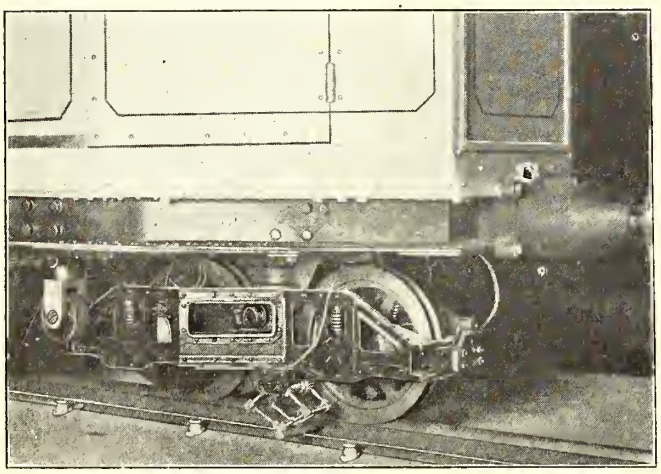
The first vice-president of the association this year is W. J. Harvie, chief engineer, Utica & Mohawk Valley Railway, Utica, N. Y.

After the adoption of this resolution the meeting adjourned, most of the members in attendance going to inspect the trial trip of the gyroscopic mono-rail car in Brooklyn.

GYROSCOPIC CAR IN BROOKLYN

On Jan. 10 the first test runs were made at the Clermont Skating Rink, Brooklyn, with the Scherl monorail car, which is operated on the gyroscopic principle. This car is boat-shaped, with an over-all length of 18 ft. and a maximum width of 4 ft. The dead weight of the car is 5500 lb., 5½ per cent of which covers the weight of the gyroscopes. The seating capacity is six riders, including the motorman. The body is mounted on two double-axle trucks which are spaced 15 ft. centers and carry 16-in. diameter wheels with a 1.2 in. double flange. One wheel of each truck is driven through a double reduction gear by 2-hp, 110-volt, direct-current series motor, all the motors being operated from either end by a controller. The current is collected through truck contact shoes from a copper conductor carried on insulators along each side of the running rail.

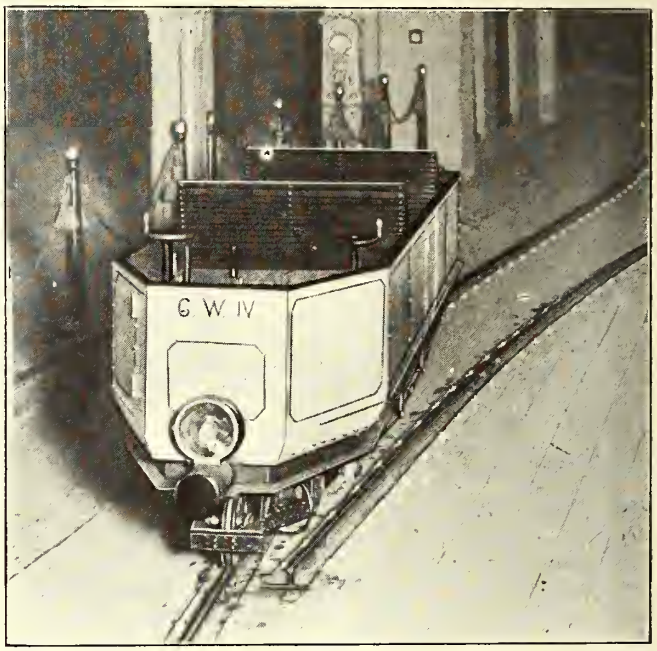
The stability mechanism comprises two gyroscopes revolving



Forward Truck with Current Collector and One of the Emergency Balance Rods at the Left

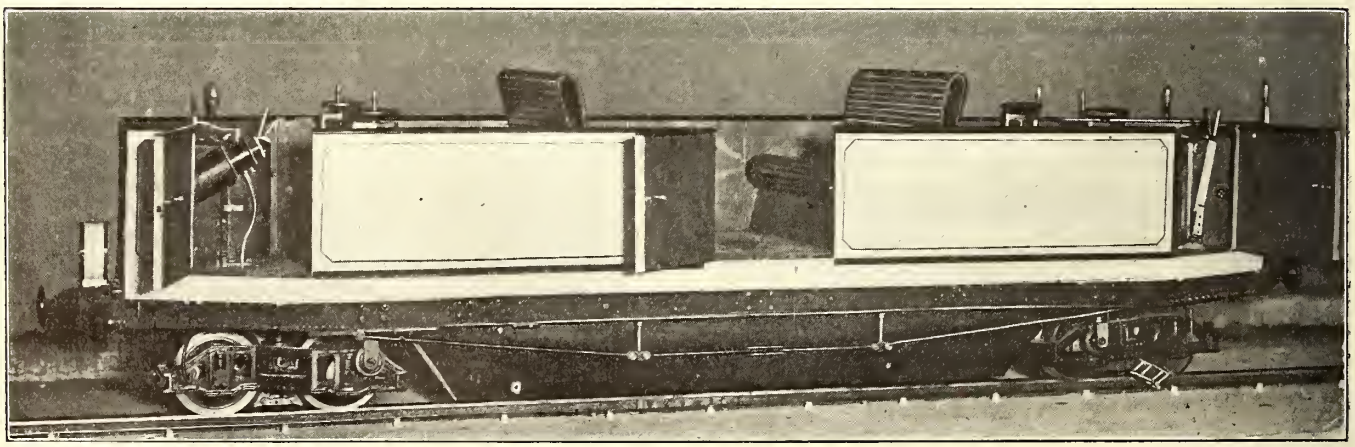
in opposite directions. Each gyroscope consists of a 110-lb. steel wheel rotating at 8000 r.p.m. in an air-tight chamber in which the pressure has been lowered almost to a vacuum. Each wheel is driven directly by a ½-hp, 110-volt, direct-current shunt motor. To obtain the balancing effort their precession is artificially influenced by means of an apparatus operated by oil under pressure. Should the motors which drive the gyroscopes fail from any cause, the high-speed wheels operating in the partial vacuum would easily permit the car to run safely for a considerable period. However, before the revolutions of the gyroscopes sink below a certain amount the motorman can apply an emergency brake, which consists of four vertical props, which are dropped to the ground to bring the car into stable equilibrium. The gyroscopes are carried underneath the car body.

The test track at the Brooklyn rink was in the form of an oval, whose longest diameter was about 150 ft. The track was laid with a rail weighing about 20 lb. per yard of special section, having a rounded head about 1 in. wide. In addition to the oval track there was a spur running into one of the anterooms, in which the car was kept when not in use. Two tests were made on Jan. 10, one in the afternoon and one in the evening, and they were witnessed by a number of electrical engineers. After leaving the anteroom the car ran around the oval track at a speed of about 4 m.p.h. on straight track and 3 m.p.h. on curves, and at the curves took a natural inclination, although, of course, there could be no elevation of the



End-On View of Gyroscopic Monorail Car Exhibited at the Clermont Skating Rink, Brooklyn

monorail. Owing to some damage which had been done to the machinery in the transportation of the car from Germany, some difficulty was experienced during the afternoon, and also on the evening run of Jan. 10, said to be due to a leak in the partial vacuum in which the gyroscopes revolved, but on both occasions



Side View of Gyroscopic Monorail Car as Exhibited in Brooklyn

the car ran for a considerable time around the track without difficulty and carried passengers. It was also stopped. When still it stood in perfect equilibrium. It was also run backward on the track. When the passengers boarded the car on one side, the effect of the gyroscopes was to give the car an inclination in the other direction, but the car righted itself after the passengers were seated.

The tests will be continued for some time at the Clermont Skating Rink, and the public will be admitted on payment of a nominal fee.

ASSOCIATION COMMITTEES AND OTHER NEWS

President Shaw has announced the following appointments to the committees of the American Street & Interurban Railway Association. Several of the committees are not entirely complete, especially the committees on active and associate membership, as the former will contain 58 members and the latter 42 members besides the chairmen:

COMMITTEE ON SUBJECTS

A. W. Brady, chairman, president, Indiana Union Traction Company, Anderson, Ind.
C. S. Sergeant, vice-president, Boston Elevated Railway Company, Boston, Mass.
R. T. Laffin, Western manager, Stone & Webster, Seattle, Wash.
H. S. Swift, secretary and auditor, Toledo Railways & Light Company, Toledo, Ohio.
F. H. Lincoln, assistant general manager, Philadelphia Rapid Transit Company, Philadelphia, Pa.
E. C. Carpenter, claim agent, Indiana Union Traction Company, Anderson, Ind.
R. I. Todd, vice-president and general manager, Indianapolis Traction & Terminal Company, Indianapolis, Ind.

COMMITTEE ON PUBLIC RELATIONS

C. Loomis Allen, chairman, vice-president and general manager, Utica & Mohawk Valley Railway Company, Utica, N. Y.
Hon. W. Caryl Ely, 902 Fidelity Building, Buffalo, N. Y.
W. G. Evans, president, The Denver City Tramway Company, Denver, Colo.
Frank Hedley, vice-president and general manager, Interborough Rapid Transit Company, New York, N. Y.
A. W. Brady, president, Indiana Union Traction Company, Anderson, Ind.
T. N. McCarter, president, Public Service Railway Company, Newark, N. J.
Gen. Geo. H. Harries, second vice-president, Washington Railway & Electric Company, Washington, D. C.
J. D. Callery, president, Pittsburgh Railways Company, Pittsburgh, Pa.
J. M. Roach, president, Chicago Railways Company, Chicago, Ill.
J. C. Hutchins, president, Detroit United Railway Company Detroit, Mich.
C. N. Black, general manager, United Railroads of San Francisco, San Francisco, Cal.
E. C. Foster, vice-president, New Orleans Railway & Light Company, New Orleans, La.
Russell Robb, president, Tacoma Railway & Power Company, 147 Milk Street, Boston, Mass.
W. G. Ross, managing director, Montreal Street Railway Company, Montreal, Can.
B. S. Josselyn, president, Portland Railway, Light & Power Company, Portland, Ore.
P. F. Sullivan, president, Boston & Northern Street Railway Company, Boston, Mass.
E. H. Davis, secretary, treasurer and manager, Williamsport Passenger Railway Company, Williamsport, Pa.

COMMITTEE ON COMPENSATION FOR CARRYING U. S. MAIL

R. S. Goff, chairman, general manager, Boston & Northern Street Railway Company, Boston, Mass.
H. A. Nicholl, general manager, Indiana Union Traction Company, Anderson, Ind.
C. H. Hile, assistant to vice-president, Boston Elevated Railway Company, Boston, Mass.
C. L. S. Tingley, second vice-president, American Railways Company, Philadelphia, Pa.
A. R. Piper, general freight agent, Brooklyn Rapid Transit Company, Brooklyn, N. Y.
J. K. Choate, general manager, Otsego & Herkimer Railroad Company, Hartwick, N. Y.
Edgar S Fassett, general manager, United Traction Company, Albany, N. Y.

COMMITTEE ON INSURANCE

H. J. Davies, chairman, secretary, Cleveland Railway Company, Cleveland, Ohio.
A. H. Ford, president, Birmingham Railway, Light & Power Company, Birmingham, Ala.
F. A. Healy, secretary and treasurer, The Ohio Electric Railway Company, Cincinnati, Ohio.
S. L. Tone, second vice-president, Pittsburgh Railways Company, Pittsburgh, Pa.
S. J. Dill, general manager, Susquehanna Railway, Light & Power Company, New York, N. Y.
R. B. Hamilton, vice-president, Chicago City Railway Company, Chicago, Ill.

COMMITTEE ON WELFARE OF EMPLOYEES

H. C. Page, chairman, general manager, Springfield Street Railway Company, Springfield, Mass.
Wm. A. House, president, The United Railways & Electric Company, Baltimore, Md.
A. A. Anderson, general manager, Indianapolis, Columbus & Southern Traction Company, Columbus, Ohio.
John A. Beeler, vice-president and general manager, The Denver City Tramway Company, Denver, Colo.

COMMITTEE ON INTERSTATE COMMERCE COMMISSION AFFAIRS

Gen. Geo. H. Harries, chairman, second vice-president, Washington Railway & Electric Company, Washington, D. C.
F. R. Ford, Ford, Bacon & Davis, New York, N. Y.
C. S. Sergeant, vice-president, Boston Elevated Railway Company, Boston, Mass.
G. O. Nagle, general manager, Wheeling Traction Company, Wheeling, W. Va.

COMMITTEE ON EDUCATION

Prof. H. H. Norris, chairman, Cornell University, Ithaca, N. Y.
R. E. Danforth, general manager, Public Service Railway Company, Newark, N. J.
Prof. A. S. Richey, professor of electrical engineering, Worcester Polytechnic Institute, Worcester, Mass.
W. F. Kelly, second vice-president and general manager, Oakland Traction Company, Oakland, Cal.
J. F. Calderwood, vice-president and general manager, Brooklyn Rapid Transit Company, Brooklyn, N. Y.
D. C. Jackson, professor of electrical engineering, Massachusetts Institute of Technology, Boston, Mass.

SPECIAL COMMITTEE ON REVISION OF ASSOCIATE MEMBERSHIP

T. N. McCarter, chairman, president, Public Service Railway Company, Newark, N. J.
James F. Shaw, 8 Congress Street, Boston, Mass.
Gen. Geo. H. Harries, second vice-president, Washington Railway & Electric Company, Washington, D. C.
Hon. W. Caryl Ely, 902 Fidelity Building, Buffalo, N. Y.
Paul Winsor, chief engineer of motive power and rolling stock, Boston Elevated Railway Company, Boston, Mass.
H. R. Goshorn, general claim agent, Philadelphia Rapid Transit Company, Philadelphia, Pa.
C. Loomis Allen, vice-president and general manager, Utica & Mohawk Valley Railway Company, Utica, N. Y.
Robt. N. Wallis, treasurer, Fitchburg & Leominster Street Railway Company, Fitchburg, Mass.

SUPERVISING COMMITTEE TO CO-OPERATE IN THE PREPARATION OF THE NEW ELECTRIC RAILWAY DICTIONARY TO BE PUBLISHED BY THE M'GRAW PUBLISHING COMPANY

H. H. Adams, chairman, superintendent rolling stock and shops, Metropolitan Street Railway Company, New York, N. Y.
Paul Winsor, chief engineer of motive power and rolling stock, Boston Elevated Railway Company, Boston, Mass.
Richard McCulloch, vice-president and assistant general manager, United Railways of St. Louis, St. Louis, Mo.

JUROR TO REPRESENT THE A. S. & I. R. A. IN THE MATTER OF THE PRIZES TO BE OFFERED FOR THE THREE BEST THESES ON DESIGN OF AN ELECTRIC RAILWAY CAR FOR CITY SERVICE BY THE J. G. BRILL COMPANY

Wm. A. House, president, The United Railways & Electric Company, Baltimore, Md.

COMMITTEE ON ACTIVE MEMBERSHIP WITH TERRITORY ASSIGNED

W. G. Ross, managing director, Montreal Street Railway Company, Montreal, Can.—Eastern Canada, east of Toronto.

Jas. W. Cartwright, Jr., treasurer, Bangor Railway & Electric Company, Bangor, Me.—Maine.

Franklin Woodman, general manager, New Hampshire Electric Railways, Haverhill, Mass.—New Hampshire.

G. Tracy Rogers, president, Binghamton Railway Company, Binghamton, N. Y.—Vermont and New York, A, including cities along the Vermont State line.

H. E. Reynolds, assistant general manager, Boston & Northern Street Railway Company, Boston—Massachusetts, Boston district (A).

R. N. Wallis, treasurer, Fitchburg & Leominster Street Railway Company, Fitchburg, Mass.—Massachusetts, B, western district.

E. S. Wilde, general superintendent, Union Street Railway Company, New Bedford, Mass.—Massachusetts, C, southeastern district.

D. F. Sherman, president, Providence & Danielson Railway Company, Providence, R. I.—Rhode Island.

J. K. Punderford, general manager, The Connecticut Company, New Haven, Conn.—Connecticut.

C. Gordon Reel, second vice-president, Kingston Consolidated Railroad Company, Kingston, N. Y.—New York, B, Albany and south to New York City district.

J. F. Calderwood, vice-president and general manager, Brooklyn Rapid Transit Company, Brooklyn, N. Y.—New York, E, New York City district.

R. E. Danforth, general manager, Public Service Railway Company, Newark, N. J.—New Jersey.

R. P. Stevens, president, Lehigh Valley Transit Company, Allentown, Pa.—Pennsylvania, A.

E. H. Davis, secretary, treasurer and manager, Williamsport Passenger Railway Company, Williamsport, Pa.—Pennsylvania, B, central district, and Maryland, B, western district.

F. D. Shaffer, general manager, The Citizens Traction Company, Oil City, Pa.——Pennsylvania, C, northwestern district.

Wm. A. House, president, The United Railways & Electric Company, Baltimore, Md.—Delaware and Maryland.

A. B. Skelding, general manager, Tidewater Power Company, Wilmington, N. C.—North Carolina.

P. H. Gadsden, president, Charleston Consolidated Railway, Gas & Electric Company, Charleston, S. C.—South Carolina.

W. H. Glenn, secretary, Georgia Railway & Electric Company, Atlanta, Ga.—Georgia and Florida.

G. O. Nagle, general manager, Wheeling Traction Company, Wheeling, W. Va.—West Virginia.

Albion E. Lang, president, Toledo Railways & Light Company, Toledo, Ohio—Ohio, A, Cleveland district.

Dana Stevens, vice-president, The Cincinnati Traction Company, Cincinnati, Ohio—Ohio, C, Cincinnati district, and Kentucky, A.

C. H. Harvey, president and general manager, Knoxville Railway & Light Company, Knoxville, Tenn.—Tennessee.

F. W. Brooks, general manager, Detroit United Railway, Detroit, Mich.—Michigan.

E. C. Faber, general manager, Aurora, Elgin & Chicago Railroad Company, Chicago, Ill.—Illinois, A, Chicago district.

L. C. Haynes, vice-president, East St. Louis & Suburban Railway Company, East St. Louis, Ill.—Illinois, C, southern district.

P. P. Crafts, general manager, Iowa & Illinois Railway Company, Clinton, Ia.—Illinois, D, northwestern district, and Iowa.

W. W. Wheatly, general manager, Kansas City Railway & Light Company, Kansas City, Mo.—Missouri.

Dudley Montgomery, vice-president, Southern Wisconsin Railway Company, Madison, Wis.—Wisconsin.

Herbert Warren, general manager, Duluth Street Railway Company, Duluth, Minn.—Minnesota.

C. P. Brown, general manager, Fargo & Moorhead Street Railway Company, Fargo, N. D.—North and South Dakota.

R. A. Leussler, secretary and assistant manager, Omaha & Council Bluffs Street Railway Company, Omaha—Nebraska.

F. G. Kelley, secretary and treasurer, The Topeka Railway Company, Topeka, Kan.—Kansas.

J. A. Beeler, vice-president and general manager, The Denver City Tramway Company, Denver, Colo.—Colorado, Wyoming and Idaho.

R. E. Hunt, assistant general manager, Utah Light & Railway Company, Salt Lake City, Utah—Utah.

H. T. Edgar, vice-president, Northern Texas Traction Company, Fort Worth, Tex.—Texas.

E. C. Foster, vice-president, New Orleans Railway & Light Company, New Orleans, La.—Louisiana and Mississippi.

A. H. Classen, president, Oklahoma Railway Company, Oklahoma City, Okla.—Oklahoma.

C. K. Durbin, secretary, Tucson Rapid Transit Company, Tucson, Ariz.—Arizona, New Mexico and Nevada.

H. M. Littell, assistant to general manager, Pacific Electric Railway Company, Los Angeles, Cal.—Los Angeles district.

D. A. Hegarty, general manager, Little Rock Railway & Electric Company, Little Rock, Ark.—Arkansas.

Thos. Finigan, purchasing agent, United Railroads of San Francisco, San Francisco, Cal.—California, A, San Francisco and north.

R. T. Laffin, district manager, Stone & Webster, Seattle, Wash.—Washington.

Harro Harrsen, general manager, Mexico Tramways Company, Mexico City, D. F. Mex.—Mexico.

COMMITTEE ON ASSOCIATE MEMBERSHIP WITH TERRITORY ASSIGNED

H. H. Adams, chairman, superintendent rolling stock and equipment, Metropolitan Street Railway Company, New York, N. Y.

S. W. Mower, general manager, South-Western Traction Company, London, Can.—Canada.

F. D. Hall, chief electrician, Boston & Maine Railroad, Boston, Mass.—New Hampshire and Vermont.

M. H. Bronsdon, chief engineer, Rhode Island Company, Providence, R. I.—Rhode Island.

W. J. Harvie, chief engineer, Utica & Mohawk Valley Railway Company, Utica, N. Y.—New York, A and C, covering Rochester, Syracuse, Utica, Schenectady, etc., east of Vermont line.

J. S. Doyle, superintendent of car equipment, Interborough Rapid Transit Company, New York, N. Y.—New York City and north to and including Albany, east of Binghamton.

M. C. Brush, general manager, Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—New York, D, Buffalo and east to Binghamton, including Binghamton.

Martin Schreiber, engineer maintenance of way, Public Service Railway Company, Newark, N. J.—New Jersey.

J. M. Larned, engineer maintenance of way, Pittsburgh Railways Company, Pittsburgh, Pa.—Pennsylvania, D, Pittsburgh district.

Chas. J. Bendt, secretary and auditor, Charleston Consolidated Railway, Gas & Electric Company, Charleston, S. C.—North and South Carolina.

L. P. Crecelius, superintendent of power, Municipal Traction Company, Cleveland, Ohio—Ohio, A, Cleveland district.

F. A. Healy, secretary and treasurer, The Ohio Electric Railway Company, Cincinnati, Ohio—Ohio, C, and Kentucky, A, Cincinnati district.

L. C. Shipherd, superintendent, The Evansville & Southern Indiana Traction Company, Evansville, Ind.—Indiana, A, and Kentucky, B, south of Indianapolis.

J. B. Crawford, general superintendent, Winona Interurban Railway Company, Warsaw, Ind.—Indiana, B, north of Indianapolis, including Indianapolis and Terre Haute.

H. A. Davis, superintendent railway department, Nashville Railway & Light Company, Nashville, Tenn.—Tennessee.

M. M. Lloyd, master mechanic, East St. Louis & Suburban Railway Company, East St. Louis, Ill.—Illinois, C., and Missouri.

A. W. Warnock, general passenger agent, Twin City Rapid Transit Company, Minneapolis, Minn.—Minnesota and North and South Dakota.

C. F. Holmes, president, The Kansas City-Western Railway Company, Kansas City, Mo.—Nebraska and Kansas.

W. H. McAloney, superintendent rolling stock, The Denver City Tramway Company, Denver, Colo.—Colorado, Wyoming, Idaho and Utah.

W. J. Jones, president and general manager, Austin Electric Railway Company, Austin, Tex.—Texas.

D. A. Hegarty, general manager, Little Rock Railway & Electric Company, Little Rock, Ark.—Arkansas.

Joel Hurt, ex-president, Atlanta Consolidated Street Railway Company, Atlanta, Ga.—Georgia and Florida.

W. Worth Bean, Benton Harbor, Mich.—Michigan.

MIDYEAR MEETING

The program for the midyear meeting of the American Street & Interurban Railway Association, to be held Jan. 27 and 28 at the headquarters of the association, 29 West Thirty-ninth Street, has been completed, and notices in regard to it will be sent this week to member companies.

On Thursday, Jan. 27, meetings of the following committees will take place: Subjects, public relations, Interstate Commerce Commission affairs, compensation for carrying United States Mail and revision of associate membership. The chairmen of these committees will subsequently report to the executive committee on the afternoon of the 27th. It is also expected that official representatives of the various State and sectional associations will be present on Thursday to confer on ways and means of more effective co-operation.

On Friday, Jan. 28, a general conference will take place, open to the officials of member companies who have to do with the settlement of the policies of the companies they represent.

On Friday evening, Jan. 28, the officials of member companies who are in attendance at the meetings of the association will be tendered a banquet by the Manufacturers' Association at the Hotel Knickerbocker at 7 o'clock, to which all those present at the meeting are cordially invited. A number of prominent speakers will address the guests on subjects connected with electric railway interests.

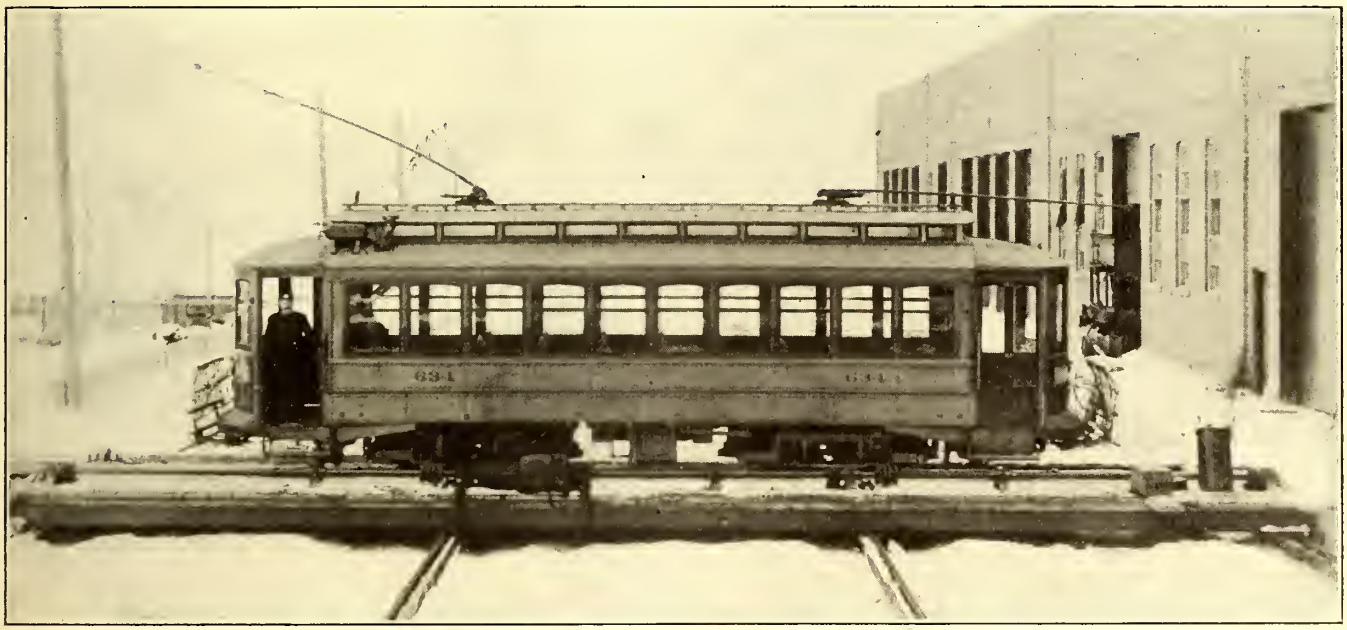
NEW BULLETIN

The association has issued Bulletin No. 109, containing statistical information relating to wages paid in different parts of the country. The data are classified under different headings. Copies of this bulletin have been mailed to all member companies.

TRANSFER TABLE AT SYRACUSE

An account was published in the ELECTRIC RAILWAY JOURNAL of Nov. 9 of the new shops of the Oneida Railway Company at Syracuse, N. Y. As will be remembered, a very important feature of these shops was the abandonment of entrance tracks and the substitution for them of two transfer tables, one at each end of the shop with a single entrance track. The installation was of such interest that an editorial was published in the following issue, discussing the arguments in favor of and against transfer tables and entrance tracks for electric railway repair shops.

The accompanying illustration gives a view of one of these transfer tables, the two being identical. The rated capacity of the table is 70 tons, but often it has to carry a greater weight. The length of the table is 54 ft. 9 in. and is built up of structural members, over which a plank floor has been laid. The



Transfer Table at New Shops of Oneida Railway Company

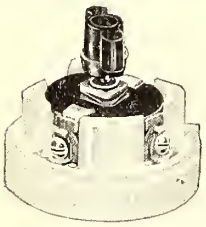
motive power is supplied by a G.E.-52 railway motor geared to a 3 7/16-in. shaft extending the entire length of the table. This shaft in turn, is geared at a reduction of 24-68 to the four driving wheels which are 22 in. in diameter.

The trolley wires for the cars are carried over the table at the usual height and the current for operating the table is obtained from an inverted third rail mounted next to one of the running rails. The current is taken from this rail by a standard Oneida Railway third-rail under-running shoe. As explained in the original article on the shops, the pits were made 1 ft. deeper than the run-ways on which the tables run, to prevent interference with the movement of the tables by an accumulation of snow in the pit. The tables have been in operation during the recent very heavy snowstorms, and so far it has not been necessary to remove the snow. The company estimates that a saving in cost of 50 per cent was made by the installation of these tables instead of entrance tracks and a complicated overhead network.

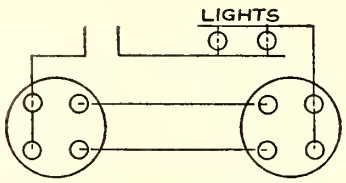
The tables were designed and built by the Archbold-Brady Company, of Syracuse, N. Y., and installed under the direction of W. J. Harvie, chief engineer of the Oneida Railway Company.

BARRIER SWITCHES FOR LAMP AND HEATER CIRCUITS

The accompanying illustrations show several types of a new line of 600-volt switches which have been put on the market by the Hart & Hegeman Manufacturing Company, of Hartford, Conn. These switches are made in single-pole, double-pole, three-way and two-circuit styles, and in various capacities from 1 amp to 25 amp. The single-pole switch is designed for the air-brake circuit, and with the double-pole or three-way switch can be used for the lighting circuit. With the three-way switch a light or group of lights can be controlled from either of two points. The two-circuit switch is designed for use on a combination arc and incandescent headlight. One turn cuts in the arc headlight, the second turn cuts out the arc headlight, the third turn cuts in the incandescent headlight, the fourth turn



Three-Way Barrier Switch

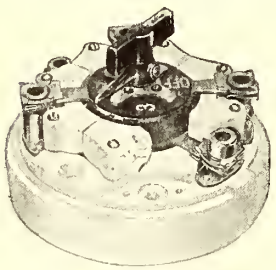


Wiring Connections for Three-Way Surface Switches

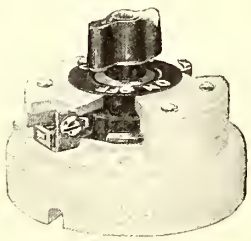
cuts out both lights. The switch has three contact terminals and uses a common conductor to both lamps.

The principal feature of all these switches, and from which they take their name, is the use of a barrier for extinguishing the arc. As will be seen from the engravings, the rotating switch blade passes through a narrow channel in the slotted porcelain barrier, and this barrier offers a mechanical resistance to the arc when it attempts to follow the rotating blade through the slot. It has a choking effect on the spark, due to the lack of oxygen in the slot behind the rapidly rotating switch blade. Then what remains of the arc is blown out by the draft or the inrush of air which follows the rotating blade. Switches of 20-amp capacity are so constructed that when the circuit is broken the switch blade rotates one-third of a circle or 120 deg.

The company also makes a 35-amp, 660-volt barrier-type switch for the control of electric heaters. This heater switch is a three-circuit switch and is connected as follows: The first turn connects the heater of medium intensity, the second turn cuts out the medium heater and throws in the heater of greater intensity, the third turn cuts in both heaters at the same time, and the fourth turn opens the heater circuit. Of course, other combinations can be readily effected by this switch. The heater



Three-Degree Heater Switch



Two-Circuit Headlight Switch

switch handle may be turned in either direction so that it is not necessary to pass from low to high degrees of heat in order to open the circuit.

The handles of these switches are of heavy, one-piece porcelain to insure the user doubly against shock. The insulation is of solid sheet mica, and all current-carrying parts are fully insulated from the handle and from the switch mechanism.

The latter is of a frictionless "eccentric" design and all wearing parts are of hardened steel. The contact jaws are of tempered spring phosphor bronze. The breaking movement of these switches is very rapid and they are designed to carry an overload greatly in excess of their rated capacity.

SPECIAL CONTROLLER HANDLE FOR AUXILIARY CONTACTOR CONTROL

The new pay-within cars of the Capital Traction Company, of Washington, D. C., which were described in the Electric Railway Journal of Sept. 18, 1909, page 434, are equipped with four Westinghouse 101-B, 40-hp motors and K-29 controllers, to which are added two auxiliary contactors. These contactors are similar to those used with standard type M control, and are mounted under the car body. They are connected in the main trolley circuit, and additional contacts are provided in the controllers for opening and closing the contactors when the controller is turned off or on, respectively. The connections are so arranged that when either of the controllers is in any of the "on" positions a circuit is completed through an automatic tripping switch, and the energizing coils of the contactors thus holding the auxiliary contacts closed and completing the main power circuit through the controller contacts to the motors. When the controller is moved to the "off" position and in passing from series to parallel connections the power circuit is broken in the contactors and not in the controller and the contactors also open in the event of an

Special Controller Handle

excessive current passing through the overload coil of the tripping switch.

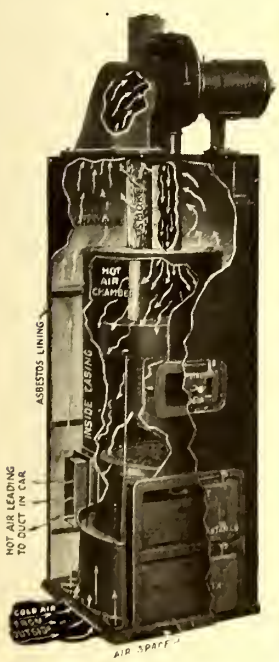
To prevent any possibility of breaking the current in the controllers when moving to the off position in case the contactors should stick and fail to open, J. H. Hanna, chief engineer of the Capital Traction Company, designed the special controller handle shown in the accompanying engraving. An auxiliary attachment is provided in the controller which is so arranged that when the controller drum is turned from the second step back to the first the auxiliary contactors open, but the main power circuit remains unbroken within the controller.

The special handle is fitted with a push button, which is connected through a bent lever to a pivoted stop interposed between the lug on top of the controller case and the downward projection of the handle. When this pivoted stop is down the handle cannot be moved beyond the first point in throwing the controller to the "off" position. By pressing down on the push button in the handle the stop can be raised and the handle moved past the first point to the "full off" position, which unlocks the reverse drum and breaks all contacts in the main power circuit within the controller. The stop is lifted when running only in emergencies, and, of course, must be lifted in order to reverse. The stop is attached to the handle by set screws, and can be quickly removed when the handle is transferred to an ordinary controller.

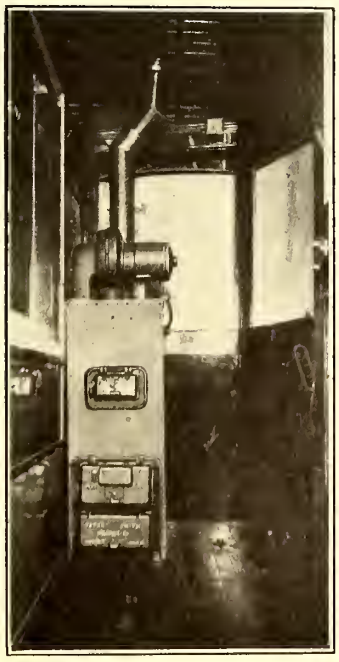
COMBINED HOT AIR HEATING AND VENTILATING SYSTEM

The Peter Smith Heater Company, Detroit, Mich., which is well known in the car heating field through its hot water system, has recently made a radical innovation by devising a forced circulation, hot air car-heating system to accomplish the dual object of heating and ventilation. The principle of this system is very simple and similar to that of the ordinary mechanical draft machinery used for the heating and ventilation of large buildings. Several electric railways are already using this method, but the following paragraphs will describe the single installation now being tried by the Public Service Railway Company, Newark, N. J.

As shown by the accompanying illustrations, this system is a combination of a car heater with a forced air circulation mechanism thereon and a duct under the longitudinal car seats on one side with suitable outlets for the discharge of heated air. It will be observed that the heater is mounted in the vestibule where it takes up no more floor room than the usual car stove. In this case, the heater was designed for cars measuring 30 ft. inside yet it is only 42 in. high and 16½ in. sq. The air circulating mechanism located at the top consists of a blower of the well-known "Sirocco" type which is driven by a ⅛-hp 500-volt motor. The motor is controlled by a snap switch and requires no attention except at very long intervals. When the fan is in operation, cold air is drawn from under the car through a hole cut in the floor beneath the heater. This cold air comes up through the perforated base plate of the heater and between the walls of the inner cylindrical hot air box and the square heater jacket. It then passes through the blower which forces it downward into the air-tight chamber surrounding the fire-pot of the heater and from thence it is forced into a duct which runs along the truss plank on one side of the car. This duct consists of 3 in. x 8 in. rectangular galvanized iron with circular outlets of 4 in. diameter spaced every 3 ft. These vents are placed in a gradually ascending



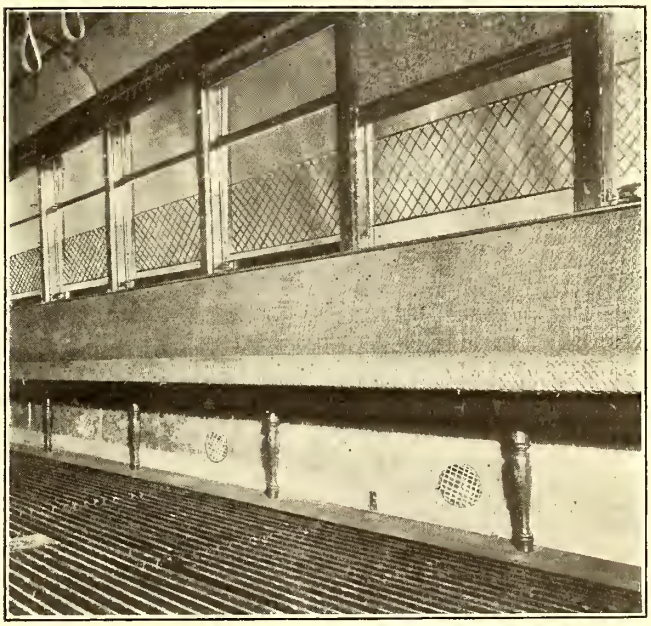
Sectional View of Heater



Heater Installed in Vestibule of Car

line beginning at the heater end because this arrangement permits the emission of equal amounts of air throughout the car. The steady volume of hot air passes over the floor and then rises to the ventilators, thereby insuring an even distribution of heat, dry floors and a complete change of air every five to six minutes. The fact that the bad air never has a chance to remain in the car is one of the features of this system.

It might be supposed that the draft at the outlets would be strong enough to inconvenience the passengers sitting over them, but this is not the case. The blower pressure is sufficient to allow the passengers on the other side of the car to enjoy its benefit. The duct outlets in this installation are screened to prevent passengers from throwing rubbish into them. Under longitudinal seats, the duct is placed back far enough to prevent its being kicked by the passengers. Where cross-seats



Hot-Air Duct Openings Under Seats

are used, the duct is placed alongside each seat in a magnesia-lined wooden box.

Although the blower motor is rated at ⅛ hp, its full capacity has not been required in practice. Under operating conditions, the motor takes .166 amp. at 500 volts, which means an electric operating cost of about 3.3 cents for a 20-hour day with power at 2 cents a kw-hour. The same heater in continuous operation will burn 40 lb. of hard coal in 20 hours, which at $6.00 per ton means a fuel cost of 12 cents a day. Thus the total operating changes would not exceed 15.2 cents a day.

HEATER DETAILS.

In view of the importance of having air tight joints in this heater to make the air circulating system effective, the following details may be of interest. The stove, which is on the inside of the hot air chamber, is of ordinary type except that it has a 12 in. diameter corrugated firepot. The grate is shaken with a side movement and can be rocked or dumped when desired. The base of the heater is a wrought plate casting which serves as a foundation and keeps the different parts permanently in line. Below the grate are two chambers equipped with pans, one for holding ashes and the other an extra coal supply. These pans have sufficient capacity for 18 hours service. The doors of the firebox, the ash pot and the reserve coal supply are hung on gravity hinges to prevent their being left open or unfastened by careless attendants.

The hot-air chamber which surrounds the firepot is circular in form with a 2½ in. air space between the stove proper and the casings and is made of No. 20 sheet iron. The outer casing is also made of No. 20 sheet iron lined throughout with 3-16 in. asbestos millboard and has a minimum spacing of 1 in. from the hot-air chamber. The framing on the top is cast iron, reinforced under the blower bedplate.

The city of Bonn, Germany, is considering a plan for electrifying the steam tramway connecting Bonn with Mehlem at a cost of $475,000, to be borne in equal amounts by the two municipalities.

News of Electric Railways

Joint Commission Reports on Boston Electrification

The joint board composed of the Massachusetts Railroad Commission, the Boston Transit Commission, the Metropolitan Park Commission and the Harbor & Land Commission has issued a report to the Legislature of 1910 in accordance with a resolve of the General Court of 1909, directing it to investigate various commercial and transportation matters in connection with the improvement of the Boston metropolitan district. The report includes a short discussion of the electrification question in connection with railroad service at Boston, which is abstracted herewith:

"Most of the suggested improvements in the passenger and freight service of the metropolitan district are predicated upon the substitution of electricity for steam as a motive power. As the Metropolitan Improvements Commission reported that the question of transportation was the paramount question affecting the commercial and industrial development of the district and of the State, and as that opinion has been plainly endorsed by the Legislature and by the public, and is fully concurred in by the board, it becomes of primary importance that the work of studying the problem of electrification should be begun at once in a determined and comprehensive way.

"To electrify a complicated terminal is no simple undertaking; it involves fundamental changes and very large expenditures. It is very different from the problem of electrifying one or two through tracks for passenger traffic. That electrification for passenger traffic is practicable has been demonstrated in New York by the New York Central & Hudson River Railroad and the New York, New Haven & Hartford Railroad and in other places, both in this country and Europe. Information is meagre, however, as to the cost of installation and economy of operation under various conditions.

"The best method of furnishing electric power is undetermined. In New York the respective systems in use by the New York Central & Hudson River Railroad and the New York, New Haven & Hartford Railroad are different. On the former a third-rail is used as a conductor and on the latter an overhead wire. On the former an alternating current is carried at high tension to substations where it is transformed to a lower voltage direct current and then transmitted to the locomotive by a third rail; on the latter the alternating current is carried at high tension by overhead conductors directly to the locomotive, where it is transformed to a lower voltage. Moreover, electrification for freight traffic, and particularly the electrification of a large freight terminal, is a difficult matter regarding which there is little or no experience and much difference of opinion."

The board states that the study of this problem should now be taken up by the railroads and pushed with vigor. As against the great cost of installation of electricity there is opened the possibility of utilizing in terminal stations and yards the space over the tracks for offices, warehouses, manufacturing plants and roadways. With electrical operation the entire passenger and freight terminal area may be covered with buildings. In the matter of operation there are several elements of saving. One of these is a saving in fuel owing to the power being generated in a large central plant under favorable conditions. The consumption of fuel per horse-power is much smaller than that which results from the extremely wasteful method of the steam locomotive. It is estimated that power can be furnished at the locomotive under electrical operation with one-half the consumption of fuel required by our present steam locomotives. "Freedom from locomotive smoke, soot and gas will contribute in large measure to the comfort and health not merely of passengers in the stations and cars, but also of almost every person in the metropolitan district," concludes the report.

The board recommends that a resolve be passed requiring railroads operating within the Boston metropolitan district to prosecute studies with reference to the electrification of their passenger and freight service and to report their conclusions to the board by Sept. 1, 1910.

Cleveland Traction Situation

Two lists of names will be available to the City Council of Cleveland before a referendum vote is called. One of them was prepared and the names secured by former Mayor Johnson, but because Burr Gongwer, secretary to Mr. Johnson, refused to file the names with the city clerk, Mayor Baehr requested that another set of petitions be circulated. Mr. Gongwer then filed his list. It was decided, however, to complete the new list, and the names are being checked as fast as received by the clerks of the board of elections. It is claimed that the Johnson list contains 24,000 names and that 8000 will be added. Workers on the Baehr petitions state that they will get 20,000 names in a short time.

The employees of the Cleveland Railway are urging greater protection for conductors assigned to the pay-as-you-enter cars. Receiver Bicknell has agreed to erect partitions at the entrance as a temporary means of relief.

The report of Mr. Bicknell for December, 1909, shows a surplus of $94,703. The gross earnings were $565,066, and the net earnings $332,976. Maintenance charges amounted to $107,827; transportation, $187,895; general, $37,163. Rentals, taxes, interest and dividends made up the remainder of the charges against the receipts.

On the evening of Jan. 10, 1910, the City Council fixed Feb. 17, 1910, as the date to vote on the street railway franchise. The petitions obtained by the Baehr solicitors have been accepted by the Council.

Detroit United Railway Awaits Franchise Settlement

The reply of J. C. Hutchins, president of the Detroit (Mich.) United Railway, to Mayor Breitmeyer of Detroit, who had requested Mr. Hutchins to authorize a reduction of fares pending the settlement of the franchise question, was presented to the City Council of Detroit at its meeting on Jan. 4, 1910. In his letter to Mr. Hutchins the Mayor referred to the present rental of $300 a day being paid by the company pending the settlement of the franchise question, saying that he felt that "the most equitable form of temporary arrangement would be one under which a reduced rate of fare could be given at least on the lines on which franchises have expired, the company in return to be given the privilege of operating from day to day until a permanent arrangement shall be made."

Admitting the large return to the city under the present rental plan the Mayor said that this return could by no means have the same effect upon the growth of the city as a reduction in fare. He concluded: "I believe that any concession which your company is able to make temporarily should be made to the street car users rather than the taxpayers at large; and with that end in view I would invite your suggestions as to what your company might be able to do in the shape of a reduced fare given in return for the right to run your cars until such time as the entire franchise matter can be permanently settled."

In his reply Mr. Hutchins said that pending the results of the investigation of street railway affairs in Detroit now under way it would not be wise to jeopardize either the revenue or the credit of the company. His letter to the Mayor follows:

"Your desire to obtain for the people of the city every possible advantage is quite fully understood. We most heartily share that desire with you. Let me advise you of our situation and of the efforts we are making.

"The city of Detroit ranks in population as the eighth or ninth of our American cities. Its present ratio of growth in population and in industrial activities is probably greater than that of any other American city. The average rate of fare now in effect in Detroit is below the rate in effect in any other of these cities. Every dollar of this company's income, whether derived from the addition of new capital or from its earnings, is now being applied and for a long time past has been applied to the maintenance and extension of its service to meet the growth of the city. We have added this year 80 new cars to our car equipment, along with all of the appurtenances necessary

for the operation of same. It is very necessary that certain double tracking, to which your attention has been called, shall be done, and it will be necessary during the coming year to supply many additional cars and much additional equipment. All of the company's resources are being used for such purposes.

"There is now under way an investigation, as inaugurated by yourself through the Committee of Fifty, which should show the exact status of this company respecting its capitalization, its earnings and its expenses, so that all of these matters may be dealt with from the standpoint of actual facts. It would seem to me that under these circumstances it would be wise in the city to let our revenues and our credit alone until the results of this investigation are made manifest."

At the meeting at which Mr. Hutchins' letter was presented the Mayor urged immediate action looking to the submission of a franchise settlement ordinance to the voters, and the report of the Committee of Fifty was ordered printed. Alderman Glinnan at the meeting on Jan. 4, 1910, moved for the immediate submission of the question of municipal ownership of street railways to the people.

Proposed Chicago Subways

It was expected that two legal decisions which would define the right of Chicago to use its percentage of the net earnings of the surface railways for subway construction would be rendered during the week ended Jan. 15, 1910. The court has had these cases under consideration for two weeks. The points at issue are, first, whether the city has the right to build subways under the present powers conferred on it by the Legislature, and, second, whether the so-called traction fund totaling about $4,000,000, can be used for preliminary work or must be reserved until subway work has been started. It is anticipated that the court will conclude that the city does not need any additional enabling legislation to further the subway undertaking, and that the 55 per cent of the net receipts of the companies which goes to the city is a part of the municipality's general income and can be used from year to year. In an earlier decision Judge Windes enjoined the city from paying $75,000 from the subway fund for the expense of preparing a subway report. Walter L. Fisher, special traction counsel, has represented the city in the cases.

In any event, it is expected that the cases will be carried to higher courts and that efforts will be continued toward securing enabling legislation. Two weeks ago Senator Ettleson presented a bill amending the Cities and Villages Act which would give Chicago the power to undertake the construction of subways and municipal wharves. This bill was not presented at the request of Chicago. Now it is announced that Walter L. Fisher has drawn a subway bill with the assistance of the local transportation committee which will be presented to the Legislature at once. The bill provides essentially: That the city has a right to own, operate or lease a subway; that it has a right to grant a franchise for a subway; that in case of a franchise the grant be no longer than 20 years; that the subway may be used for street cars, elevated railroad trains, interurban cars and all public service cars not operated by steam; that the subway also may be used to contain galleries for wires, tubes for service, conduits for pipes, etc.; that the question of grant by franchise be submitted for a referendum vote; that the city has a right to compensation and also to fix rates in case of a grant by franchise.

One of the important features of the bill is the provision for a referendum vote. Another is the matter of compensation to the city for the use of the subway.

Growth of the Denver City Tramway

The daily newspapers of Denver on Jan. 1, 1910, presented large advertisements outlining features of the development of the Denver (Col.) City Tramway. The history of this property, which was chartered in 1867, includes a "story of trials and tribulations and ultimate success out of continued failure." The first rails laid weighed 16 lb. and supported 10-ft. cars, drawn by one horse. The company now has 198 miles of track in the city and 26 miles of interurban railway and operates 265 cars daily. In 1909, 84,000,000 passengers were carried, equivalent to handling the population of Denver 400 times. The following statement regarding taxes was included in the advertisement:

"Fifteen cities of the United States have a population of 6,689,126, and pay $5,787,375 in taxes, an average of 87 cents per capita. The figures for population are those of the 1905 or 1906 State or Government estimate census for cities of 8,000 or over, and while they are not accurate, now, and while some cities have grown faster than others, they do very well for the purpose of comparison. Chicago paid in 1908 in taxes $2,215,941, and has 2,049,185 people—we are talking of street car companies, of course—so Chicago paid $1.08 per capita. Denver, by the same census, had 151,920 people and paid $180,000 in taxes, or $1.18 per capita."

During 1909 the Denver City Tramway spent $1,000,000 in improvements. Eleven miles of new track were constructed and 10 miles of double track were reconstructed. During 1910 the company proposes to build 14 miles of new track, replace 7 miles of cable track, erect a new office building and car house at Fourteenth Street and Arapahoe Street, build a new suburban depot opposite the central loop, construct 35 new passenger cars and enlarge the central power station. These improvements will entail an expenditure of approximately $1,750,000.

Meeting of Central Electric Railway Association

The official call for the annual meeting of the Central Electric Railway Association to be held at Columbus, Ohio, on Jan. 27, 1910, issued by A. A. Anderson, president, and A. L. Neereamer, secretary, is dated Jan. 8, 1910. In addition to the program of the meeting, as published in the ELECTRIC RAILWAY JOURNAL of Jan. 8, 1910, page 83, the circular contains a list of railways which are members of the association and a list of supply men who are members of the association. In view of the fact that this is the annual meeting and that officers for the ensuing year are to be elected and reports from the standing committees read, every member of the association is urged to be present, and it is suggested to those members living at a distance that the trip be made in special interurban cars. Members have the privilege of inviting friends to this meeting. The executive committee will meet at 7:30 p. m. on Jan. 26. The list of supply men who are members of the association follows:

Armstrong, G. E., American Railway Guide Co.
Ashley, R. W., General Electric Co.
Ayres, Chas. S., G. C. Kuhlman Car Co.
Beattys, W. H., Jr., The Westinghouse Electric & Mfg. Co.
Benham, John, International Register Co.
Berger, E. F., Midvale Steel Co.
Billau, H. E., The Sherwin-Williams Co.
Blackwell, W. L., Cooper Heater Co.
Bloss, W. H., The Ohio Brass Co.
Bone, Jas. L., The Ironsides Co.
Burch, T. A., Wm. C. Robinson & Son Co.
Burford, Wm. B., Stationery and Printing.
Callan, J. G., Arthur D. Little, Inc.
Clapp, Chas. W., The Brown Hoisting Machinery Co.
Cospei, W. P., Chicago Car Heating Co.
Cotabish, N. C., National Carbon Co.
Craig, Edward A., Westinghouse Traction Brake Co.
Crawford, S. W., More-Jones Brass & Metal Co.
Cutler, H. A., Wm. C. Robinson & Son Co.
Davis, Chas. H., The Westinghouse Electric & Mfg. Co.
Davis, Geo. S., *Electric Traction Weekly.*
Dexter, R. E., Midvale Steel Co.
Doan, C. H., Nelsonville Brick Co.
Dodge, C. H., Taylor Electric Truck Co.
Dodson, C. F., Standard Steel Works Co.
Dorner, H. A., The Dorner Railway Equipment Co.
Drake, L. J., Jr., Galena-Signal Oil Co.
Duclos, A. E., Massachusetts Chemical Co.
Eayrs, T. C., The Westinghouse Electric & Mfg. Co.
Farr, Eugene H., The A. H. Pugh Printing Co.
Field, A. W., Standard Motor Truck Co.
Gay, H. B., Electric Storage Battery Co.
Gohen, J. A., The Cleanola Co.
Gould, L. E., ELECTRIC RAILWAY JOURNAL.
Goodloe, Thornton M., The Fire Protection Co.
Greaves, J. L., Stromberg Allen & Co.
Griffey, B. E., Buschmann-Griffey Co.
Grimes, E. B., Ohmer Fare Register Co.
Gundrum, F. N. Jr., Chicago Varnish Co.
Hall, G. A., John Roebling's Sons Co.
Hamer, W. D., Electric Service Supplies Co.
Hanna, J. A., Niles Car Mfg. Co.
Henkle, T. H., Electric Service Supplies Co.
Hinmon, W. E., Cooper Heater Co.
Holloway, Harry C., The Rail Joint Co.
Hornstein, F. C., Indianapolis Brass Co.
Hunter, R. W., Poole Bros.
Hutchins, S. D., Westinghouse Traction Brake Co.
Kipp, J. G., Electric Railway Equipment Co.
Klinger, P. W., The Barney & Smith Car Co.

Lee, Ray P., The W. R. Garton Co.
Lewis, Arthur, Great Western Smelting & Refining Co.
Lloyd, F. C., Gelien & Co.
McGee, John G., Hildreth Varnish Co.
McLain, J. E., The Trolley Supply Co.
McLain, W., Wm. Wharton, Jr., & Co.
Marsh, H. C., General Electric Co.
Mason, Stephen C., McConway & Torley Co.
Midgley, Stanley W., The Curtain Supply Co.
Miller, L. G., Miller Lumber Co.
Morgan, F. A., Morgan Fare Register Co.
Naugle, A. T., Naugle Pole & Tie Co.
Naylor, N. C., Railway Steel Spring Co.
Ohmer, John F., Ohmer Fare Register Co.
Olberding, A. G., The Columbia Brake Shoe & Fdy. Co.
Pickupp, W. B., Positive Nut Lock Washer Co.
Poole, Stephen K., Poole Bros.
Porter, K. E., Carnegie Steel Co.
Salsich, N. E., Pennsylvania Steel Co.
Sample, Morris DeF., The Fire Protection Co.
Sawtelle, Charles E., Tool Steel Motor Gear & Pinion Co.
Saylors, George, H. W. Johns-Manville Co.
Seymour, John B., The National Lock Washer Co.
Shutt, E. A., Factory Oil Co.
Smith, D. W., The Peter Smith Heater Co.
Spencer, E. L., Dayton Mfg. Co.
Stanton, George, The Cleveland Frog & Crossing Co.
Staats, Henry N., The American Railway Insurance Co.
Stern, M. C., The Egry Register Co.
Strieby, F. H., General Electric Co.
Tate, H. F., The National Conduit Cable Co.
Taylor, Ross, Automatic Ventilator Co.
VanDorn, W. T., The W. T. VanDorn Co.
Weston, W. S., The Buda Co.

Illinois Traction System Completing Connecting Links.—The construction of the connecting links of the Illinois Traction System from St. Louis to Chicago is progressing rapidly. The line between Streator and Ottumwa, Ill., has been opened and plans are under way for a line from Streator to Peoria and a line from Ottawa to Aurora, at which place connections will be made for Chicago.

Meeting of the A. I. E. E.—A meeting of the American Institute of Electrical Engineers was called for Jan. 14, 1910, at 8 p. m. in the auditorium of the Engineers' Building, New York, N. Y. Under the auspices of the railway committee, Prof. W. S. Franklin and S. S. Seyfert were to present a paper entitled "On the Space Economy of the Single-Phase Series Motor." W. S. Murray, E. H. Anderson, C. P. Steinmetz and E. F. Alexanderson signified their intention in advance of the meeting to take part in the discussion.

Wisconsin Electrical Association.—As announced in the Electric Railway Journal of Dec. 11, 1909, page 1201, the annual convention of the Wisconsin Electrical Association will be held at the Hotel Pfister, Milwaukee, Wis., on Jan. 19 and 20, 1910. The program has not yet been announced. The entertainment features are in charge of an exhibitors' association, connected with the parent association, and the exhibitors are represented by a committee consisting of H. P. Andrea, of Julius Andrea & Sons Company, Milwaukee, Wis.; F. G. Bolles, Allis-Chalmers Company, Milwaukee, Wis., and W. R. Pinchard, Westinghouse Electric & Manufacturing Company, Chicago, Ill. The committee has arranged for a "good-fellowship" entertainment at the Elks' Club, Milwaukee, on the evening of Jan. 19.

National Conference on Railway Legislation.—Martin S. Decker of the Public Service Commission of the Second District of New York, president of the National Association of Railway Commissioners, has appointed the following delegates from that association to attend the national conference on uniform State legislation which has been called by the National Civic Federation to meet in Washington on Jan. 17, 18 and 19: Martin A. Knapp, chairman of the Interstate Commerce Commission; Ira B. Mills, chairman of the Railroad and Warehouse Commission of Minnesota; H. Warner Hill, chairman of the Railroad Commission of Georgia; B. A. Eckhart, of the Railroad and Warehouse Commission of Illinois, and William O. Seymour, of the Railroad Commission of Connecticut.

Annual Meeting of the A. S. C. E.—The fifty-seventh annual meeting of the American Society of Civil Engineers will be held in the house of the society in New York on Jan. 19 and 20, 1910. At 10 a. m. on Jan. 19 the annual reports will be presented, officers for the ensuing year elected and members of the nominating committee appointed. The progress report of the special committee on "Steel Columns and Struts" and the progress report of the special committee on "Bituminous Materials for Road Construction" will be presented for discussion. The board of direction of the society will meet after the adjournment of the annual meeting. At 2:30 p. m. on Jan. 19 members of the society will be afforded an opportunity to inspect the tunnel and terminal work of the Pennsylvania Tunnel & Terminal Railroad, by courtesy of George Gibbs, chief engineer of electric traction and terminal station construction of the company. A reception will be held by the president in the house of the society at 9 p. m. on Jan. 19. Jan. 20 will be devoted to a visit to the Ashokan reservoir by invitation of the board of water supply of New York. At 9:30 p. m. there will be an informal smoker at the house of the society.

LEGISLATION AFFECTING ELECTRIC RAILWAYS

Massachusetts.—The Legislature of Massachusetts convened on Jan. 5, 1910. An important announcement the first day was the personnel of committees. Senator Abbott of Suffolk County was appointed chairman of the committee on street railways. Senator Turtle of Berkshire County was appointed chairman of the committee on railroads. President Treadway of the Senate on taking the chair spoke briefly of the transportation matters which are to come before the Legislature, including the questions referred to various commissions for expert information, which embrace metropolitan improvements at Boston, the construction of additional subways, tunnels or elevated structures in Boston, consolidation of the West End Street Railway and the Boston Elevated Railway; electric railway holdings by railroads. The relation of the New York, New Haven & Hartford Railroad to possible future electric railway developments in the Berkshire district, carried over from 1909 at the request of the petitioners, is one of the most important matters to be considered this year. On Jan. 7, 1910, the joint board, composed of the railroad, transit, harbor and land and metropolitan park commissions, reported to the Legislature on metropolitan improvements, advocating the study immediately of electrification by the steam railroads terminating at Boston. Several special reports from the commissions are expected within the next few days, and the Railroad Commission and Transit Commission will shortly submit a report on the proposed Boston & Eastern Electric Railroad tunnel to connect the proposed East Boston terminus of the route with Post Office Square.

New York.—The Legislature of New York convened on Jan. 5, 1910. No less than 55 new members of the Assembly were introduced. The death during the year of Senators John Raines and Patrick H. McCarren removed two conspicuous figures. Mr. Raines was Republican leader of the Senate, and the most resourceful opponent of Governor Hughes. Jotham P. Allds has been selected to succeed him. The annual appropriation bill has been introduced. The appropriations aggregate $23,750,000, as against $21,500,000 last year. Government by commission on the so-called Des Moines plan is proposed for Buffalo in a bill introduced by Senator Davis of that city. It is the first time the idea of municipal government by commission has been embodied in any measure submitted to the Legislature of New York. The Governor has again recommended the extension of the Public Service Commissions law so as to include jurisdiction over telegraph and telephone companies. This matter was referred last year to a joint special committee with instructions to report at this session. After the preliminaries had been arranged on Jan. 5 adjournment was taken until Wednesday evening, Jan. 12, at 8 p. m.

Ohio.—There is talk of the enactment by the General Assembly of a law which will provide for a State tax commission to supplant the numerous boards which now decide tax values. As a basis for the tax, it has been proposed that the market value of the stock minus the tax value of the real estate and personal property returned for taxation shall represent the property value to be taxed. The tax on the capital stock will be apportioned among the counties in which the property lies in the case of a railroad, telephone company or other corporation having property in several counties. Talk of a public service commission has also been revived, Speaker Mooney referring to the subject in addressing the House. So far as known, this idea includes the features incorporated in a bill before the last General Assembly which resembled the law in force in New York. One objection is that a measure of this kind takes away the power of municipalities to grant franchises, as cases of disagreement or dispute regarding a grant must be referred to the commission.

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Financial and Corporate

New York Stock and Money Market

January 11, 1910.

The stock market during the last week has been irregular and weak. Traders appear to be nervous and there exists a persistent pressure to sell. This condition is attributed to an uneasiness over the action that may be taken by Congress upon the recommendations made by President Taft and the continued firmness in the money market. The traction shares, however, have not been affected materially. Third Avenue and Brooklyn Rapid Transit have held their prices on moderate trading, while Interborough-Metropolitan issues have advanced several points.

Money has shown no disposition to recede, and quotations to-day were: Call, 5 to 5½ per cent; 90 days, 4½ to 4¾ per cent.

Other Markets

Philadelphia Rapid Transit stock has been active but prices have changed only fractionally since Jan. 1. Union Traction has also been active at former prices.

In the Chicago market the active dealing in the various series of Chicago Railways has in a measure subsided. There has been some selling of Kansas City Railway & Light and the price has receded several points.

In Boston, Massachusetts Electric has been the leading traction feature. Price changes have been merely nominal, the common selling for about 18 and the preferred for about 80.

As usual, the trading in Baltimore has been confined, practically, to the bonds of the United Railways Company. Prices are about as formerly: incomes, 60¼; 4s, 86½, and funding 5s, 84¼.

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

	Jan. 4.	Jan. 11.
American Railways Company	a48¼	a49
Aurora, Elgin & Chicago Railroad (common)	*57	a62⅜
Aurora, Elgin & Chicago Railroad (preferred)	*92	a95
Boston Elevated Railway	136½	134
Boston & Suburban Electric Companies	a16	a16
Boston & Suburban Electric Companies (preferred)	74	74
Boston & Worcester Electric Companies (ccn mon)	a11	a11½
Boston & Worcester Electric Companies (preferred)	a48	a47
Brooklyn Rapid Transit Company	79½	79
Brooklyn Rapid Transit Company, 1st pref., conv. 4s	86¾	86
Capital Traction Company, Washington	a135¼	a136½
Chicago City Railway	185	185
Chicago & Oak Park Elevated Railroad (common)	*2	*2
Chicago & Oak Park Elevated Railroad (preferred)	*10	*10
Chicago Railways, ptcptg., ctf. 1	a109	a108
Chicago Railways, ptcptg., ctf. 2	a35½	a33
Chicago Railways, ptcptg., ctf. 3	a20	a17
Chicago Railways, ptcptg., ctf. 4s	a10	a9½
Cleveland Railways	*84	a91½
Consolidated Traction of New Jersey	a77	a77
Consolidated Traction of New Jersey, 5 per cent bonds	a106	a106
Detroit United Railway	*65	*63
General Electric Company	159⅞	159⅛
Georgia Railway & Electric Company (common)	a104½	a105½
Georgia Railway & Electric Company (preferred)	87½	87½
Interborough-Metropolitan Company (common)	24¼	25¼
Interborough-Metropolitan Company (preferred)	61	62¼
Interborough-Metropolitan Company (4½s)	83	82⅞
Kansas City Railway & Light Company (common)	a35	a36
Kansas City Railway & Light Company (preferred)	*75	a76½
Manhattan Railway	138	*138
Massachusetts Electric Companies (common)	a19	a18½
Massachusetts Electric Companies (preferred)	a80½	80
Metropolitan West Side, Chicago (common)	a19	a17½
Metropolitan West Side, Chicago (preferred)	a57	a54¼
Metropolitan Street Railway	20	*20
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	83⅝	81½
Northwestern Elevated Railroad (common)	a17½	a17½
Northwestern Elevated Railroad (preferred)	a70	a70
Philadelphia Company, Pittsburg (common)	a51¼	a52¼
Philadelphia Company, Pittsburg (preferred)	a45¼	a46
Philadelphia Rapid Transit Company	a28⅜	a27½
Philadelphia Traction Company	a89	a89
Public Service Corporation, 5 per cent col. notes	*100⅛	*100⅛
Public Service Corporation, ctfs.	a104	a106
Seattle Electric Company (common)	a115	a115½
Seattle Electric Company (preferred)	a105	a104½
South Side Elevated Railroad (Chicago)	a56	a55
Third Avenue Railroad, New York	18⅞	18
Toledo Railways & Light Company	12½	15¼
Twin City Rapid Transit, Minneapolis (common)	117	115
Union Traction Company, Philadelphia	a52¾	a52½
United Rys. & Electric Company, Baltimore	a14	a14⅛
United Rys. Inv. Co. (common)	11¼	12
United Rys. Inv. Co. (preferred)	*71⅞	*71⅞
Washington Ry. & Electric Company (common)	a43¼	a42¾
Washington Ry. & Electric Company (preferred)	a91¼	a90½
West End Street Railway, Boston (common)	a95	a94¾
West End Street Railway, Boston (preferred)	*106	*106
Westinghouse Electric & Mfg. Company	82	79⅛
Westinghouse Elec. & Mfg. Company (1st pref.)	*130	*130

aAsked *Last Sale.

Segregation of Light and Railroad Properties in Port Jervis

The Public Service Commission of the Second District of New York has rendered a decision in which it approves the segregation of the railway and electric light properties in Port Jervis and refuses an application from new interests to enter into competition with the companies which took over the property of the old consolidated company.

The Port Jervis Electric Light, Power, Gas & Railroad Company, which operated the gas and electric plants and an electric railway in Port Jervis, because of excessive funded debt, and other liabilities, and extensive depreciation of the railroad property, found itself unable to comply with an order of the commission requiring that the railroad be put in a condition of safe and satisfactory operation. In consequence, a mortgage foreclosure suit was instituted by the bondholders, who bought in the property. Two successor corporations were formed, one to take over the lighting property and one to take over the railroad. The commission grants capitalization to the Port Jervis Light & Power Company of $118,000 capital stock and $170,000 bonds, and to the Port Jervis Traction Company of $20,000 capital stock and $70,000 bonds. The stock of each company goes to the bondholders as the purchase price of the property. The bonds to be issued by each company are solely for improvements necessary to put the properties in proper condition, except that the bonds of the Port Jervis Light & Power Company include the taking over by that company of the bonds of the Port Jervis Traction Company. The commission says that the bonds of the Traction Company are likely to sell at a large discount, while the bonds of the Port Jervis Light & Power Company are to bring at least 90 per cent of face value. The combined capital thus fixed for the new companies is based upon actual value and is a reduction of $357,000 from the capitalization of the old company, which amounted to $735,000. In an opinion written by Commissioner Martin S. Decker, the commission holds that the successor corporations are as such entitled to take over the properties and to issue capital stock and bonds upon a fair basis.

The decision also disposes of the application of C. F. Wright and others, who desired to form a corporation to furnish gas and electricity in Port Jervis and to build and operate an electric railway in Port Jervis and develop power at Mongaup Falls, 14 miles from Port Jervis, and transmit it to Port Jervis. These petitioners also proposed to build an electric railway from Port Jervis to Milford, Pa. The object of this proposed corporation was to supplant the old lighting and railroad company and its successor corporations in Port Jervis. The decision declares that as the successor companies are in possession of property rights that cannot be denied, this object cannot be attained by order of the commission. If the new company were authorized by the commission to produce and supply gas and electricity in Port Jervis both companies would probably become bankrupt in a short time and one would without question, with probable resulting consolidation and unnecessary increase of capitalization on that account. In regard to the Traction Company the commission says that the company cannot be compelled by the city or by the commission to vacate the streets; there is no suggestion that another road could be operated in the same streets; no franchise for a road in other streets has been granted by the city and if it had, proof must be submitted that it could be operated without continual loss, and with good service by the present line it seems no such proof could be presented.

The opinion of Commissioner Decker states the service of the old company was so poor and the rights and proper interests of the people of Port Jervis were disregarded to such extent that if the petition by Mr. Wright had been presented before the sale on foreclosure it would have been granted; but the situation in its legal aspect has been so changed by the sale and formation of companies to take over both the lighting and railroad properties and operate them under capitalization fixed by the commission, that a just basis for approving the exercise by the proposed new company of the new franchises in Port Jervis is lacking. The commission says that serious disregard by the new lighting company of its obligations to the public will result in drastic action through the approval of the exercise of a new franchise by a competing company. The petitioners for new

rights are free to present the application at any time of a corporation to develop the Mongaup River power and build an electric transmission line to Port Jervis.

Birmingham Railway, Light & Power Company, Birmingham, Ala.—An annual dividend of 2 per cent on the $3,500,000 of common stock of the Birmingham Railway, Light & Power Company was paid on Jan. 1, 1910. This is the first dividend on the common stock since Dec. 31, 1906.

Boston (Mass.) Suburban Electric Companies.—The directors of the Boston Suburban Electric Companies have declared a quarterly dividend of $1 a share on the preferred stock, payable on Jan. 15, 1910, to stock of record on Jan. 3, 1910.

Lynchburg Traction & Light Company, Lynchburg, Va.—The American Railways, Philadelphia, Pa., has purchased from R. D. Apperson and his associates the controlling interest in the Lynchburg Traction & Light Company, Mr. Apperson and his associates receiving in part payment bonds and stocks of the American Railways. Mr. Apperson will be retained as president and general manager under the same conditions as when he and his associates owned the property. Mr. Apperson's associates, however, have retired as officers and directors of the company and H. J. Crowley has been elected vice-president and C. L. S. Tingley secretary and treasurer of the company in the interests of the American Railways. Mr. Crowley, Mr. Tingley, J. J. Sullivan, E. Clarence Miller, William H. Shelmerdine, Walter H Lippincott and R. D. Apperson remain as directors of the company.

Metropolitan Street Railway, New York, N. Y.—The hearing on the motion to terminate the lease of the Fourth Avenue, Eighth Avenue and Ninth Avenue lines to the Metropolitan Street Railway, which was to have been held before Judge Lacombe in the United States Circuit Court on Jan. 5, 1910, has been postponed until Jan. 21, 1910.

Ocean Shore Railway, San Francisco, Cal.—Fred S. Stratton, receiver of the Ocean Shore Railway, has announced that he proposes to apply to the courts for authority to issue $2,000,000 receiver's certificates, the proceeds of which will be used to complete the road.

Portland Railway, Light & Power Company, Portland, Ore.—The Portland Railway, Light & Power Company is said to have concluded negotiations for the purchase of the property of the Portland Water Power & Electric Transmission Company and the River Mill Company.

Roanoke Traction & Light Company, Roanoke, Va.—The American Railways, Philadelphia, Pa., has purchased from R. D. Apperson and his associates the controlling interest in the Roanoke Traction & Light Company, Mr. Apperson and his associates receiving in part payment bonds and stock of the American Railways. Mr. Apperson will be retained as president and general manager under the same conditions as when he and his associates owned the property. Mr. Apperson's associates, however, have retired as officers and directors of the company and H. J. Crowley has been elected vice-president and C. L. S. Tingley secretary and treasurer of the company in the interests of the American Railways. Mr. Crowley, Mr. Tingley, J. J. Sullivan, E. Clarence Miller, William H. Shelmerdine, Walter H. Lippincott and R. D. Apperson remain as directors of the company.

Sheboygan Light, Power & Railway Company, Sheboygan, Wis.—The Sheboygan Light, Power & Railway Company has asked the Wisconsin Railroad Commission to sanction an issue of $114.000 of 5 per cent bonds to cover the cost of extensions and improvements.

Southern Colorado Power & Railway Company, Trinidad, Col.—The property of the Southern Colorado Power & Railway Company was bid in for $500,000 at foreclosure at Trinidad on Dec. 24, 1909, by the Northern Securities Company, a temporary holding company, which on completion of the reorganization will turn the property over to the Colorado Railway, Light & Power Company, which was incorporated in Colorado on Dec. 21, 1909, with an authorized capital stock of $5,000,000.

Winona Interurban Railway, Winona Lake, Ind.—The Winona Interurban Railway has leased the property of the Winona & Warsaw Railway for 99 years from Jan. 1, 1910.

Traffic and Transportation

Increase in Wages in Brooklyn

The Brooklyn (N. Y.) Rapid Transit Company announced an increase in the wages of conductors, motormen and guards in the employ of the company of practically one cent an hour, effective on Jan. 28, 1910. This is a further recognition of the service of the men in addition to the pension system adopted on Jan. 1, 1910, of which mention has previously been made in the Electric Railway Journal. The announcement was conveyed to the men in a communication addressed to them by J. F. Calderwood, vice-president and general manager of the company. This letter follows:

"In consideration of your past loyalty and hearty cooperation, so essential, not only in serving the public, but in protecting the interests of the company, the management takes pleasure in announcing, in addition to the pension system recently adopted, an increase in wages of trainmen on both surface and elevated lines, conforming to schedules shown on the attached bulletin.

"With reference to the latter, special attention is invited to the provision which makes possible, by good conduct and record free from demerit, promotion to the higher grades at periods earlier than those prescribed for advancement, by reason of length of service alone."

The statement to the motormen, conductors and guards of the elevated lines was signed by J. J. Dempsey, superintendent of elevated lines of the company. It follows:

"Effective on dates given below, the following changes will be made in the rates of pay for trainmen, elevated lines:

"The flat rates of 25 cents for motormen, 20 cents for conductors and 17½ cents for guards, will be discontinued and all employees of these classes receiving the rates just mentioned will receive the rates of 26 cents, 21 cents and 18½ cents, respectively.

RATES OF PAY, PER HOUR (MOTORMEN).

Years of service.	Present rate. Cents.	Rates effective Jan. 28, 1910. Cents.	Rates effective Jan. 6, 1911. Cents.
1	25	26	26.0
2 and after	30	31	31.5

RATES OF PAY, PER HOUR (CONDUCTORS).

	Cents.	Cents.	Cents.
1	20	21	21.5
2	20	21	21.5
3	21	22	22.5
4	22	23	23.5
5	22	23	23.5
6 and after	23	23	23.5

RATES OF PAY, PER HOUR (GUARDS).

	Cents.	Cents.	Cents.
1	17.5	18.5	18.5
2	17.5	18.5	19.0
3	18.4	19.0	19.5
4	19.2	20.0	20.5
5	19.2	20.0	20.5
6 and after	20.0	21.0	21.5

"The present seniority rules and regulations will govern in determining the grade to which an employee is entitled."

The statement to the conductors and motormen of the surface lines was signed by W. Seibert, superintendent of surface lines of the company. It follows:

"Effective on dates given below, the following changes will be made in the rates of pay for conductors and motormen, surface lines:

"The flat rate of 20 cents per hour will be discontinued, and all conductors and motormen heretofore receiving 20 cents per hour, effective the dates given below, will receive the rate as shown in the table for Grade 3.

RATES OF PAY PER HOUR.

Years of service.	Present rate.	Rate effective Jan. 28, 1910.	Rate effective Jan. 6, 1911.	Grade.
1	20	21	21.5	
2	20	21	21.5	3
3	21	22	22.5	2
4	22	23	23.5	
5	22	23	23.5	1
6 and after	23	24	24.5	1 A

"PROMOTION ON EFFICIENCY

"Employees are advised that good conduct will be rewarded by promotion which may be earned under the following conditions:

"FROM GRADE 3 TO GRADE 2

"At the end of the first year, if record shows 20 demerits or less. If at this time an employee has more than 20 de-

merits, promotion will be given when he reduces his record of demerits to 20.

"FROM GRADE 2 TO GRADE 1

"At the end of the second year, if record is free of demerits. If at this time an employee has demerits, promotion will be given when demerit record is cleared.

"FROM GRADE 1 TO GRADE 1-A

"At the end of the fourth year, if record is free of demerits. If at this time an employee has demerits, promotion will be given when demerit record is cleared.

"The present seniority rules and regulations will govern in determining the grade to which an employee is entitled."

Mr. Calderwood subsequently made this statement to the public through the newspapers:

"Now that the stockholders who have invested their money in the property are receiving a partial return, the directors feel that the trainmen, whose rates have not been uniformly changed, should also share in the prosperity the company has enjoyed in the past year, and as a result they will receive an increase which will amount to about $200,000 a year, and this amount will be further increased by efficient service, depending entirely upon the efforts of the men. The above increase is more than 10 per cent of the last year's surplus of the company."

Complaint Against Service in Albany, N. Y.

The Public Service Commission of the Second District of New York recently received a complaint from Augustus S. Downing, first assistant commissioner of education of New York, against the service furnished by the United Traction Company, Albany, N. Y., on its Pine Hills line between 5 p. m. and 6 p. m. on days other than Saturday and Sunday in that sufficient cars were not provided to accommodate persons employed in the Capitol who reside in that part of the city served by the Pine Hills Line, on which the commission about 10 months ago limited the number of passengers to be carried on each car.

Mr. Downing alleged that many residents of the western part of the city who have offices or are employed in the Capitol have been seriously inconvenienced by the failure of the company to furnish a sufficient number of cars during these hours. Instances were cited when he was required to wait 30 minutes during which time seven cars passed and he was finally obliged to take a car at State and Pearl Streets; another instance when he waited 20 minutes and five cars passed without stopping; another when he waited 18 minutes, during which time five cars passed without stopping and on the last instance he walked up Washington Avenue to Lark Street where two more cars passed without stopping and finally at Madison Avenue and Lark Street he succeeded in boarding a car. The petitioner asked that the company be required to operate more cars between the hours mentioned and to rescind the rule limiting the number of passengers to be carried on each car.

Attached to the petition was an affidavit from Frank B. Gilbert, chief of the law division of the State Education Department, who recited that on one occasion he left the Capitol at 5.40 p. m. and seven cars passed without stopping, all having the full number allowed by the rules and that he did not arrive at his destination until 6.20 p. m.

The company has filed with the commission an answer, in which it states that since March 30, 1909, it has been complying with an order of the commission limiting the number of passengers on the larger type of cars to 40 and the smaller type to 35. The company states that a sufficient number of cars are being operated for the number of passengers carried, and if the order were set aside or rescinded, the cars which are not now by its terms permitted to stop because carrying the maximum number of passengers fixed by the order, would stop to receive and carry more passengers, which would afford greater convenience.

The company maintains it gives the Pine Hills line during the rush hours a service of 2½ minutes headway and a 5-minute headway during the rest of the day, and that during the rush hours cars are run at less than a minute headway on State Street, Eagle Street and Washington Avenue, and if it were possible to operate an additional number of cars during the rush hours and earn enough to pay the interest on the cost of such additional equipment of cars, it would be difficult, if not impossible, to employ men to operate cars for only two, three or four hours a day.

A statement is attached showing the number of cars operated, the total number of passengers carried and the average number of passengers per car at the time they were made. The company denies all the allegations of the complaint, which charges that an insufficient number of cars is being operated on the Pine Hills line, that the service is inadequate for the travel thereon, and that the public is inconvenienced on account of the service rendered, except in so far as inconvenience is due to the limiting rule.

The commission announced that it would take up the various complaints as to the service on the Pine Hills line of the company, as to alleged insufficiency of cars and the operation of the limiting rule now in effect, on Jan. 12, 1910. Complaints to be heard at that time were those of the Pine Hills Association, Augustus S. Downing and Charles S. May.

Order Regarding Use of Side Doors

The Public Service Commission of the First District of New York has issued substantially the following order regarding the operation of center side doors in cars used in the subway, on which subject hearings were held before the commission on Dec. 21, 1909, and Dec. 24, 1909, as previously noted in the ELECTRIC RAILWAY JOURNAL:

"The Interborough Rapid Transit Company shall operate all completely equipped side-door trains in its possession continuously throughout the scheduled time for express-train operation in the subway, excepting for such time or times as side-door trains may be required to lay up for adjustment of mechanism or for cleaning or repairs.

"During December, January, February and March of each year the company shall open the side doors of all cars on all side-door trains (not including mixed trains in which side-door cars are mingled with other cars) at all stations on the Lenox Avenue Branch of the subway south of and including Prospect Avenue Station, and on all stations south of Dyckman Street, on the Broadway Branch of said subway, where the platforms are adjacent to the side doors and during all other months the company shall open the side doors on all cars on such side-door trains at all stations where the platforms are long enough to come in front of the side doors.

"This order shall take effect on Jan. 10, 1910, and remain in force until further order of this commission.

"The company shall notify the commission five days after service of this order upon it whether the terms of this order are accepted and will be obeyed."

The opinion of Commissioner Eustis, on which this order was based, after reciting the testimony taken at the hearings, says in part:

"I do not believe it would be wise to change the company's plan of operation, in view of the fact that within a few weeks the company expects to have a sufficient number of side-door trains to cover the whole of the rush-hours. But those trains should be kept in operation continuously during the express service, from 6 a. m. until 1 a. m., or until the time of the express service expires, excepting for such time as the trains should be required to lay up for adjustment, cleaning or repairs.

"The use of the side doors at all stations was objected to by the company, especially on that part of the structure which is elevated, on account of the small number that would use them, and also on account of the difficulty of keeping the cars properly warm during the severe winter weather. In the spring, when the express service will be nearly all side-door trains, the side doors should be operated at all stations.

"As to the use of the middle side door in the cars that are now used in mixed trains, the company claimed that it would add very largely to the risk by using them. The commission's expert testified that while the use of these doors would add something to the risk, the doors could be safely operated even in a mixed train. As these cars are only operated to make use of all the cars the company has while awaiting motor cars to make up solid center side-door trains, I would recommend that the company be

allowed to continue the use of these side-door cars, for the purpose of trailers in mixed trains without operating the center doors, while they are so used; but that all of the solid center-side-door trains should use the side doors at all times when in operation, excepting on the stations on Lenox Avenue line north of Prospect Avenue station, and on the Broadway line north of Dyckman Street, and except where the side door of the end car does not stop in front of a platform."

Service in Schenectady

The Public Service Commission of the Second District of New York has made public its conclusions in relation to the complaint of a committee of citizens of Schenectady regarding the service of the Schenectady Railway. The conclusions of C. R. Barnes, the electrical expert of the commission, which have been endorsed by the commission, follow:

"1. The Schenectady Railway with its present tracks and equipment is unable to handle its traffic properly.

"2. Certain portions of the city, including the American Locomotive Works, are not properly provided with street car facilities.

"3. The tracks should be extended, the equipment should be increased, and the car routes should be changed to permit a large increase in the number of cars operated and to furnish service to all localities needing it.

"4. The changes required can only be carried out by the cooperation of the railway company, the city authorities and the citizens."

In conclusion the commission says:

"To make any order of this commission effective it will be necessary for the city authorities to grant permission to the railway to lay additional tracks where new tracks are finally determined to be necessary, and to widen streets where they are too narrow to permit such tracks to be laid. It will also be necessary for the property owners involved to consent to the laying of new tracks and to cooperate in the widening of streets. As the changes recommended, or equivalent ones, are, however, apparently necessary to the welfare and growth of the city, the commission believes that the cooperation of all parties will be readily secured.

"The problem of improving the street railway service of Schenectady is more complicated and difficult of solution than that of any city outside of Greater New York. Schenectady has increased in population from 22,000 in 1892 to about 77,000 in 1909. This increase has not been accompanied by any change in the width or location of streets in the business section, and the city has consequently outgrown the available business area."

The commission has presented several plans involving double-tracking and extensions and has suggested a conference for a discussion of the problem.

Pensions for Employees in Newburgh

The Orange County Traction Company, Newburgh, N. Y., on Jan. 6, 1910, announced that it had been decided to pension employees of the company, after 20 years of continuous service or if they became incapacitated while in the service of the company. The announcement to the men, signed by B. B. Odell, Jr., president of the company, follows:

"On and after Jan. 1, 1910, this company will establish a pension for those who desire to retire after 20 years of continuous service, at the rate of $25 per month during the balance of their life.

"This pension can also, at the option of the management, be extended to meet conditions where the employee is physically incapacitated, and apply to those who have worked for a less term than 20 years. Should the incapacitated employee regain health and strength, sufficient, in the opinion of the management to resume his duties, he may do so by surrendering his right to a further receipt of the pension while actively employed. The number of years of continuous service up to Jan. 1, 1910, will be credited to each employee, in determining the 20 years of continuous service.

"This applies to conductors, motormen, shopmen, and trackmen.

"Similar arrangements for long and continuous service, for those who are upon a regular salary, will be announced hereafter."

On Christmas the company gave each married employee a turkey and every unmarried employee the equivalent in cash with the exception of the office force, heads of departments, inspectors, etc., who received from $5 to $20 in gold.

On Dec. 31, 1909, the company distributed $500 in gold as prizes for the merit system, inaugurated on Jan. 1, 1909, for conductors and motormen. Prizes ranged from $5 to $30 per man.

The conductors and motormen presented Mr. Odell, president of the company, who was formerly Governor of New York, a gold-mounted ebony cane and F. S. Berry, general manager of the company, a gold-mounted pipe.

Winona Interurban Railway.—Cars were operated on Sunday on the Winona & Warsaw Railway, Winona Lake, Ind., for the first time in the history of the company, on Jan. 2, 1910. The change in policy of the company followed the lease of the property on Jan. 1, 1910, to the Winona Interurban Railway.

Lowell & Fitchburg Street Railway Seeks Freight Rights in Ayer.—The Lowell & Fitchburg Street Railway, Ayer, Mass., has petitioned the Selectmen of Ayer for permission to transport, as common carriers, newspapers, baggage, express matter and freight upon all parts of its line in Ayer, and a hearing has been ordered for Jan. 17, 1910.

Freight and Passenger Departments of Ohio Electric Railway Consolidated.—The freight and passenger departments of the Ohio Electric Railway have been combined, and W. S. Whitney, whose appointment as general freight and passenger agent of the company is noted elsewhere in this issue, has appointed district passenger agents, district freight agents also.

Increase in Service Ordered on New York City Lines.—The Public Service Commission of the First District of New York has ordered the Metropolitan Street Railway, New York, N. Y., to increase the service on its 116th Street crosstown line by providing a sufficient number of cars to be run past a given point to furnish as many seats as there are passengers in each quarter of an hour. The point at which the commission will make observations will be at 116th Street and Seventh Avenue.

Conference on Rules for Indiana Interurban Railways.—The Railroad Commission of Indiana has called a conference with a committee of interurban managers to be held in the State Capitol at Indianapolis on Jan. 18, 1910, at which amendments to the code of interurban rules adopted in 1908 will be considered. The committee of managers, which consists of H. A. Nicholl, Indiana Union Traction Company; C. D. Emmons, Ft. Wayne & Wabash Valley Traction Company; G. K. Jeffries, Terre Haute, Indianapolis & Eastern Traction Company, and F. M. Durbin, Evansville & Southern Indiana Traction Company, will present a report recommending some changes in the rules which will be considered and acted upon by the commission.

City Limits Extended in Tacoma to Frustrate Fare Increase.—Suburbs of Tacoma, Wash., aggregating 105 square miles voted on Jan. 9, 1910, for annexation to Tacoma, giving that city an area of nearly 150 square miles. In December, 1909, 6 square miles between Tacoma and Fern Hill were similarly annexed. It is expected that Milton, Puyallup and Steilacoom will vote for annexation before March. The suburbs thus annexed have 25,000 population, increasing Tacoma's population to 150,000. The street railways in Tacoma operate under a franchise requiring 5-cent fares within the city limits, but in October, 1909, the Puget Sound Electric Railway increased the fare on its lines outside the city to 2 cents per mile. This action started a movement for annexation of all territory to Milton, 6 miles east; Puyallup, 9 miles southeast; Spanaway, 11 miles south, and Steilacoom, 11 miles southwest, in the hope of obtaining low fares to these suburbs when made part of Tacoma. The company has taken the matter into the Federal Court.

Policy Toward Employees in Boston.—William A. Bancroft, president of the Boston (Mass.) Elevated Railway, made the following reference to the employees in the report of the company reviewed in the ELECTRIC RAILWAY JOURNAL of Jan. 8, 1910, page 85: "The company has continued its liberal policy toward its employees in respect to their wages, as well as in other matters. Compensation for learners during the year amounted to $24,917.92. There was paid during the year the sum of $25,078.93 as a guaranteed minimum wage for new or extra men. There was also paid as increased compensation to long service men the sum of $71,346.40. There was paid in pensions, under the provisions recited in former reports, the sum of $12,225.92. There was also paid in 'satisfactory service' money, in sums of $15, $20 or $25 to each of the employees deemed worthy thereof, the sum of $53,815. The aggregate sum of increased payments to employees, under the provisions adopted six years ago, amounted during the year to $187,384.17. The provisions of two years ago raising the rate of wages increased this amount by about $130,359.36, making a total of about $317,743.53."

New Transfers in Worcester.—The Worcester (Mass.) Consolidated Street Railway has modified its transfer system by printing the date of issue and the time in larger characters so as to enable conductors to see readily if the transfer is being properly used. The new transfers were placed in use on Jan. 1, 1910. H. C. Page, general manager of the company, in a statement which he issued regarding the new transfers said: "The new transfer rule is not intended to deprive the people of any of the rights that they have previously enjoyed. Stated simply, the aim of this new transfer is to stop persons from obtaining a transfer on a transfer, and from using a transfer that is several days old. The transfer places absolutely no hardship on the traveler. He can go just exactly as far as he could on the old transfer, and we are just as willing to give it. We issued in November, 1909, 81,873 more transfers than we did in November, 1908. This is double the increase in passengers carried and shows that the transfers were used improperly. The conductors have been instructed to use discretion in the matter at all times. If a man forgets to ask for a transfer and he looks respectable, of course we will not deny him a transfer, and especially so until the people get used to the new method. The conductors have all been instructed to explain the matter to the patrons in case they fail to understand."

Bulletins to Portland (Ore.) Employees.—J. F. Roach, chief dispatcher of the Oregon Water Power Division of the Portland Railway, Light & Power Company, Portland, Ore., posts daily on the bulletin board of the company notices in which various subjects concerning the operation of interurban cars and the attitude of the employees of the company toward the traveling public are considered. The result has been satisfactory in increasing the efficiency and enthusiasm of the men. The following notice, dated Dec. 18, 1909, is reproduced as typical of the statements: "We sometimes hear the expression, 'Anyone can run a car,' and in a sense this may be true. Experience, however, teaches us that this phrase is not well founded. It is not every man who can operate a car and be able to say at the end of the day's work that the car is in as good condition as when it was taken from the shops, except for ordinary wear and tear. You may be sure that the man who does this has not imposed upon, or has not abused the apparatus on the car in order to maintain his schedule throughout the day. The man who makes the best and safest time is the one who handles the equipment as it was intended to be handled. Motors are constructed to give a certain efficiency. . . . In other words, the equipment will perform its work in proportion to the rate and manner in which it is used, the efficiency decreasing as the abuse increases. You cannot give this matter too much attention, and the subject is not as deep as is generally supposed. It is a plain, every-day matter, needing very little probing to get at the true inwardness of the thing. The use of the electric motor is coextensive with the growth of all cities, and it will fully repay any man to gain a full understanding of the ailments of motors, the consequences of their abuses, and how motors can be handled to the best advantage."

Personal Mention

Mr. J. C. Thirlwall has been promoted to foreman of the Fresh Pond inspection shop of the Brooklyn (N. Y.) Rapid Transit Company.

Mr. G. E. Miller has resigned as superintendent of the railway department of the Chattanooga Railway & Light Company, Chattanooga, Tenn.

Mr. John J. Skinner has resigned as superintendent of the St. Joseph Valley Traction Company, Elkhart, Ind., to enter the insurance business at Peru.

Mr. D. L. Beaulieu has resigned as superintendent and purchasing agent of the Northampton Traction Company, Easton, Pa., to accept a position as commercial representative of a company with offices in Boston.

Mr. G. K. Jeffries, superintendent of the Brazil and Danville lines of the Terre Haute, Indianapolis & Eastern Traction Company, with offices in Greenfield, Ind., has been appointed general superintendent of the company.

Mr. William McDaniel has accepted a position with the Covington & Southwestern Railway, Kingman, Ind., which is under construction. Mr. McDaniel was formerly general superintendent of the Chattanooga (Tenn.) Railway.

Mr. B. B. Bell, passenger agent of the divisions of the Ohio Electric Railway from Columbus to Zanesville and Columbus to Morgans, has had his jurisdiction increased by being made passenger and freight agent for these divisions.

Mr. Bert Meredith has been appointed chief engineer of the power plant of the Mansfield Railway, Light & Power Company, Mansfield, Ohio, to succeed Mr. O. S. Newton, whose resignation was announced in the ELECTRIC RAILWAY JOURNAL of Jan. 8, 1910.

Mr. W. S. Whitney, general passenger agent of the Ohio Electric Railway, with offices in Springfield, Ohio, has been appointed general freight agent of the company to succeed Mr. J. C. Forester, resigned. Mr. Whitney will retain the office of general passenger agent.

Mr. Albert Koch, who has been ticket agent of the Ohio Electric Railway at Columbus, Ohio, for the last four years, has been appointed passenger and freight agent of the lines of the company between Dayton and Columbus, effective Jan. 10, 1910, with headquarters at Dayton.

Mr. I. M. Burns has been appointed foreman of inspection of the elevated lines of the Brooklyn (N. Y.) Rapid Transit Company for the Eastern Division, succeeding Mr. E. Keller, whose appointment with the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., was noted in the ELECTRIC RAILWAY JOURNAL of Jan. 8, 1910.

Mr. Charles E. Hubbard retired as secretary, general manager and purchasing agent of the Farmington Street Railway, Hartford, Conn., following the recent absorption of the company by the New York, New Haven & Hartford Railroad in the interest of the Connecticut Company. Mr. Hubbard has not announced his plans for the future.

Mr. A. D. McDonald has resigned as secretary and auditor of the Pacific Electric Railway, Los Angeles, Cal., to become auditor of the Southern Pacific Railroad with offices in San Francisco, Cal. Before becoming connected with the Pacific Electric Railway Mr. McDonald was assistant to Mr. C. B. Seger, auditor of the Southern Pacific Railroad, who resigned recently to accept a position in Chicago, Ill.

Mr. M. J. Leary has been appointed general foreman in charge of maintenance of equipment of the New York State Railways, Rochester (N. Y.) Lines. Mr. Leary entered railway service with the Cleveland Electric Railway on July 23, 1894, in the Holmden Avenue shops, and remained with the company at that place until 1899, when he entered the operating department in the capacity of roadmaster. He continued with the Cleveland Electric Railway as roadmaster until 1905, when he was appointed foreman in the mechanical department. Early in 1908, Mr. Leary accepted a position with the mechanical department of the Rochester (N. Y.) Railway under Mr. Terrence Scullin, master mechanic. On account of changes in organization due to the resignation of Mr. Scullin on Dec. 15, 1909, Mr

Leary has been advanced to general foreman in charge of maintenance of equipment.

Mr. G. M. Cameron has been appointed master mechanic of the New York State Railways, Rochester (N. Y.) Lines, to succeed Mr. Terrence Scullin, whose appointment as master mechanic of the Cleveland (Ohio) Railway was noted in the Electric Railway Journal of Dec. 25, 1909. Mr. Cameron was graduated from the Ohio State University of the class of 1904 with the degrees of mechanical and electrical engineer. Immediately after leaving college, he entered the service of the Jeffrey Manufacturing Company, Columbus, Ohio, in the mine locomotive department, but resigned after a year's service with that company to accept a position with the Electric Controller & Supply Company, Cleveland, Ohio. He continued with the latter company until the beginning of 1906 when he was appointed draughtsman as applied to power plant and equipment design with the Cleveland Electric Railway. Early in 1908, Mr. Cameron became chief draughtsman and engineer of buildings of the Rochester Railway, in which position he continued until appointed master mechanic of the company.

Mr. Frank W. Payne, whose appointment by Governor Marshall of Indiana to succeed Mr. Henry M. Dowling as a member of the Railroad Commission of Indiana, was noted in the Electric Railway Journal for Jan. 8, 1910, was born in Jeffersonville, Ind., on March 14, 1875, and was in the service of the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad for 13 years preceding his appointment to the commission, eight years as a fireman and five years as a locomotive engineer. Mr. Payne was appointed to the commission in accordances with a promise made by Governor Marshall during the campaign preceding his election that he would appoint a member of some railway brotherhood to the commission. He was endorsed by the Indiana lodge of the Brotherhood of Railway Trainmen, the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen and the general committee on adjustment of the Brotherhood of Locomotive Engineers of the Pennsylvania Lines west of Pittsburgh. His appointment completes the reorganization of the commission under the amended act of the Legislature.

Mr. E. F. Schneider, whose appointment as general manager of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, to succeed Mr. C. N. Wilcoxon, was noted in the Electric Railway Journal of Jan. 1, 1910, has been interested in electric railway work for 15 years. His service with the Cleveland, Southwestern & Columbus Railway covers a period of 11 years, during 10 years of which he has acted as secretary of the company and in various other capacities. Mr. Schneider's business experience also extends to commercial fields. He is well qualified by his intimate knowledge of the affairs of the Cleveland, Southwestern & Columbus Railway and the requirements of the territory which the company serves for the position of general manager. The Cleveland, Southwestern & Columbus Railway comprises 220 miles of line over which 60 motor and 17 miscellaneous cars are operated.

E. F. Schneider

Mr. J. C. Forester, who resigned as general freight agent of the Ohio Electric Railway, Cincinnati, Ohio, on Dec. 31, 1909, expects to engage in the manufacturing business in Cincinnati. Mr. Forester entered railroad work in 1877 with the Port Huron & Lake Michigan Railroad, which has been succeeded by the Chicago & Grand Trunk Railroad, and in 1881 went with the Wabash Railroad at St. Louis. Subsequently he served with the Wisconsin Central Railroad at Milwaukee and the Chicago, St. Paul, Minneapolis & Omaha Railroad at St. Paul. Returning to Milwaukee, Mr. Forester became chief clerk in the general freight office of the Milwaukee & Northern Railroad. On Dec. 1, 1886, he was appointed general freight agent of the Milwaukee & Northern Railroad and on Dec. 1, 1889, was appointed commercial agent of the Missouri-Pacific Railway at Atchison, Kan. One year later he was transferred to Kansas City by the Missouri-Pacific Railway and five years later was transferred to Cincinnati by the company, which he served for 18 years in Atchison, Kansas City and Cincinnati. Mr. Forester retired from the Missouri-Pacific Railway on Feb. 29, 1908, and was almost immediately appointed to the position with the Ohio Electric Railway which he has just relinquished.

Mr. Frederick H. Lincoln, who resigned as assistant general manager of the Philadelphia Rapid Transit Company last month, as announced in the Electric Railway Journal for Dec. 25, 1909, has accepted the office of vice-president and general manager of the Pay-Within Car Company and will make his headquarters at the company's Philadelphia office. Mr. Lincoln, as is well known, is one of the co-inventors of the pay-within car and is not only well suited for this reason to direct the affairs of that company but understands from his operating experience in Philadelphia the advantages of this form of prepayment car. Mr. Lincoln is a native of Boston, Mass., where he was born on May 28, 1867. His first work was in the machine shop of the Walworth Manufacturing Company, but in 1884 he entered the employ of the Thomson-Houston Electric Company and from that period until March, 1891, he took an active part in the installation of many of the early electric lighting and railway systems on which that company was engaged. In 1891 he resigned from that company to become connected with the Toledo (Ohio) Consolidated Street Railway, with which he remained for about two years, when he entered the employ of the People's Traction Company, Philadelphia, Pa., as an inspector. This company at that time was changing from horse to electric power and in 1894 Mr. Lincoln was given full charge of all the company's power stations. At the time of the consolidation of all the surface roads in Philadelphia in 1895 Mr. Lincoln was made superintendent of lines and cables, and in this capacity had entire charge of the re-designing and rebuilding of the company's electrical distribution system. He was also superintendent of the Willow Grove Park, owned and operated by the Philadelphia Rapid Transit Company. In August, 1905, he was made assistant general manager of the company and as such has had particular charge of the Market Street elevated and subway division as well as of the maintenance of equipment of the entire system. While the elevated and subway system was being planned, Mr. Lincoln was sent by the company on an extended trip to the principal cities of Europe to study elevated and subway systems. Mr. Lincoln has always taken an active part in the work of the American Street & Interurban Railway Engineering Association and at the convention held in Denver last fall was elected president of the organization. He is also a member of the American Institute of Electrical Engineers.

F. H. Lincoln

OBITUARY

Henry L. Shippy, formerly treasurer, manager and director of the John A. Roebling's Sons Company, New York, N. Y., is dead. Mr. Shippy had been connected with the Roebling Company for 35 years.

G. Hilton Scribner, who was president of the Central Park, North & East River Railroad, New York, N. Y., prior to its lease by the Metropolitan Street Railway in 1892, is dead. Mr. Scribner was president of the Street Railway Association of the State of New York in 1886-87 and Secretary of State of New York State in 1870-73.

Construction News

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

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

RECENT INCORPORATIONS

St. Louis, Springfield & Peoria Railroad, Champaign, Ill.—Incorporated at Springfield in the interests of the McKinley syndicate. Capital stock, $5,000,000. Incorporators: George M. Mattis, W. P. Carnahan, Charles Zilly, R. E. Bramble and Charles E. Cox, all of Champaign.

***Chicago, Bloomington & Peoria Railway, Chicago, Ill.**—Incorporated for the purpose of building an electric railway from Chicago to Bloomington and Peoria, passing through the Counties of Cook, Du Page, Will, Kendall, Grundy, La Salle, Livingston, Woodford, Tazewell, McLean and Peoria. Principal office, Chicago. Capital stock, $25,000. Incorporators and first board of directors: Jerome J. Danforth, Charles S. Sollars, Averne A. Hyde and Frank M. Capp, all of Chicago, and Virginius L. Garnett, Highland Park, Ill.

***Motor Grand Traction Company, Belleville, Kan.**—Chartered to build a railway, to be operated by gasoline or electricity, from Belleville via Concordia, Minneapolis, Salina, Canton and Newton to Wichita, a distance of 150 miles. It will extend through Republic, Cloud, Ottawa, Salina, McPherson, Harvey and Sedgwick Counties. Capital stock, $1,000,000. Headquarters, Belleville. Incorporators: E. S. Alnutt, E. N. Van Hosen, G. L. Litel and Roy S. Johnson, Belleville, and W. L. Hope, Fairbury.

***Fostoria, Napoleon & Defiance Railway, Columbus, Ohio.**—Incorporated in Ohio with a capital stock of $100,000 to build an electric railway through Seneca, Wood, Henry, Hancock and Defiance Counties. Incorporators: W. S. Reece, R. T. Betts, George Schrock, Charles Aten and Charles A. Bliss.

***Renovo & Gleaston Street Railway, Harrisburg, Pa.**—Incorporated at Harrisburg to construct an electric railway from Renovo to Gleaston, 5 miles. Office, Renovo. Capital stock, $30,000. Officers: R. V. Rogers, W. B. Reilly, Renovo; J. H. Crissman, and T. W. Gleason.

Greenville, Spartanburg & Anderson Railway, Columbia, S. C.—Incorporated with an initial capital of $300,000, to build an electric railway from Belton through Williamson, Pelzer and Piedmont to Greenville and thence to Spartanburg, 30 miles. The total length of the line will be 65 miles. Incorporators: J. B. Duke, B. N. Duke, Ellison Smyth, W. J. Thackston, H. J. Haynesworth and Lewis W. Parker. [E. R. J., Dec. 18, '09.]

FRANCHISES

Cœur d'Alene, Idaho.—The Common Council has granted a franchise to J. H. Hall and Herman J. Rossi, representing the Spokane, Wallace & Interstate Railway, for an electric railway through Cœur d'Alene along Independence Avenue to Government Way; thence north to connect with the Spokane International Railway into Spokane. [E. R. J., Jan. 30, '09.]

Greenfield, Ind.—Perry J. Freeman has applied to the Commissioners of Hancock County for a franchise for the Greenfield & Northern Railway, Greenfield, to construct an interurban railway from Greenfield north to Pendleton. [E. R. J., Dec. 25, '09.]

Indianapolis, Ind.—The Capital Circuit Traction Company organized to connect the seven county seat towns and numerous intervening villages around Indianapolis by an interurban railway has asked for renewals of several of its franchises. [E. R. J., Dec. 18, '09.]

***Sioux City, Ia.**—C. A. Magee has applied to the City Council for a franchise for an electric railway he proposes to build from Sioux City to Parkston, S. D., via Sioux Falls, Freeman, Yankton, Centerville and Elk Point. An extension is also to be built from Freeman to Pierre.

Boston, Mass.—The Railroad Commissioners have granted the petition of the Worcester & Northern Street Railway Company for an extension of 18 months in which to construct its proposed railway.

Springfield, Mo.—The County Court has granted the Springfield Traction Company an extension of time until April 21 to complete the new line on Nichols Street.

New York, N. Y.—The Public Service Commission of the First District on Jan. 8 adopted a resolution approving the franchise recently granted to the New York & Queens County Railway by the Board of Estimate for the operation of its cars from Jackson Avenue, Long Island City, over the Queensboro Bridge.

New York, N. Y.—Application has been made to the Board of Estimate by the Manhattan Bridge Three-Cent Line for a franchise to operate a street railway from Flatbush Avenue and Fourth Avenue, Brooklyn, over the Manhattan Bridge to Desbrosses Street and West Street, Manhattan. [E. R. J., Jan. 8, '10.]

***Lexington, N. C.**—S. E. Williams and J. E. Foy are reported to have applied to the Board of Aldermen for an electric railway franchise.

Portage, Pa.—The City Council has granted to the Johnstown & Gallitzin Railway, Johnstown, a six months' extension of its franchise until July 1 in which to begin work on its proposed street railway through Portage. [E. R. J., Dec. 25, '09.]

Towanda, Pa.—George R. Hill has asked the City Council for an extension of time of from 60 to 90 days on the franchise granted the Bradford County Traction Company in which to begin work on its line. [E. R. J., April 10, '09.]

Wheeling, W. Va.—The County Commissioners have passed an ordinance granting a franchise to the Rapid Transit Railway to construct an electric railway through Ohio County. [E. R. J., Dec. 25, '09.]

TRACK AND ROADWAY

***Fort Smith, Van Buren & Interurban Light & Traction Company, Van Buren, Ark.**—This company has been organized for the purpose of building a line through Crawford, Franklin, Johnson, Madison, Boone and Searcy Counties. T. A. Bailey, engineer, is said to have made a preliminary survey through Crawford County, and rights of way have been secured from Van Buren to Mulberry, Ark. Capital stock, $10,000. Officers: W. F. Keller, president; L. W. Burgett, vice-president; T. A. Bayley, secretary; S. A. Pernot, treasurer, and S. R. Chew, attorney.

Chicago, Aurora & De Kalb Railroad, Aurora, Ill.—This company expects to electrify 30 miles of track and for this purpose will purchase cross ties, rail braces, tie plates, electrically driven gravel loaders. W. C. Cram, Jr., general manager.

Union Consolidated Elevated Railway, Chicago, Ill.—A work order has been passed by the board of managers of this company authorizing the renewal of rails and ties on this 2-mile, double-track structure in the heart of the business district of Chicago. It is stated that the 30-ft. rails will be replaced by rails 60 ft. long. Some form of continuous joint also will be used for the same purpose.

Springfield & Jacksonville Electric Railway, Springfield, Ill.—This company has awarded a contract to the J. H. McFarland Company for the construction of its proposed railway between Springfield and Jacksonville, 33 miles. Work on the railway will commence as soon as the weather will permit. John Melick, chief engineer. [E. R. J., Jan. 1, '10.]

***Brookston, Ind.**—Surveyors are locating a route for an interurban railway from Battle Ground to Reynolds by way of Brookston, a distance of 24 miles, in the interest, it is said, of the Ft. Wayne & Wabash Valley Traction Company, which operates to Battle Ground.

Fort Wayne & Toledo Electric Railway, Harlan, Ind.—This company announces that grading has begun on its 55-mile railway between Fort Wayne and Harlan, Ind., Hicksville, Farmer Bryan, Toledo and Montpelier, Ohio. Preliminary capital stock, $200,000. Bonds authorized, $18,000 per mile. Franchises from the various municipalities are being obtained as fast as possible. R. T. Bastress, Harlan, general manager. [E. R. J., Sept. 25, '09.]

Cincinnati, Madison & Western Traction Company, Indianapolis, Ind.—J. E. Greenley, president, says that work on the line to connect Scottsburg and Madison will be be-

gun on April 1, 1910. Subsidies of more than $100,000 have been voted and the preliminary survey has been made. [E. R. J., Nov. 20, '09.]

Vincennes (Ind.) Electric Railway.—This company advises that work will probably be started next spring on the projected 14-mile gasoline motor railway which is to connect Vincennes, Ind., Lawrenceville and Bridgeport, Ill. Officers: R. V. Stinson, Mt. Vernon, president; J. D. Madding, Bridgeport, Ill., vice-president; J. D. Lacroix, Vincennes, secretary; Charles Breen, Lawrenceville, Ill. [E. R. J., Dec., 11, '09.]

Lawrence Railway & Light Company, Lawrence, Kan.—This company has recently placed in operation a section of its street railway in Lawrence. The entire line will be 9 miles in length, and will be partly single and partly double track. About one-half mile of track still remains to be completed. Track consists of 70-lb. T-rails and is laid with 6-in. x 8-in. x 8 ft. No. 1 white-oak ties at 2 ft. centers. The overhead installation consists of No. 00 trolley wire and No. 0000 feeders. All construction work was carried out by the Dwyer Construction Company, Lawrence. A reinforced concrete car house has been built to accommodate the company's rolling stock which is made up of 7 open cars and 12 closed single-truck cars. Power to operate the line is secured from the local power plant which is owned by the company. Headquarters, Lawrence. Albert Emanuel, Dayton, Ohio, president. [E. R. J., April 17, '09.]

Central Kansas Interurban Railway, Salina, Kan.—C. B. Kirtland writes that this company expects to begin work during the spring on its projected railway which will connect Newton, Canton, Roxbury, Gypsum City, Abilene and Salina. Gasoline motor cars will be operated. The company has not yet been incorporated. Stock, authorized, $1,500,000. Officers: John C. Nicholson, Newton, president; J. C. Bruner, Abilene, secretary; C. B. Kirtland, Salina; O. Mooreshead, Newton, chief engineer. [E. R. J., Jan. 1, '10.]

***Little Falls, Minn.**—Henry Diebel, Long Prairie, is promoting an electric railway from Little Falls to Alexandria by way of Long Prairie.

Nebraska Traction & Power Company, Omaha, Neb.—During 1910 this company expects to build 3 miles of new track. William D. Crist, general manager.

Easton & Washington Traction Company, Washington, N. J.—This company is said to have announced that arrangements are being made to continue its line from Port Murray, the present terminus, to Hackettstown, and thence to Lake Hopatcong, where it will connect with the Morris County Traction Company.

Manhattan Bridge Three-Cent Line, New York, N. Y.—This company has filed an application with the Public Service Commission for a certificate of convenience and necessity for the construction and operation of a street railway from Flatbush Avenue and Fourth Avenue, Brooklyn, through the Flatbush Avenue extension, over the Manhattan Bridge and through Canal Street to the Hudson River. John C. Brackenridge, vice-president. [E. R. J., Jan. 8, '10.]

Hendersonville Light & Power Company, Hendersonville, N. C.—C. H. Broward writes that work will be started in the spring on its 4½-mile street railway. Contracts are not yet awarded. Capital stock, authorized, $125,000. Bonds, $100,000. Officers: R. M. Oates, Hendersonville, N. C., president; M. D. Peder, secretary; C. H. Broward, superintendent. [E. R. J., Oct. 23, '09.]

Grand Forks (N. D.) Street Railway.—During 1910 this company will construct 3 miles of new track. T. D. Campbell, general manager.

***Fostoria, Napoleon & Defiance Railway, Toledo, Ohio.**—Charles A. Bliss and R. T. Betts, Toledo, two of the incorporators of the company, state that McKeen gasoline motor cars will be used on the line, instead of electric cars. The right-of-way is now being secured. The company has just been incorporated to build a line through Seneca, Wood, Henry, Hancock and Defiance Counties.

Muskingum & Morgan Railway, Light & Power Company, Zanesville, Ohio.—W. H. Pierpont writes that this company will begin construction work in the early spring on the line between Zanesville and Duncan Falls. A power plant will be erected at Duncan Falls. Capital stock, authorized, $10,000. Officers: A. W. McDonald, Pittsburgh, Pa., president; John J. Adams, Columbus, vice-president; W. H. Pierpont, Zanesville, secretary; R. C. Burton, treasurer; F. C. Connas, chief engineer. [E. R. J., July 17, '09.]

Erie, Cambridge, Union & Corry Railway, Erie, Pa.—This company has filed for record at Erie a mortgage in favor of the Carnegie Trust Company, New York, to secure an issue of $1,000,000 in bonds. The proceeds are to be used for completing the electric railway which is to connect Erie, Union City, Cambridge Springs, Corry and Titusville.

***Franklin, Pa.**—Emory C. Read is said to be preparing to begin work securing rights-of-way for a route for the proposed railway between Franklin and Ellwood City. A committee, consisting of C. E. Smith, Dr. S. G. Foster, P. D. Murphy and G. B. Woodburn, has charge of all preliminary matters in connection with the new line.

Philadelphia & Suburban Elevated Railroad, Philadelphia, Pa.—The State Charter Board will give a hearing on March 1 on the application of this company for a charter for a line partly elevated and partly underground, including a subway on Broad Street. S. S. Neff, president. [E. R. J., Dec. 4, '09.]

Franklin & Towamensing Street Railway, Slatington, Pa.—A. P. Berlin, writes that this company will begin construction work in the spring on the line to connect Slatington, Palmerton, Bowmans, Parryville, Weissport, Lehighton and Mauch Chunk, Pa., 10 miles. Officers: A. P. Berlin, Slatington, Pa., president; H. T. Craig, Lehigh Gap, Pa., secretary; John T. Semmel, treasurer. [E. R. J., April 25, '08.]

Waynesburg & Blacksville Street Railway, Waynesburg, Pa.—This company is said to have awarded a contract to W. A. Martin for the construction of that section of its street railway between Blacksville and Morgantown. The contract for the Mannington-Blacksville division has also been let. A power station will be erected at Blacksville. The main line will extend from the Pennsylvania-West Virginia State boundary to Waynesburg, 14 miles. The extensions to be built will total 50 miles. J. L. Johnson. [E. R. J., Nov. 6, '09.]

***Regina, Sask.**—J. D. McArthur, in conjunction with the Western Trust Company, Winnipeg, Man., is said to be considering the construction of a street railway in Regina.

Corpus Christi & Interurban Railway, Corpus Christi, Tex.—An official writes that this company has nearly completed its street railway in Corpus Christi and will place it in operation within the next few weeks. It will be a belt line with a loop in the business section of the city and will be 5 1/3 miles long. Five miles of track has been laid and the rest is now being graded. The company is using a 60-lb. T-rail and is installing span type of overhead construction, with No. 00 grooved wire. About one-half of the overhead work has been completed. There will be only two grades of about 4 per cent each. All construction work is being done by the company. Power will be rented from the People's Light Company. V. S. Heinly, Corpus Christi, secretary and treasurer. [E. R. J., Dec. 4, '09.]

***Galveston, Tex.**—C. L. Hoges, Chicago, and L. L. McSweeney, New York, are reported to have announced that they are in charge of the preliminary work of a projected electric railroad connecting the larger cities of Texas behind which is a syndicate representing $26,000,000 capital. They state that surveys providing for lines connecting Fort Worth and San Antonio, 250 miles; San Antonio and Houston, 270 miles, and Houston and Dallas, 275 miles, have been made and construction will begin within 90 days on the Fort Worth and San Antonio line.

Galveston-Houston Electric Railway, Galveston, Tex.—This company has filed for record a mortgage for $3,000,000 in favor of the City Trust Company, Boston, Mass., as trustee, to secure an issue of bonds. Of this amount $3,000,000 will be issued to cover the cost of the construction of the interurban railway between Galveston and Houston in accordance with the authority of the Railroad Commission of Texas. [E. R. J., Jan. 1, '10.]

***Greenville, Tex.**—Mayor Frank Nichols is said to be at the head of a plan to organize a company for the construc-

tion of an interurban railway from Greenville to Wolfe City. Extensions are also projected from Greenville to Plano and from Wolfe City to Clarksville.

Mt. Adams Electric Railroad, White-Salmon, Wash.—H. S. Hall, chief engineer, writes that this company expects to begin construction about May 1, 1910, on the proposed 60-mile line between White-Salmon and Glenwood, Wash. The company has not yet been incorporated. It is proposed to build a power plant on the White-Salmon River. Capital stock, authorized, $1,000,000. C. L. Colburn, White-Salmon, Wash., secretary. [E. R. J., Dec. 18, '09.]

Bay Shore Street Railway, Green Bay, Wis.—This company has almost completed its street railway which is to connect Green Bay, Preble, Bay Beach, Bay View Beach and Harbor View, a distance of 2 miles. It is stated that this company is affiliated with the Green Bay (Wis.) Traction Company which operates a line from Duck Creek to Green Bay. Four cars will be operated over the new line. Power will be rented from the Green Bay Traction Company. Capital stock, authorized, $30,000. Issued, $10,000. Officers: F. E. Murphy, president; W. B. Allen, vice-president; A. C. Neville, secretary; F. A. Rahr, treasurer and general manager; J. M. Carl, superintendent, all of Green Bay. [E. R. J., July 3, '09.]

SHOPS AND BUILDINGS

Edmonton Radial Railway, Edmonton, Alta.—This company will erect a new fireproof car house in Edmonton to be 250 ft. x 80 ft. The structure will accommodate 50 cars, and will contain six tracks. A machine shop and offices will also be provided for in the building.

Dayton & Troy Electric Railway, Dayton, Ohio.—This company will erect a steel and brick office building at Tippecanoe City, 40 ft. x 100 ft. and two stories high. Steel has already been received. C. M. Paxton, general manager.

Pittsburgh & Allegheny Valley Railway, Leechburg, Pa.—The car house of this company located in Leechburg was destroyed by fire on Jan. 1. The loss is said to be $30,000. No cars were burned.

Philadelphia (Pa.) Rapid Transit Company.—This company expects to erect a station at Front Street, Water Street and Market Street, to cost $30,000. A similar station will be built in the vicinity of Twelfth Street and Filbert Street.

Pittsburgh & Butler Street Railway, Pittsburgh, Pa.—It is announced that contracts will be awarded by this company within the next few days for the erection of a freight depot.

POWER HOUSES AND SUBSTATIONS

Colorado Railway, Light & Power Company, Trinidad, Col.—This company expects to build during 1910 an extension to its power house and will purchase turbo-generators and steam-generating equipment. H. N. Siegfried, general manager.

New Orleans Railway & Light Company, New Orleans, La.—This company has awarded a contract to the Jefferson Construction Company, Perrin Building, New Orleans, for the erection of a substation and emergency house, 154 ft. 8 in. x 53 ft. 8 in. The substation is to be of fireproof construction and the emergency house of mill construction.

Boston (Mass.) Elevated Railway.—The auxiliary power plant of this company, located on Harrison Avenue, Boston, was destroyed by fire on Jan. 3. The building was of brick construction and two stories high. The loss is said to have been about $50,000.

Nebraska Traction & Power Company, Omaha, Neb.—This company is considering the purchase of a rotary converter. W. D. Crist, general manager.

New York & North Shore Traction Company, Roslyn, N. Y.—This company has filed plans for a power plant to be located on Albany Creek north of Broadway, Douglaston. The building will be 105 ft. x 79 ft. and one story high, and will cost about $90,000. This plant will furnish power for the line from Manhasset to Whitestone. C. H. Clark, Roslyn, chief engineer. [E. R. J., Oct. 9, '09.]

Grand Forks (N. D.) Street Railway.—This company expects to purchase second-hand power-plant equipment complete with a capacity of 200 kw to 300 kw. Thos. D. Campbell, general manager.

Manufactures & Supplies

ROLLING STOCK

Denver (Colo.) City Tramway will have 35 new cars built during 1910.

Public Service Railway, Newark, N. J., has ordered 100 pay-as-you-enter cars from the Cincinnati Car Company.

Michigan United Railways, Lansing, Mich., is in the market for from 15 to 20 pay-as-you-enter cars for city service.

Power, Transit & Light Company, Bakersfield, Cal., expects to place an order within the next two weeks for some new cars.

Petaluma & Santa Rosa Railway, Petaluma, Cal., expects to order 12 to 20 M. C. B. trucks for 30-ton freight cars within the next two months.

Missoula (Mont.) Street Railway has placed an order with the American Car Company for three closed vestibule cars to be equipped with Brill No. 39-E trucks.

Charleston Consolidated Railway, Gas & Electric Company, Charleston, S. C., contemplates purchasing some GE-57 and 67 motors and Brill single and double trucks during 1910.

New York & North Shore Traction Company, Mineola, N. Y., has placed an order with the Westinghouse Electric & Manufacturing Company for four 40-hp four-motor equipments, including control and wiring.

Hudson & Manhattan Railroad, New York, N. Y., mentioned in the ELECTRIC RAILWAY JOURNAL of Dec. 11, 1910, as being in the market for 30 all-steel passenger cars for tunnel service, has placed an order with the American Car & Foundry Company for 50 cars of this type.

Oregon Electric Railway, Portland, Ore., mentioned in the ELECTRIC RAILWAY JOURNAL of Dec. 4, 1909, as contemplating the purchase of some cars, has placed an order with the Niles Car & Manufacturing Company, through W. S. Barstow & Company, New York, N. Y., for two observation trail cars. The remaining cars to be bought will be ordered within the next few weeks.

Third Avenue Railroad, New York, N. Y., which recently ordered 100 pay-as-you-enter cars from The J. G. Brill Company, has divided the order for two-motor equipments for these cars between the Westinghouse Electric & Manufacturing Company and the General Electric Company, each company obtaining 50, including the wiring and control, but not the brakes. These motors will be 70 hp each.

TRADE NOTES

Northern Engineering Works, Detroit, Mich., have purchased land adjoining their works on which to extend their crane plant.

F. H. Niles Car Company, Chicago, Ill., has increased its capital stock from $50,000 to $500,000 and changed its name to the Blue Island Rolling Mill & Car Company.

Jones Change Register Company, New York, N. Y., has the Jones duplex check gate in operation at both ends of a car of the Ocean Electric Railway, Far Rockaway, N. Y.

Carborundum Company, Niagara Falls, N. Y., will open an office in New York City at 26 West Broadway about the middle of January, to carry a full line of the company's products.

Stone & Webster, Boston, Mass., announce that the New York office of the company will soon be located in the Hanover National Bank Building on Nassau Street, where a suite of offices is being fitted up.

W. H. Zimmerman, First National Bank Building, Chicago, Ill., announces the incorporation of the W. H. Zimmerman Company to do general engineering, with offices in Chicago and a branch in Lansing, Mich.

Paul J. MacCutcheon has resigned as manager of the New York office of the M. B. Foster Electric Company, electrical engineers and contractors of New York and Boston. Mr. MacCutcheon has not yet announced his plans for the future.

Bruce Macbeth Engineering Company, Cleveland, Ohio, has opened a branch office at 1020 Drexel Building, Philadelphia, Pa., in charge of M. E. Jackson. The company

builds gas engines in units up to 300 hp, and has equipped more than 500 plants.

George T. Steele has been appointed receiver of the Indiana Engineering Company, Indianapolis, Ind., on application of George Stewart, who alleges the company is insolvent. H. T. Wilkerson is president of the company, and H. E. Gaddis, secretary.

Allis-Chalmers Company, Milwaukee, Wis., has received an order from the Southwest Missouri Railroad, Webb City, Mo., for four two-motor, double-end car equipments and two four-motor, double-end equipments, including controllers. The motors are of a new interpole type.

Kinsman Block System Company, New York, N. Y., reports that throughout the heavy blizzard of Christmas week its block signal installation for the Public Service Railway gave perfect service. This installation was described in the Electric Railway Journal of Dec. 18, 1909, pages 1239 and 1240.

Idealo Company, Philadelphia, Pa., has recently placed on the market a new preparation called Idealo car cleaner, which, it is claimed, contains no alkali, acid, grit or water, but is a perfect and lasting emulsion. It is said to produce a fine finish and luster on the varnish and a small quantity will cover a large surface.

John Watts, of the Canadian General Electric Company, Toronto, Ont., had charge of the rehabilitation of the electrical equipment of the Lac Du Bonnet water-power plant of ths Winnipeg (Man.) Electric Railway after the recent accident, and not G. W. Watts, as stated in the Electric Railway Journal of Dec. 25, 1909, page 1275.

O. M. Edwards Company, Syracuse, N. Y., received an order for its window fixtures 13-OD1 for use on the 50 new cars ordered from The J. G. Brill Company by the Chicago City Railway and the 33 cars being built by the Cincinnati Car Company for the Louisville Railway. Window design, 7-D1, and Edwards trap doors will be used on 30 suburban steel cars now under construction at the plant of the Pullman Car Company for use by the Pennsylvania Railroad.

Watson-Stillman Company, New York, N. Y., has made several additions to its sales department to handle the increasing business in hydraulic tools and turbine pumps. Edwin Stillman has entered the sales department, and is assisting in taking care of customers in New York State, while all southern railroad business is now in charge of Frank C. Clark. The company's representative in the Orient is F. W. Horn, the well-known machinery importer of Yokohama, Japan.

Ackley Brake Company, New York, N. Y., announces the appointment of John C. Raymond as secretary and manager of the New York office in the Hudson Terminal Building. Mr. Raymond was for some years connected with H. A. Clark, of Middletown, Pa., who was at that time acting as eastern agent for the National Brake Company. Later he was in charge of the order department of the Middletown Car Works at Middletown, Pa., and for the past year he has represented the National Brake Company in the West and in Mexico.

Brill & Gardner, Chicago, Ill., is a new partnership between George M. Brill and Horace C. Gardner for the continuation of the engineering and architectural practice conducted in the past by Mr. Brill. Mr. Brill has been engaged in constructive engineering work for many years, and for 12 years has specialized in the design of complete manufacturing and power plants. Through his position as manager of the construction and mechanical departments of Swift & Company Mr. Gardner has had active experience in the wide range of construction and engineering matters for 20 years, including all that pertains to packing-houses, industrial plants, cold storage, ice-making and refrigeration and the building and maintenance of railway equipment. The offices of Brill & Gardner will be located at 1134 Marquette Building, Chicago, Ill.

National Brake Company, Buffalo, N. Y., announces that it has made certain changes in its organization due to the arrangement made with G. S. Ackley, the former president of this company, as mentioned in the Electric Railway Journal of Jan. 8. While Mr. Ackley will sell the Ackley adjustable and Peacock brakes in foreign countries through his own company, the National Brake Company will still own and retain for itself all the patents on these in the United States, Canada, Mexico and the Hawaiian Islands. The officers of the National Brake Company as now organized are as follows: President and manager, Frank D. Miller; vice-president, E. B. Stone; second vice-president, B. W. Lewis; treasurer, O. S. Mills; secretary, W. D. Brewster. The only change in the personnel is the return of O. S. Mills to the office of treasurer, which position he held with the National Brake Company at the time of its organization. The National Brake Company states that the new arrangements will enable it to give better and closer attention to the requirements of its customers in this country, and that the little change there has been in the personnel of the company will in no way affect its general policy. Mr. Miller, who is well known in the street railway field, will assume active management of the company and will see to it that the company's customers receive the same consideration and courteous treatment as in the past.

ADVERTISING LITERATURE

Frank Ridlon Company, Boston, Mass., has issued its January list of second-hand electrical machinery.

Poole Brothers, Chicago, Ill., printers of railway tickets and timetables, are sending out a large wall calendar for 1910.

Vulcan Steam Shovel Company, Toledo, Ohio, is distributing a 1910 calendar calling attention to Vulcan power shovels.

Albert & J. M. Anderson Manufacturing Company, Boston, Mass., is distributing two folders describing improved porcelain strain insulators and Anderson trolley wire ears.

H. B. Underwood & Company, Philadelphia, Pa., is distributing large calendars for 1910 on which are advertised the company's line of portable tools for railway repair shops.

Allgemeine Elektricitats-Gesellschaft, Berlin, Germany, has issued three publications in German as follows: Flaming arc lamps; single and polyphase turbo-generators, and turbine-driven power-plant auxiliaries.

Hurley Track-Laying Machine Company, Chicago, Ill., is distributing a folder which refers to a record-breaking performance of one of its track-laying machines on the Manistee & North-Eastern Railroad.

Lord Electric Company, New York, N. Y., has prepared advertising leaflets descriptive of Heany arc lamps, M. V. G. cell lightning arresters for a.c. circuits, the Bradshaw car skid and also of two Westinghouse air compressors which it has for sale.

Engineering Department of the National Electric Lamp Association, Cleveland, Ohio, has issued Bulletins Nos. 6 F and 6 G, in which are described and illustrated, respectively, the tungsten 250-watt multiple lamp for 100-125 volts and the tungsten street series lamps. Bulletin No. 6 G supersedes Bulletin No. 6 A.

Brown Hoisting Machinery Company, Cleveland, Ohio, has published a handsomely illustrated catalogue describing the application and manifold uses of Ferroinclave, a corrugated sheet-steel reinforcement for concrete roofs, floors, walls, bridges, tanks and other structures.

Trussed Concrete Steel Company, Detroit, Mich., has printed in pamphlet form a report of a fire, load and water test made upon reinforced concrete floor arches at the Columbia University fire testing station, New York, N. Y., by Prof. Ira H. Woolson in co-operation with the City Building Bureaus. The Detroit company's "Rib Metal" and "Hy-Rib" were used as reinforcement in these experiments and developed a high carrying capacity.

Western Electric Company, New York, N. Y., has issued Bulletin No. 1105 in which is described in detail the company's intercommunicating telephone systems. The bulletin contains 40 pages of descriptive matter, showing the different combinations of systems in which the new Western Electric metal intercommunicating telephones may be used. It also contains the wiring diagrams necessary for the installations of these systems. This company has also issued two folders describing the application of the Gill selector for telephone train dispatching and the use of telephones in railway terminals.