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#### Midwinter Meeting of the American Association

A radical change in the policy of the American Street & Interurban Railway Association was adopted at the convention at Denver last year, and will be put into force next month. This consists in holding during the winter a general conference, at which the president or other accredited representative of member companies will be present. The date this year is set for Friday, Jan. 28, the day following the meetings of the executive and other committees of the American Street & Interurban Railway Association, and the place is New York City. Midwinter meetings of the committees of the American Street & Interurban Railway Association have been held for several years past, and last year when all the committees were called together the number of those present was larger than ever before. Opinions were so unanimous on the part of those in attendance at this meeting of its value that it was decided at Denver to extend its character and give up one day of the midwinter meeting to a conference intended specially for the executive and financial heads of electric railway companies. Of course, the program for the meeting will be arranged so as to include discussions upon subjects of most timely interest to these officers.

Many of those most interested in the welfare of the association have believed for some time that an interval of one year was too long between the meetings of the main association, and no time seemed so desirable for a second meeting as the latter part of January, soon after the meetings of the various committees of the association. The selection of this time permits these committees to report the scope of the work which they proposed to take up during the year and receive any additional suggestions which may then seem desirable. The reports of the electric railway companies for the calendar year just closed are also available, so that the conference affords a fine opportunity for the exchange of views among those in attendance. The advantage of the midwinter meeting will also appeal with particular emphasis to those companies in which it has been found impossible for both the executive head of the company and the heads of departments to be absent at the same time. On properties so situated the executive officials will probably find it most convenient to attend the January meeting, and in the fall, if necessary, can remain with the property while the heads of the departments attend the later meeting.

If present expectations in regard to the matter of attendance are realized, the midwinter meeting of the American Street & Interurban Railway Association will be continued in the future as an event of importance comparative to that of the general convention held in the fall.

### Remuneration for Transportation of Mail

The appointment at the last meeting of the Street Railway Association of the State of New York of a committee to take up the subject of adequate remuneration for the transportation of United States mail appears to insure a definite inquiry into the cost of this service on electric railways. Mr. Allen's suggestion of an arbitrary rate applicable to closed pouch service of 1.5 cents per mile for 100 lb. appears large in view of various existing arrangements for remuneration, but it seems to be approximately the revenue per mile which most properties calculate on receiving from their passenger traffic. With a 5-cent limit of fare on an urban system and an assumed average haul of say three miles, the rate per mile would be a little greater than that suggested by Mr. Allen for closed pouch service. The average weight per passenger, however, would be larger than the 100 lb. suggested as the unit of weight for the postal service. The average length of passenger haul is greater in some cities, but in such places the heavier density of traffic might overcome the lower revenue per passenger per mile. Transportation of mail by electric railways ought to be a business proposition. It involves the use of the facilities which the company was organized to market at a profit. The service rendered by many electric lines in the transportation of United States mail is of more value than any other transportation agency available can furnish and this fact should be recognized by adequate remuneration. While the rate suggested by Mr. Allen is advanced purely as an arbitrary one, such an attitude will be much more likely to result in definite action toward improvement than mere complaint of existing conditions without precise recommendation of an adequate figure.

### Recording Instruments and Accident Cases

Recent observation of the conduct of electric railway accident cases in the court room leads to the conclusion that automatic recording instruments of various kinds may become an invaluable aid to a company in the establishment of operating conditions in connection with specific suits. Not seldom does it become necessary in damage cases to prove to the jury that at the time of an accident the voltage at the power plant was normal; that the current demand upon the system was not excessive, or some other point of technical importance depending upon the physical plant of the company and its general operative efficiency at a definite time. Thus, in a recent case of this kind the company was sued for \$15,000 by a passenger who fell off a station platform in the early evening, and who claimed that the accident was caused by inadequate lighting. The company found it most helpful to be able to produce recording voltmeter records from its nearby station covering the day and hour four years before the trial, when the accident happened. These records showed no abnormalities in the power station voltage, and as the railway station lighting was accomplished by a number of separate circuits supplied off the general trolley feeding system, the presumption was established that the lighting conditions were normal; otherwise, any disturbance of sufficient importance to affect the subdivided railway station lighting would have been indicated at the power house. With a large network of trolley lines and feeders between the power house and the station

where the accident occurred, the lighting taps at the latter point would be sensitive only to conditions likely to disturb the voltage regulations for at least a few seconds at the power house, such as a block in the cars on a street or a partial short-circuit. The records from the power house indicated steady service conditions, and were thus automatically corroborative of the testimony of the station master, that the lights were burning at their usual brilliancy and steadiness at the hour when the accident happened.

The cost of maintaining records of this kind is small in relation to their possible future value. Obviously, a company cannot usually afford to establish automatic recording instruments at many different points, but it certainly may be well worth while to maintain them at the power house, and possibly at one or two other central locations, provided the records are filed with scrupulous care. Such records may not win a case in themselves, but they always go far to show that the road is being operated scientifically; that the service is kept up to certain desirable standards, and that the memories of employees covering several years can be reinforced by concrete data having a time-value as admissible evidence.

### Terminal Electrification in Chicago

An interesting communication from Slason Thompson, manager of the Bureau of Railway News and Statistics, with reference to terminal electrification in Chicago, appears in a recent issue of the *Commercial and Financial Chronicle* of New York. Mr. Thompson takes the view that reform in motive power in Chicago is impracticable. He summarizes the total trackage within the corporate limits of Chicago, which amounts in all to some 2500 miles, and from its size and intricacy and the mass of traffic to be handled, jumps to the conclusion that the thing is economically impossible, stating that the terminal facilities of Chicago cannot be operated with half steam and half electricity.

Mr. Thompson is a close student of steam railroad conditions, and we have had occasion in the past to compliment him on his research work. In this case we agree with him entirely that the electrification of 2500 miles of urban trackage, including a large amount of track installed for industrial purposes, is a very large problem, perhaps the greatest which has yet been suggested for solution to the electrical engineer. But it is equally true that very few suburban services could be so easily and usefully electrified as those of the Illinois Central Railroad quite independently of other trackage. Granting that there may be in Chicago some situations of particular difficulty, this is no reason why all hope of improvements should be abandoned. We do not consider the abolition of smoke possible with electric operation the chief argument in its favor. But if Chicago could get rid of a portion of its smoke nuisance, even admitting that the rest could not immediately be eliminated, it would be an exceedingly good thing for the welfare of the city. An inability to electrify all of the trackage is no excuse for failing to make any improvement whatever.

The chief difficulty which the average steam railroad engineer experiences in analyzing this and other similar problems is that he has difficulty in divorcing in his mind

the underlying principles of steam railroad movement from the broader aspects of the transportation problem. Electrification is not a mere change of motive power—it involves a revolution in transportation methods. From the standpoint merely of operating expenses and fixed charges a plan of electrical equipment such as that proposed for the lines in Chicago or even for those of the Illinois Central passenger equipment may not look particularly attractive. But if the service is cleaner and much more rapid, if the trains, as is the case with electric power, can be run at such frequent intervals during the day that the suburban travelers do not have to think of a time table when they plan a trip to the city, the gross receipts should increase rapidly. If to these advantages are added those of greatly increased capacity of the track and terminals and equipment, the additional fixed charges required for the electrical equipment do not seem such a large obstacle in the problem.

It is not proper to assume, however, that the adverse decision in regard to electrical equipment was reached from a study only of the engineering phases of the question. The other railroad companies in Chicago might see in the suggestion to convert the passenger service of the Illinois Central Railroad a long step toward complete abolition of the steam locomotive within city limits and so have brought pressure to secure a negative vote. There may be other valid reasons in the minds of those responsible for the decision sufficient to outweigh the direct arguments from an engineering and transportation point of view in favor of the adoption of electricity, but the change is bound to come eventually, and this is a fact which cannot safely be ignored.

### Permanent Track Construction

The aim of most engineers is to design and build a track foundation which will last at least as long as the rails laid in it. In the recently issued first annual report of the Board of Supervising Engineers, Chicago Traction, a description of the track now being laid in Chicago under the supervision of the board is prefaced with the statement that the structure was designed to "permit the renewal of the rail with the least possible disturbance of the track foundation."

The development of a type of track construction which consists of a foundation heavy enough and indestructible enough to outlast two or more sets of rails and permits the rails to be renewed with little trouble and expense passed through three stages of evolution. At first the engineers of the board were favorably inclined toward the use of steel ties completely embedded in concrete extending 7 in. below the bottom flange. Several miles of track were built of this type during the first year of rehabilitation, but later the board turned its attention to wooden tie construction and in most of the permanent track built in 1908 and during the past summer wooden ties have been used. The first wooden tie specifications called for untreated yellow pine ties of 90 per cent heart, spaced 4 ft. or 5 ft. center to center, which was the same spacing as used for steel ties. The latest specifications call for wooden ties spaced 3 ft. center to center and thoroughly impregnated with chloride of zinc or creosote.

There are three ways in which a permanent track foundation may deteriorate. The concrete, if too thin or lean, may crack and crumble under excessive loads or the action of moisture, and the ties, if of wood, may rot or the fiber may be disintegrated under the movement of the rail. The latest type of construction used in Chicago attempts to provide against all three of these sources of failure. In the earlier track construction a saving in volume of concrete was made by banking up a mound of dirt 9 in. high between adjacent ties and putting 7 in. of concrete only under the rails and the ties. This practice has been abandoned in favor of a level bottom in the trench which is thoroughly rolled and compacted before the concrete mixed in the proportions 1:3:6 is laid to a uniform depth of 15 in. This thick mattress of concrete is a monolith reinforced by the ties embedded in it and has ample strength to support the load and resist heaving due to the expansive action of frost.

The board in its report says that all of the data it could collect seem to show that sound wood, when completely encased in concrete, was practically indestructible from decay. As a precaution, however, and to insure that any fungus growth in the wood was destroyed before the ties were placed in the track, creosote treatment was decided upon. Later, this was largely supplanted by the chloride of zinc treatment which is effective so long as the fungicidal salts remain in the wood cells. The zinc chloride treatment is much cheaper than the creosote treatment, costing less than half as much, but its principal fault is that the fungicidal solution leaches out of the wood in time if the wood is exposed to moisture and sunlight. This objection does not hold against ties which are completely embedded in concrete.

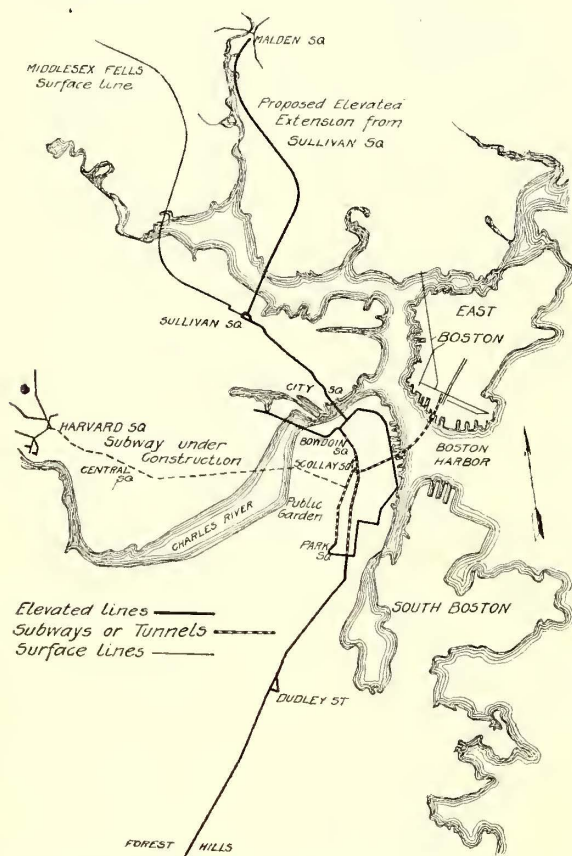
In discussing the report of the committee on way matters at the Denver convention George Weston, a member of the Board of Supervising Engineers, referred to the use of tie plates on wooden ties. The investigation made by the board into failures of track laid on a concrete foundation showed that in almost every instance the fibers of the wooden ties had been destroyed by the action of the rail resting directly on the ties. When the ties gave out the movement of the rail finally disintegrated the concrete. To prevent this a form of tie plate has been adopted for both steel and wooden ties which has a flat bottom and is fastened to wooden ties by lag screws. If any vertical movement or creeping of the rail takes place, its damaging effect is expended on the tie plate. Finally, the board adopted screw spikes for fastening the rails to the ties in order to facilitate the renewal of the rails and prevent damage to the ties when this becomes necessary.

None of the rehabilitated track in Chicago has been in use long enough to require renewal of the rail and the theoretical advantages of the permanent foundation have still to be demonstrated in practice. Some difficulties probably will be encountered in surfacing and aligning the track when new rail is put down. Very slight side kinks will not permit moving the tie plates on the ties and boring new holes for the screw spikes. Shimming may have to be resorted to in order to get good surface. These troubles, however, will be of small moment if it is shown that a track foundation can be built which will outlast the rails first laid on it.

## RECENT EXTENSIONS OF THE BOSTON ELEVATED SYSTEM

Rapid transit facilities in Boston are undergoing noteworthy expansion at the present time in the construction by the Boston Elevated Railway Company of important elevated and subway extensions to the north, south and west of the city. With the establishment of elevated train service in Boston in 1901 a far-reaching plan of urban transportation development was inaugurated, and through the construction of new lines, permitting the operation of fast trains and cars from the heart of the city to the four cardinal points of the compass, a most effective radial service between the business and suburban districts is being realized in combination with the local surface lines.

The fundamental plan of operating multiple-unit trains



Boston Elevated Extensions—Map Showing Elevated and Subway Lines

at relatively high speed between the business center of Boston and important surface car transfer stations in the nearer suburbs, with local transfers to and from street cars serving the intermediate territory, has never been departed from since the establishment of the initial service between Dudley Street terminal, Roxbury, and the Sullivan Square terminal in Charlestown, in the summer of 1901. The opening of the Atlantic Avenue elevated lines in the fall of 1901 continued the flexible service started a few months before through the Tremont Street subway between the terminals above named. In December, 1904, the East Boston tunnel was opened for travel, and while this service is maintained by single cars of the semi-convertible type, it exemplifies high-speed operation with few stops between the business district and the residential section lying on the east side of Boston harbor. In November, 1908, the Washington Street tunnel was opened for traffic, and the elevated train service was withdrawn from the Tremont Street subway in accord-

ance with the legislative requirements. In general, the surface car lines were restored to their former routing through the subway, and the train service was then operated between Dudley Street and Sullivan Square, via the Washington Street tunnel and the Atlantic Avenue elevated lines. This arrangement has since been continued, with a decided improvement in the north and south trunk line facilities of the city, since there are now six tracks available for rapid transit off the surface of the streets through the heart of Boston, apart from the existing trolley facilities on Washington Street, Charles Street and Atlantic Avenue.

In connection with the establishment of service through the Washington Street tunnel, plans have been made for extending the platforms of all the elevated stations in the city, to permit the operation of eight-car trains on the rapid transit system, and this work is now rapidly approaching completion. The initial elevated system was designed for the operation of five-car trains, but when the Washington Street tunnel was designed the necessity for a large increase in capacity became evident, and the tunnel was built with 350-ft. platforms to permit a 60 per cent increase in the train service without alteration of the interval between train units. Important modifications of the terminal stations on the elevated system have been necessitated by the provision of these new facilities, including plans for the separation of inbound and outbound traffic, enlargement of platform areas, utilization of former dead spaces between loop boundaries, and the construction of foot bridges and passageways to facilitate the free movement of loading and unloading passengers.

The company now has nearly completed the construction of a 2½-mile extension of its elevated structure southward from Guild Street, near the Dudley Street station, to Forest Hills Square. This line was fully described in the *ELECTRIC RAILWAY JOURNAL* of Aug. 8, 1908, and only brief mention need be made of its physical features here. This line will provide a double-track route from the Forest Hills district to Dudley Street, and thence into the center of Boston, with an approximate saving in time of nine minutes per passenger on every trip to and from the city from the West Roxbury section of Boston when patronized in connection with surface lines terminating at the Forest Hills station. The same saving will apply from Forest Hills inward and outward.

The company is now building a subway in the City of Cambridge, between First Street, near the Charles River, and the Harvard Square district, to provide rapid transit between the western suburban area and the center of Boston. The Boston end of this subway is to be built by the Boston Transit Commission, and the work has been begun on the line within the past few weeks. The Cambridge subway will terminate, according to present plans, at the Park Street station of the Tremont Street subway, and it will shorten the time of transit between points near or beyond Harvard Square and Boston by about 15 minutes per trip. The present running time between Harvard Square and Park Street, via surface lines and the Public Garden loop of the Tremont Street subway, is about 23 minutes. The subway under construction will be double tracked, with but two stops between Park Street and Harvard Square. It is probable that the next Legislature will be asked to consider the extension of the Cambridge subway from Park Street to the South Station.

In the near future the company will begin the construction of an extension of the elevated structure for double-track train service between Sullivan Square and the subur-

ban cities of Everett and Malden, the terminus being at Malden Square, 3 miles north of Sullivan Square station. Detailed estimates of the running time between Malden and the center of Boston via the elevated extension are not yet in hand, but it is anticipated that a passenger will save at least 10 minutes per trip, being able to travel by through train from Malden to the heart of Boston's financial district in about 20 minutes. The present running time, via surface lines to Sullivan Square, including a transfer to an elevated train at the latter point, is about 30 minutes.

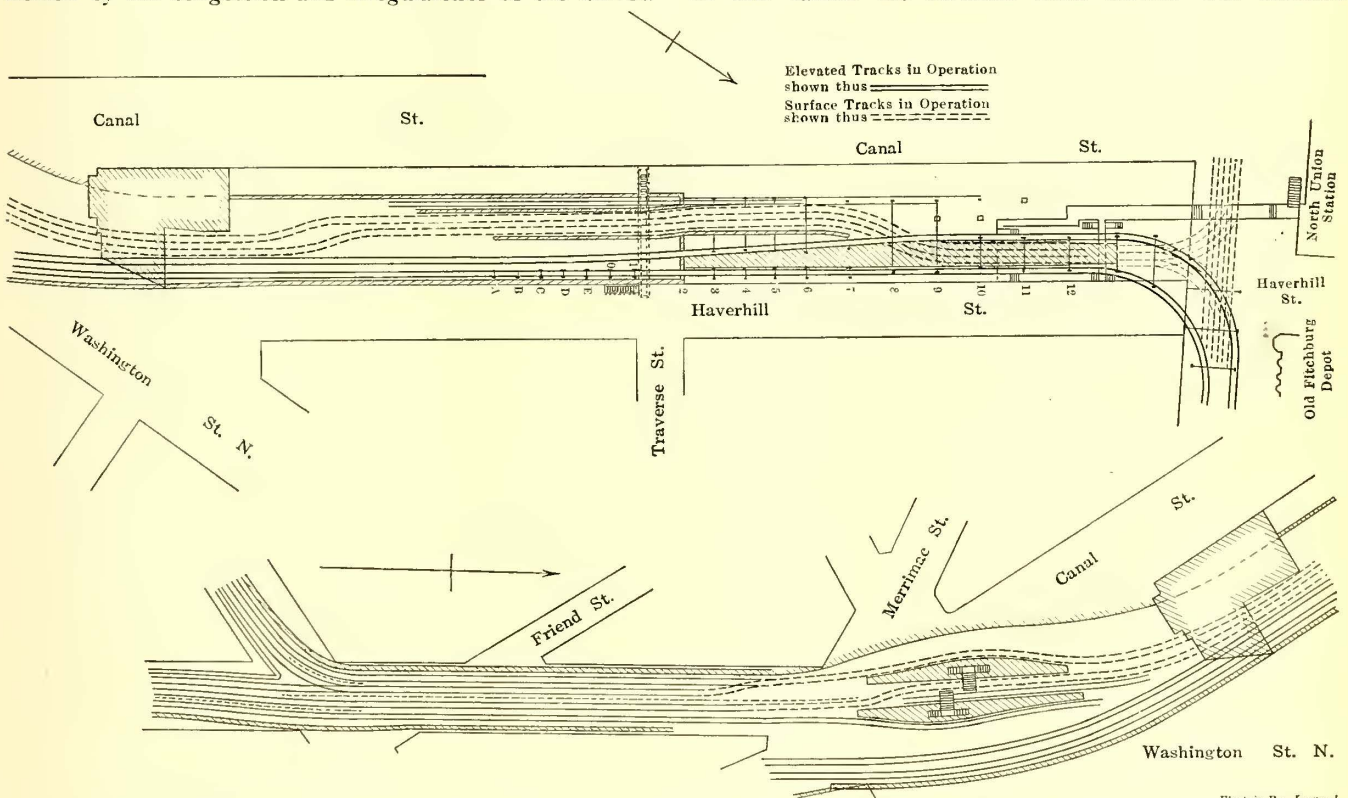
In connection with the withdrawal of the elevated trains from the Tremont Street subway and the restoration of the surface cars, the company has begun the construction of about 1 mile of elevated structure to connect the Lechmere Square district of Cambridge with the subway system at the North Station. This section, called the East Cambridge extension, will be used exclusively by surface cars, which at present are seriously handicapped in their entrance into Boston by the congestion and irregularities of the narrow

Ultimately, it is planned to operate through cars from Sullivan Square to Stoneham via the Fells route, thus bringing this suburb into closer touch with Boston than the present facilities afford.

In the following paragraphs are given certain details which illustrate the character of the designs which are being applied to the terminals and stations under construction, the special architectural features of the elevated structure, general arrangements for handling the traffic at transfer points, work in progress in the field, and the former and present track installations in relation to the inauguration of enlarged service. A general map of the Boston system is shown on page 1214.

CHANGES AT THE NORTH STATION

With the opening of the Washington Street tunnel several important changes in the track layout and arrangements for handling traffic were made at the North Station, as indicated in the accompanying drawing. Prior to the opening of this tunnel the elevated train service was handled



Boston Elevated Extensions—North Approach of Washington Street Tunnel and North Station East

streets between the North Station and East Cambridge. The elevated structure will be carried across the new Charles River dam on the downstream face of the latter, and it is probable that there will be a saving of at least 50 per cent in the running time between Lechmere Square and the North Station by the elevated structure compared with the present surface schedule.

An important extension of the surface lines has recently been made from Sullivan Square into Middlesex Fells, a noted woodland reservation under the Metropolitan Park Commission's administration. This tract of forest has never before been easy of access to the population of Boston, although it was designed for the fullest enjoyment of the public. The opening of the new line in the summer of 1909 provided a double-track surface route between Sullivan Square and Spot Pond, the running time being 23 minutes and the distance being 4½ miles. The opening of the route to the Fells brings the entire area within the limits of a 5-cent fare from any part of the Boston Elevated system.

through the Tremont Street subway, and the tracks were brought out of the subway by an incline between Haymarket Square and the North Station and carried to the level of the elevated structure at the latter point. The surface car lines operating in the subway as far as the Scollay Square loop were likewise brought out of the ground on the incline, and carried along at the street level when the proper grade was reached. When the Washington Street tunnel was opened it became necessary to connect the north and southbound tunnel tracks with the two elevated train tracks on the incline, and this was done without interfering with traffic except for a few hours on the Sunday before the tunnel trains were started in service. The through tracks in the old subway formerly used by elevated trains were again utilized for surface car travel; the platform for handling elevated train traffic at the North Station was extended southward to receive eight-car trains when necessary, and certain short sections of steel structure and tracks were temporarily abandoned.

In the final arrangement the two tracks for the elevated trains entering and leaving the tunnel are located side by side on the east of the incline, giving a direct run between the portal of the tunnel and the North Station, and afford-

ness with thorough separation of opposing streams of travel beyond the confines of the station platforms. The approach to and leaving of trains at this station is much improved by the modified design.

#### POWER STATION DESIGN

Expansion of the company's power supply system in connection with the opening of the Washington Street tunnel has already been fully described in the *ELECTRIC RAILWAY JOURNAL*. However, an exterior view is shown of the enlarged Lincoln power station, on Atlantic Avenue, to illustrate the architectural attractiveness of the company's later work. The original station building is shown at the left of the picture. The extension is close to the elevated structure, and is seen by passengers in all trains passing the station. Special attention was given in the design to the end windows, the cornice and the facade of the building, the central panel and trimmings being particularly attractive. The station capacity has been increased from 8100 kw to 13,500 kw.

#### FOREST HILLS EXTENSION AND EGLESTON SQUARE

The Forest Hills extension has been built with but one local station, in order to accommodate the through traffic from the center of Boston to the terminus of the elevated structure on the edge of the West Roxbury district. A special feature of the structure is the use of reinforced concrete posts and sheathing where it crosses the Boston park system near Forest Hills Square. A view is shown of the construction at the Arborway, where the double-track line is carried on a single row of massive posts encased in concrete and supported on foundations 11 ft. 6 in. square and 12 ft. deep. The structure proper here is of deck construction with steel plate cross and longitudinal girders as

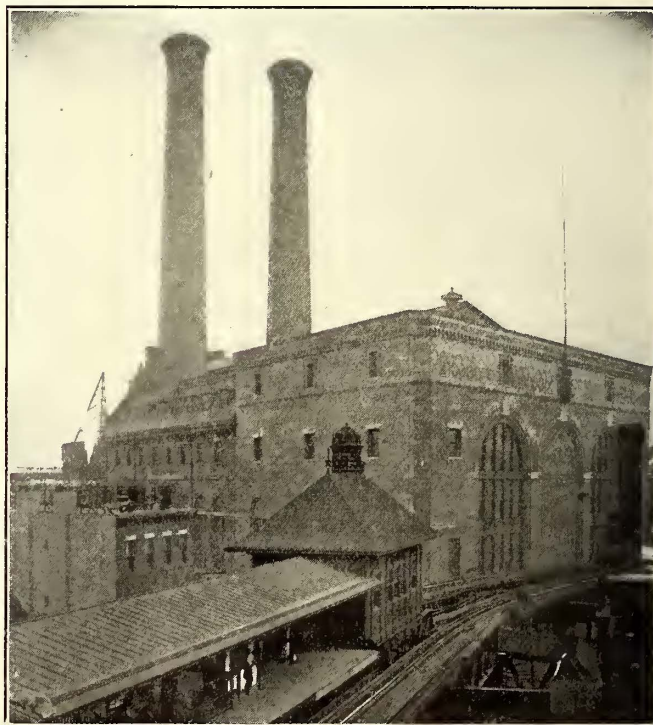


Boston Elevated Extensions—Remodeled Station at City Square

ing unimpeded facilities for surface car movements at the west of the train tracks. At the North Station the two elevated train tracks were spread to make the island platform between them, and a new and commodious transfer station was established under Haymarket Square, between the Washington Street tunnel trains at the so-called Union-Friend Station and surface cars in the subway in each direction. This change has eliminated much of the congestion which hampered the company at the North Station, and has facilitated interconnection of the tunnel and subway systems for all classes of passengers. The work of building the Union-Friend Station and the alteration of tracks at Haymarket Square was carried on by the Boston Transit Commission and the Boston Elevated organization in the face of extreme difficulties of space limitation, necessity of supporting overhead structures, including part of a hospital, and the maintenance of a heavy traffic. Under the new arrangement a spur track was also built at the North Station, with a covered platform for the use of shuttle trains running between the North and South stations, and several important changes were made in the layout of passageways and ticket offices to facilitate the movement of traffic under the new conditions.

#### CHANGES AT CITY SQUARE, CHARLESTOWN

In order to adapt the elevated station at City Square, Charlestown, for the operation of eight-car trains it became necessary to change over this important transfer point from the island type of station to the outside platform type. A half-tone view of the modified station is shown above. This work was carried on without stopping the train service, and the new arrangement of the station affords maximum facilities for handling the inward and outward busi-



Boston Elevated Extensions—The New Wing of the Lincoln Power Station

ness elsewhere on the extension; but the sides and under portion are sheathed with concrete reinforced in the manner shown in the half-tone view on the opposite page.

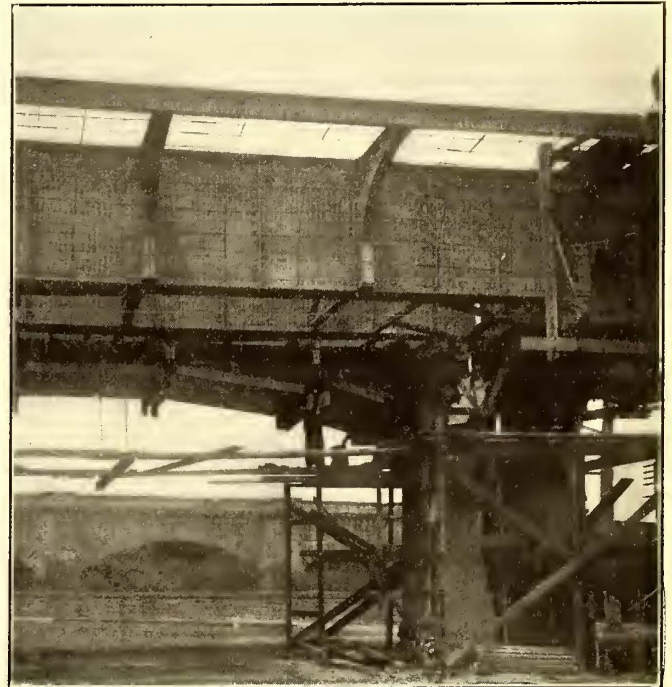
A view is also shown of the Egleston Square station, which is of the side platform type and is unique in being

the first Boston station to use reinforced concrete for platforms, galleries and stair landings. The reinforcement extends both longitudinally and transversely. The Forest Hills station is also to be of the two-platform type, and will be equipped with escalators and stairways connecting the surface and elevated lines. Outward-bound trains will stop at a platform 20 ft. wide, and after the cars have been emptied the train will proceed to a cross-over just beyond the station and return to receive inward passengers at the second platform of the station. The latter has been made 30 ft. wide to facilitate rapid loading of trains. Surface platforms and track loops below provide for expeditious

in the plans has been made by the company through the utilization of the space inside the surface car loops at the elevated level for waiting room accommodations, as shown in the plan on page 1219. The principal changes at Dud-



**Boston Elevated Extensions—Egleston Square Station Built Largely of Reinforced Concrete**



**Boston Elevated Extensions—Concrete Reinforcement on the Forest Hills Structure**

movement of traffic received from and delivered to the elevated trains.

**ALTERATIONS AT DUDLEY STREET STATION**

Important alterations in the Dudley Street station have

ley Street are the construction of a new unloading platform on the Washington Street side of the property, the building of foot passages and bridges to enable transfers to be made without crowding between the trains and outward-bound



**Boston Elevated Extensions—Forest Hills Structure Nearing Completion**

been made in connection with the Forest Hills extension. These were briefly described in the *ELECTRIC RAILWAY JOURNAL* of Aug. 8, 1908. Since the general plan of changes at Dudley Street was approved in 1908 by the Massachusetts Railroad Commission a still further improvement

cars, and the filling in of the surface car loops at the elevated level, so that by using both sides of the surface car platforms loading and unloading may take place simultaneously and with far less massing of passengers than the present operation of the station entails. In the central portion of the terminal the equivalent of six platforms will be provided. Entire separation of inward from outward traffic will be facilitated to a remarkable degree by the establishment of the unloading platform over Washington Street and the utilization of the passageways indicated. The use of a portion of the surface loops for waiting-room space will tend to relieve the present waiting room from overcrowding, reduce the number of passengers standing or crossing the inbound elevated platform and shorten the time required for a passenger from Boston to the suburbs to reach his particular surface car at the elevated level when it approaches its berth. The accompanying recent view of the changes at Dudley Street shows the general type of construction which the company is pushing to completion here. The bridges are covered, and are of ample width to enable rapid transfers of passengers to be made across them. They are provided with short stair-

way connections to the different platforms. A special feature of the design which has received very little attention from the public, but which will add greatly to its comfort, is the absence of the stair climbing usually necessary to make transfers between surface cars and trains. The bulk of stair travel in the station will be downward, regardless of whether the passenger is inward or outward bound. The remodeled station can be used either as a terminal or a way station, trains being switched back to Boston through Dudley Street when desired and thence returned to Boston, or run through to Forest Hills with a single stop on the west side of the property. The capacity of the station will be greatly increased by the above changes, which also include the lengthening of the original elevated platforms to handle eight-car train service.

#### IMPROVEMENTS AT SULLIVAN SQUARE AND SOUTH STATION

At the Sullivan Square terminal a radical change in the station design has just been approved by the Railroad Com-

der the new plan, as shown on page 1219, there will be built a platform about 350 ft. long on the west side of the station over Main Street, Charlestown, for use by passengers destined for Boston via the elevated trains. This platform will be at a slightly higher level than the present interior platform of the terminal, and will be connected with the latter by one 5 per cent and one 6 per cent ramp, with a combined width of 30 ft., besides having a bridge connection 10 ft. wide with the easterly platform of the terminal. In place of the present stub tracks on the west side of the station a loop for surface car traffic will be built, with an unloading platform having short connections with the inward elevated platform. Cars will ascend the inclines to the elevated level as at present, on the west side of the station; they will discharge their passengers upon the unloading platform at an average distance of 60 ft. from the trains, traverse the loop and make a second stop at the surface loading platform, which is in immediate



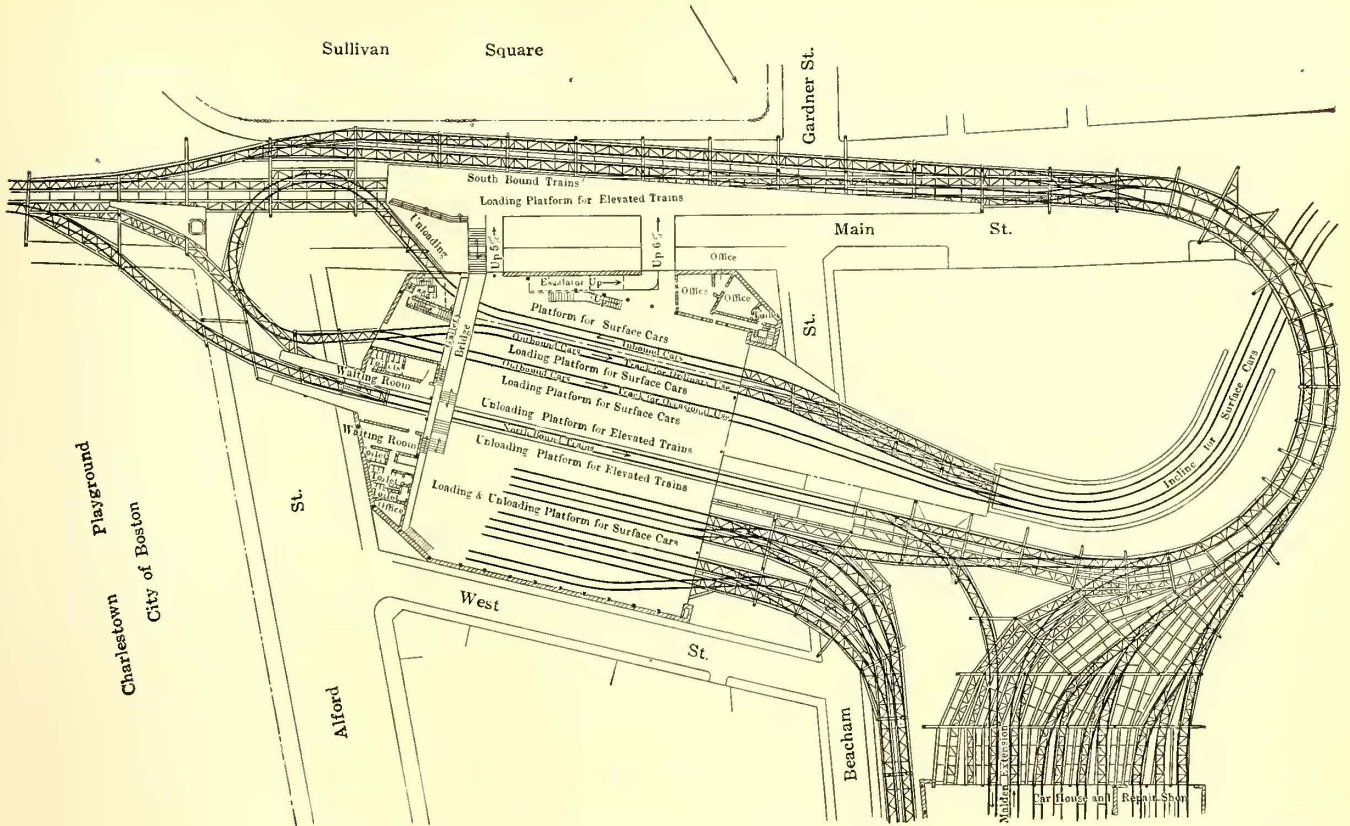
Boston Elevated Extensions—Changes under Way at the Dudley Street Station

mission in connection with the inauguration of service on the future Malden extension. The original design of this station provided a single track through it for use by elevated trains arriving from Boston, and on each side, at the same platform level, parallel surface car tracks with stub terminals which received and delivered traffic transferred between the trains and suburban cars. Little separation was possible between inward and outward travel except by encouraging passengers to enter the elevated trains by the end doors and leave by the center doors, and by trying to empty the surface cars at the forward end and load them at the rear end. With the growth of travel consequent upon the full utilization of the elevated system and its connecting surface lines, together with the admission to the terminal of new lines of interurban cars from distant points, the capacity of the station became closely limited. Hence a rearrangement was necessary in preparing the plans for the new line of elevated service to Malden. Un-

touch with the outward-bound elevated trains. An extra track for occasional use in times of heavy traffic or other emergencies will be available in the center of the surface car loading platform. All outward-bound trains from Boston will enter the station as at present, and after discharging their passengers at the unloading platforms in the center of the station, trains will proceed either to Malden or to Boston as desired. Malden trains entering the station will pass around the north elevated loop and make a stop at the loading platform on the west side of the building, receiving inward passengers in the same manner as the trains looped through the station direct from Boston.

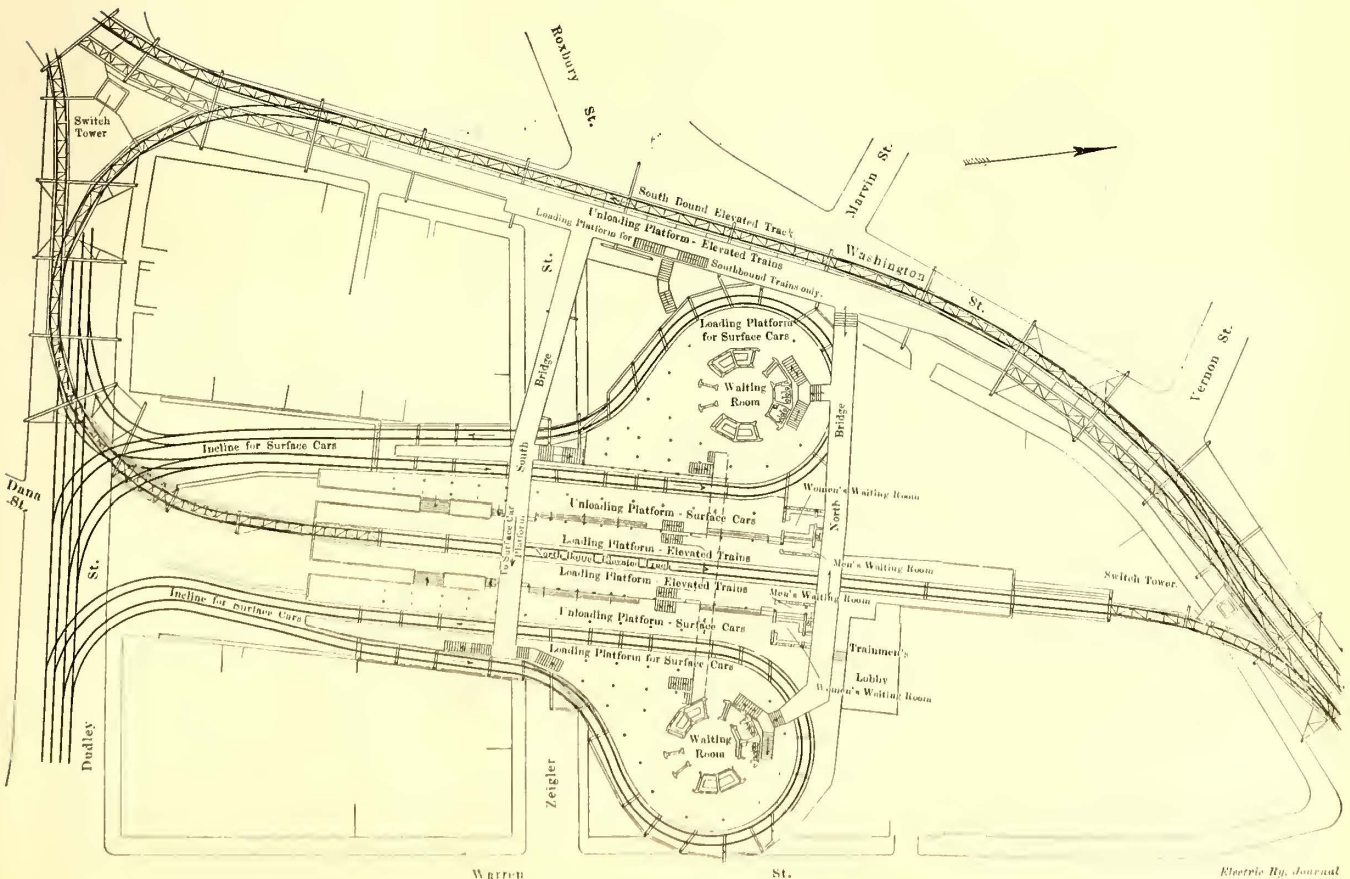
The tracks and incline on the east side of the station will remain unchanged, because a large part of this traffic will be handled by the Malden extension, and the necessity for separating inward and outward passengers at the surface car platforms will be less urgent. The rearrangement of the station, however, provides for a general separa-





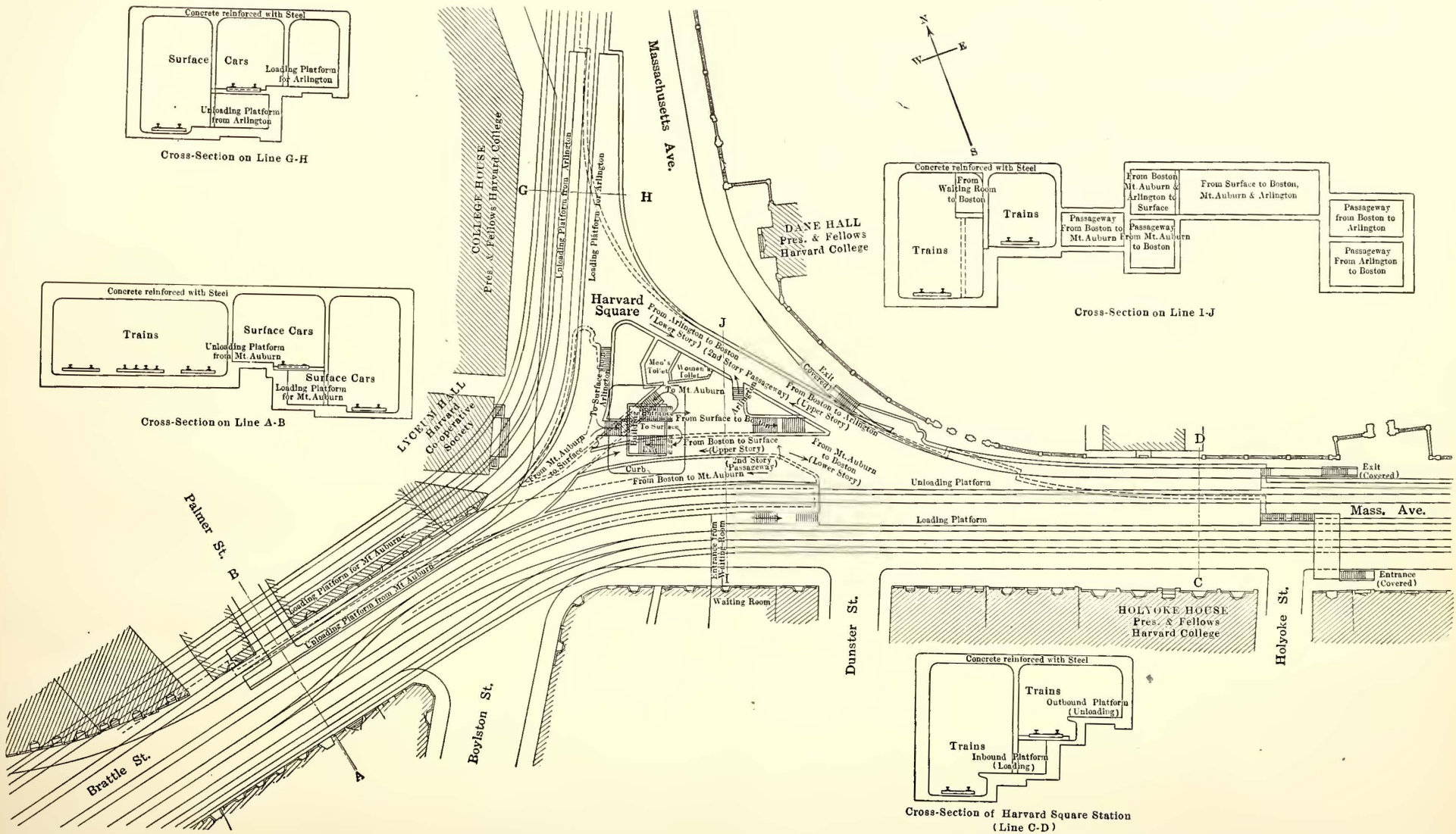
Boston Elevated Extensions—Plan of the New Sullivan Square Station

Electric Ry. Journal



Boston Elevated Extensions—Plan of the Dudley Street Station Improvements

Electric Ry. Journal



Boston Elevated Extensions—Plan and Sections of the Harvard Square Station of the Cambridge Subway

Electric Ry. Journal

the platform areas, together with a freer movement of surface cars. These changes should result in a considerable increase in the capacity of this station.

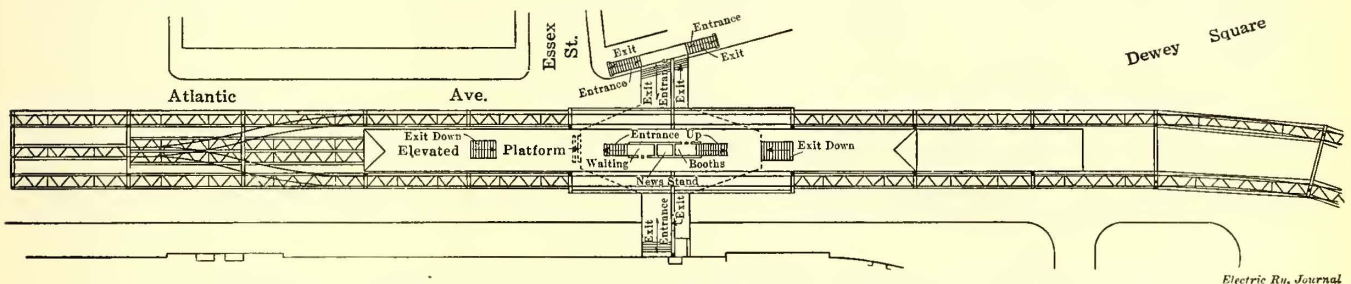
A representative way-station improvement is illustrated by the accompanying plan of the South Station with extended platform. The company has widened the physical connection here between the elevated station and the steam railroad terminal building of the same name; it has extended the platform at each end to accommodate longer trains, and has installed a middle siding and switches to facilitate the turning back of the inter-terminal trains operating on a shuttle schedule between the North and South Stations. Formerly these trains were necessarily operated through Atlantic Avenue to Beach Street, making a relatively unprofitable run of about 1 mile per round trip. This will be eliminated by the track improvements at the South Station.

#### CAMBRIDGE SUBWAY STATIONS

The work now under way in connection with the building of the Cambridge subway by the company is still in the excavation stage. The general features of the route and the station designs have been briefly reviewed in the *ELECTRIC RAILWAY JOURNAL* in connection with the hearings held before the Railroad Commission in which the designs of the company were in the main approved as presented. The terminal station at Harvard Square will present the most complicated problem in construction, and is the most interesting feature of the subway.

desirable through service may be given between Newton and Arlington Heights or between intermediate points. The shape of Harvard Square approximates an equilateral triangle of very limited area, and this, with the number of surface car lines passing through the district and the valuable property of Harvard University abutting, made necessary the adoption of different levels and grades for the tracks and platforms to be utilized by the different services. Ample accommodations have been provided, however, by the use of platforms of considerable length, and while these are of necessity connected by passageways of corresponding length, the accessibility of the different connections is straightforward and the opportunities for congestion greatly reduced. Besides the usual sidewalk entrances and exits, there will be an entrance to the station from the waiting room of the company now located on the south side of the square and a main entrance and exit housed in a tasteful structure in the center of the square on an area of about 1800 sq. ft. A large part of the traffic will pass through the station without any necessity of coming to the surface until it does so on the suburban surface cars passing out of the terminal, via the inclines.

There are also to be stations at Central and Kendall Squares, on the Cambridge subway. These are to be of simple design, consisting of a platform for westbound trains on the north side of Massachusetts Avenue, below the street level, and a similar one on the south side for eastbound service. At Central Square no special surface car



Boston Elevated Extensions—Plan of South Station as Modified for Eight-Car Trains

will be built for double-track service, with arrangements for free transfers between surface cars and trains in the same general direction. By this plan the intermediate territory between subway stations will share in the fast service afforded by the subway trains to and from the business district of Boston.

The Harvard Square station will be arranged for the separation of inward and outward traffic by the construction of separate platforms for each service, and the physical division of the station into sections and passageways for special movements of trains, cars and passengers on foot. In general, the surface cars connecting with this station will be carried under ground by inclined approaches beginning at considerable distances from the center of Harvard Square. These cars will deliver their passengers at platforms connecting by ramps of moderate grade to the loading platform for the Boston-bound subway trains. Outward trains will stop at a special unloading platform, also connected with the different surface car lines by passageways leading to separate loading areas for use by surface car passengers bound for points beyond Harvard Square. At Harvard Square there are two general directions for connecting surface cars. One group of lines is operated in the direction of North Cambridge and Arlington, and the other to Mount Auburn, Watertown and Newton. The surface car tracks at the subway station will be arranged so that if

facilities are planned outside the present double-track lines through Massachusetts Avenue and their branching connections to Somerville, Brighton and the Cottage Farm district. The entrance and exit stairways will be located at the sidewalk edges and above the ends of the subway platforms. Below the surface the two subway tracks will be carried through the station without special features, the platforms being on the outside of the tracks. At Central Square a similar arrangement will be installed, with the addition of a surface car loop to permit lines serving the north center of Cambridge via Broadway, to terminate above the subway station if desired. By this arrangement passengers from the heart of Cambridge can be transferred to the subway, and surface car operation into Boston avoided to any extent required by the traffic conditions, or, if desired, cars can be operated on the surface as far as Kendall Square, and then turned back into Boston to handle any special traffic. The stations at Kendall and Central Squares are specially planned to serve the manufacturing and mercantile districts of Cambridge, while that at Harvard Square is planned to handle the residential and university traffic, and will furnish quick access to the subway trains to and from Boston in connection with athletic events at the Harvard Stadium.

#### OTHER CONSTRUCTION

The elevated structure for surface cars running between

East Cambridge and the North Station is to be carried over the Charles River dam on a stone arched bridge with Chelmsford granite piers. A bascule lift bridge will be provided in the span over the main channel lock of the dam. The architectural features of the bridge have been designed to harmonize with the improvement work which is being effected by the Charles River Basin Commission.

The Middlesex Fells extension is a double-track line with span construction, following the parkway from Mystic Avenue, Somerville, into the Fells on a reserved right-of-way in the middle of the highway. The line is carried on a semi-private right-of-way, with rock ballast within the Fells, and opposite Spot Pond it crosses Brooks Road on a new reinforced concrete bridge to avoid the highway. This bridge was designed and built by the Metropolitan Park Commission, and is illustrated herewith. It emphasizes the character of the construction work on the entire Fells extension. This bridge is 170 ft. long, 20.5 ft. wide, and is reinforced in the deck, arches and piers. The bridge is built in three spans, and was especially designed to meet the requirements of transportation without injuring in any way the beauties of the reservation.



Boston Elevated Extensions—Brooks Road Bridge at Middlesex Fells

The elevated and subway extensions reviewed above are being built under the general direction of George A. Kimball, chief engineer of elevated and subway construction, to whom this paper is indebted for courtesies extended in the preparation of this article. The surface line work mentioned has been carried out under the direction of H. A. Plimpton, civil engineer of surface lines, Boston Elevated Railway Company.

It is the practice of the Cincinnati Traction Company to soak the car motor brushes in sperm oil, which is said to keep them from chipping and to greatly improve the surface of the commutators. Two sets of brushes are provided for each motor. The lead brush of the No. 1 motor on a car carries the number of the car and the motor numbers for the other brushes are indicated by scratches. One of the two sets of brushes is kept in oil while the other is in use, and a shift is made about every third night. A high-grade Columbia brush is used, from which excellent results are obtained, even though the steep hills in Cincinnati require the motors to work under severe loads.

## ANNUAL MEETING OF PENNSYLVANIA STREET RAILWAY ASSOCIATION

The annual meeting of the Pennsylvania Street Railway Association was held in Harrisburg on Wednesday, Dec. 1, and was attended by the following representatives from different sections of the State: R. P. Stevens, of Allentown, president of the association and president Lehigh Valley Transit Company; E. H. Davis, manager, Williamsport Passenger Railway Company; Charles O. Kruger, president, Philadelphia Rapid Transit Company; F. B. Musser, president, Central Pennsylvania Traction Company, Harrisburg; H. R. Fehr, president, Easton Transit Company; L. C. Bradley, Pottsville, general manager, Easton Pennsylvania Railways Company; F. D. Shaffer, Oil City, general manager, Citizens Traction Company; C. H. Bishop, Lemoyne, superintendent, Valley Traction Company; J. I. Quigley, president, Lewistown & Reedsville Electric Railway Company; C. Edgar Titzel, Lancaster, manager, Conestoga Traction Company; W. H. Lanius, York, president, Hanover & McSherrystown Street Railway Company; Dr. H. M. Stine, Harrisburg, secretary of the association.

Prior to the opening of the convention at 11 a. m. in the offices of the Central Pennsylvania Traction Company, the executive committee held a brief session for the purpose of considering its report, then met in the office of the secretary. The convention approved the minutes of the last annual convention, and President Stevens appointed a committee to place candidates in nomination for the ensuing year.

Treasurer Lanius read his paper showing a balance in the treasury of \$2,055.10. The report was approved and ordered to be filed.

President Stevens called upon Secretary Stine for an address, and the latter gave a brief report of the work of the association during the year, and expressed great confidence in the future growth in numbers and influence of the association during the coming year.

President Stevens then followed in an address full of suggestions for improved methods of work that would prove of much benefit to the members of the association, and that would stimulate interest in the organization. He urged stronger cohesion, loyalty and zeal on the part of all the members and referred to the suggestion that he had made at the Denver convention about the organization of the executives of State associations. This body, he said, could meet at stated intervals and co-operate with the efforts of the national association of street railway interests. He stated that he had been invited to represent the State association at a meeting of the executive committee of the American Street & Interurban Railway Association, to be held in New York City in January next, at which time the matter of an organization of State executives will be brought up.

After some discussion it was decided that the association should hold quarterly meetings in the future, to be called by the president, at which times papers of interest to the membership would be read by various officials and members.

The nominating committee then submitted the following slate, and upon motion the secretary was instructed to cast the ballot, with this result: President, R. P. Stevens, Allentown; vice-president, E. H. Davis, Williamsport; treasurer, W. H. Lanius, York; secretary, H. M. Stine, Harrisburg; executive committee, R. P. Stevens, E. H. Davis, Chas. O. Kruger, Dr. Walter A. Rigg, Reading.

The convention then adjourned to the Harrisburg Club, where dinner was served at 1 o'clock. The delegates were then taken over the lines of the Central Pennsylvania Trac-

tion Company in two special cars and shown through the concrete car houses which have recently been built on North Cameron Street.

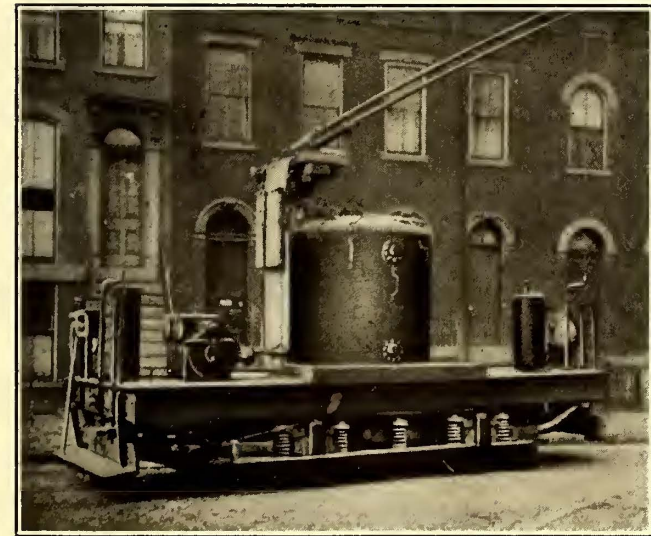
Fourteen new members were added to the association in 1909, making the present membership 44 companies. The outlook for 1910 is most favorable.

### SAND DRYING PLANT OF THE CINCINNATI TRACTION COMPANY

The Cincinnati Traction Company has a very complete mechanical system for drying and distributing sand. The great number of hills in Cincinnati and the numerous steep grades ranging up to 13 per cent require the use of about 10,000 tons of sand each year. Sand is dried in a central plant at the Brighton car house and distributed to other car houses in a tank car, which handles the sand entirely by air pressure. This car also delivers sand to line cars, which place it on the tracks.

#### DRYING PLANT

The Brighton car house is built on a side hill, and the sand-drying plant is installed in the basement. Sand is



Pneumatic Sand-Distributing Car

delivered in wagons which drive onto the car house floor and dump their loads through traps into the basement. A leather conveyor belt carries the sand from the dumping piles to the drier. This belt is about 40 ft. long and travels at a speed of approximately 3 ft. per second. At the present time the sand is screened and thrown on the belt by hand, but the company proposes shortly to install an I-beam runway with a traveling grab bucket which it is thought will considerably reduce the labor required in handling wet sand.

From the upper end of the belt the wet sand falls into the feeding hopper of the drying drum. This drum is 3 ft. 6 in. in diameter and 20 ft. long. It is made of boiler plates heavily riveted. Within the drum are baffles, which serve to distribute the sand and pass it through from end to end. The drum revolves continuously on roller bearings and is driven by a 12-hp electric motor, which also operates the two conveyor belts. The upper end of the drying drum is enclosed in a brick furnace setting, in which coal and barn refuse are burned. Gases from the furnace pass through the drum and then up a stack built in the wall of the car house. The sand as it falls from the conveyor

belt into the hopper automatically feeds through the drum, and with the turning of the drum is thoroughly exposed to the hot gases. As the drum revolves the sand is carried through to the end farthest from the furnace, where it falls into the hopper of an elevating belt conveyor. This conveyor lifts the dry sand into a steel storage tank above the car house floor.

The tank has a capacity of 30 yd., which is not sufficient to store sand dried during the dry days, when it is not needed on the tracks. New storage tanks will shortly be provided in the same car house, so that the drier may be run for longer periods and enough sand accumulated to last through a long period of bad weather. Three outlets from the steel storage tank serve to load the sand onto flat cars or into an air-operated sand distribution car which is used to fill the bins at the car houses.

#### SAND CAR

The sand car illustrated was designed and built in the shops of the Cincinnati Traction Company. It consists of a steel-plated underframe mounted on a special two-axle truck, carrying a steel tank which holds the sand. The tank is loaded by gravity at the drying station. This tank has a capacity of 9 yd. and the sand is forced out of it by air pressure. A National Brake & Electric Company D-4 air compressor mounted on the platform of the car furnishes the air for handling the sand. The air is fed in near the top of the tank, and the discharge outlet for sand has its opening near the bottom of the tank.

With the tank loaded, the crew, comprising a motorman and conductor, runs the car, which is fully equipped electrically to a car house and spots it on the track nearest to the bin from which sand is drawn to fill the sand boxes in the street cars. The air pump is then started, and a 4-in. hose connected to the sand discharge. One of the car crew stays on the car to operate the air valves and the other sits on the edge of the sand bin and moves the discharge end of the hose so that the sand is evenly distributed over all parts of the bin.

An air pressure in the tank of about 25 lb. forces the sand through the hose sufficiently fast to unload the 9-yd. tank in about 25 minutes, discharging the sand at an elevation of about 10 ft., at a labor cost of 2 cents per yard. When this work was done by hand about an hour was required by four men to unload 9 yd. of sand and place it in a bin. The sand car crew is made up of a motorman and conductor receiving 20 and 16 cents per hour, respectively. When these men are not operating the sand car they work at one of the car houses. On an average this crew with the air-operated sand car will deliver 30 yd. of sand a day to outlying car houses or to sand boxes located at grades along the street.

Formerly the sand bins had doors in the sides to facilitate filling and for getting out sand for use on the cars. Since the air-operated sand car was put into use these doors have been bricked in and sand valves placed along the sides of the bins.

This system of handling sand by air pressure has been installed in some of the car houses. The sand is stored in a steel tank in the basement, which can be filled through a trap in the car house floor. When it is desired to withdraw sand, air pressure from the shop piping system is let into the tank and the sand lifted by this pressure to the car house floor.

Acknowledgment is made to T. Fitzgerald, assistant general manager of the Cincinnati Traction Company, for information used in preparing this article.

## RAILWAY DEPRECIATION ACCOUNTS\*

BY C. I. STURGIS, GENERAL AUDITOR, CHICAGO, BURLINGTON  
& QUINCY RAILROAD

In a committee meeting held recently, Henry C. Adams, chairman of your committee on railroad statistics, lifting from the table the recently adopted balance sheet rules, said:

"I consider this a beautiful piece of work; every paragraph represents a harmonizing of the interests of the public, of the investor, and of the railroad manager."

He was asked who represented these interests while they were being harmonized, and, in his honest, outspoken way, he admitted that he represented the public. "And who the investor?" "Well, I did," said Mr. Adams. "And who the railroad manager?" "Why, the auditors; but of course I was the umpire," said Mr. Adams.

Now, gentlemen, I am going to be in somewhat the position of Mr. Adams for the next few minutes, for I am going to try to represent and present all sides of this depreciation question—the side of the public, of the investor and of the railroad manager.

Broadly speaking, depreciation is a lessening in value. To illustrate: A manufacturer buys a lathe and puts it into use; later he sells it. The difference between the value new and the value worn out represents the depreciation. This depreciation is measured by what the manufacturer has to pay for a new lathe, which he must buy to take the place of the old one, but from the price paid for the new lathe there must be deducted the amount realized from the sale of the old one, and what is left measures the depreciation.

When we talk about setting aside a depreciation fund, we mean setting aside, out of income, periodically during the life of the lathe, various sums which, in the aggregate, should equal the amount of depreciation by the time a new lathe must be purchased.

### CAUSES OF DEPRECIATION

This depreciation, or lessening in value, may be due to two causes, which we may classify: First, depreciation due to wear; second, depreciation due to premature abandonment, necessitated by changed conditions; this is generally known as obsolescence.

The first of these—that is, "depreciation from wear"—is the simpler, and in its determination by month or by year, in advance, we can apply certain general principles for all properties of any given class, but beyond these generalizations are thousands of questions of detail so complex as to require separate study for each independent plant or railroad, and when all is said and done the result is but an estimate. On a railroad, the life of ties varies with soil and climate, the life of bridges depends on the weight of locomotives running over them, the life of locomotives depends on the quality of water and coal with which they are fed, and there is hardly a railroad tool or machine the life of which does not depend on local conditions, and, even if, in determining depreciation, we could approximately estimate such variable factors as those, we would still have to consider what in the end will be the cost of the new articles to replace the old, and with markets ever fluctuating that is impossible definitely to determine. Furthermore, prosperous roads, in maintaining high standards, consider equipment is worn out when, on poorer roads, it would be considered still good for many years of service.

The second class—that is, "depreciation due to this obsolescence"—is far more difficult to anticipate and to measure, and commissioners may well shrink from assuming a railroad director's responsibility along this side of the financial policy of his road.

No doubt some of you are manufacturers, or are interested in manufacturing plants, and know how often newer makes of machines in the hands of your competitors force you to dispose of yours, when only partly worn out, that you may meet the competition. To take care of this depreciation, the successful manufacturer must put aside sums equal to 10 or even 20 per cent of the value of his

plant in those years when he can afford to—that is, when satisfactory prices and large business warrant his doing so. Good business policy dictates that the railroad director should do likewise, for a similar condition holds in the manufacturing side of railroading—that is, the building of locomotives and cars. With up-to-date machinery, the railroad can afford to do its own building, because the maintenance of the plant, salaries of officers and general expenses, as well as the cost of running boilers and dynamos, are shared with the repairing and other branches of railroad work. This advantage to the railroad lasts only so long as its planers, lathes and other machines are as up to date as those of the outside builder.

As further illustration of depreciation due to premature abandonment, necessitated by changed conditions, let me cite one or two further cases: A railroad has 40 miles of road in a city, and the city authorities require that the tracks be elevated. The old roadbed must be abandoned, a new and more expensive one built, and this without bringing 1 cent more earnings—this is clearly a case of depreciation due to premature abandonment of the old roadbed. Some will claim that while track elevation brings no more gross earnings, it does result in larger net earnings, because it saves payments for gates and gatemen and for personal injuries. Without disputing the propriety of track elevation, under certain conditions, I contend that the expense of those gates and gatemen and the personal injury payments became necessary after the road was originally built, and their growth represented loss of efficiency and hence increased expense, and therefore were in the nature of depreciation charges.

On another road the director sees that a city, to free itself from smoke, is likely to insist on electrification of the railroads, or perhaps he sees the approaching necessity of steel freight and passenger cars. Either of these requirements means premature abandonment of a still good conditioned plant and equipment and the rapid accrual of depreciation due to prospective and sudden ending of efficiency. These changes will bring no increase of earnings, and the expenditure may come in a year when his earnings are not large; therefore the director should begin at once to set aside each year, out of income, as much as he can spare, in order to meet these expenses.

It is interesting to study the effect of the increase in the price of fuel on the necessity of premature renewals and, consequently, on depreciation. This increase necessitated greater earnings per train, which meant heavier engines to pull more cars, larger cars to reduce dead weight as compared with paying load—then the heavier engines required heavier rails and roadbed and stronger bridges—and all without any increase in net earning efficiency.

In England, there has been consideration of this question of depreciation in its relation to railroads. I want to impress upon your attention the fact that the English agreement covered only depreciation deducted in the determination of the taxable income, and that while a similar agreement (or an arbitrary or a court ruling) may be necessary in this country in determination of the net income to which the recently passed corporation tax law shall apply, such depreciation figure will not properly be the one which the directors of any railroad will wish shown on the books of their company. In other words, the necessity under the law of determining the net income seems to force upon the department of internal revenue the necessity of deciding how much it is willing to allow the railroads to deduct for depreciation; even as the Interstate Commerce Commission must decide, in any hearing on rates (where net earnings are to be considered), how much the railroad at bar may deduct for depreciation.

### POSITION OF INTERSTATE COMMERCE COMMISSION

In our country the diversity of practice on different roads resulted in an attempt by the authorities charged with the formation of a uniform system of accounts to arrive at a basis for determining amounts which, charged monthly on the books of different roads, would distribute, by months, the depreciation claimed by some to be uniformly going on on railroad property. The present rules of the Interstate Commerce Commission permit of a depreciation charge and in any amount desired by each carrier, but it is understood that the commission contemplates

\*Abstract of a paper read before the National Association of Railway Commissioners, Washington, D. C., Nov. 16, 1909.

determining upon an arbitrarily determined basis for the charge, to be as nearly correct as may be, and requiring all the roads to use that basis.

This intention to require the roads to make, upon their books, a monthly charge for depreciation is, it is claimed, justified by the twentieth section of the amended interstate commerce law.

Now when the law authorized the Interstate Commerce Commission to formulate a system of accounts, did it not authorize it to go ahead and draw up a plan of recording actual facts and transactions? All through the section there is reference to the recording of facts and transactions, and there is not one word about prescribing what those facts and transactions shall be.

This section of the law does not appear to authorize the commission to arbitrarily determine what amounts, if any, any railroad shall set aside to cover depreciation. The act of setting aside an amount is a transaction wholly within the right and power of the directors of the railroad company, and the commission can properly order the recording of such act upon the books and state how and in what manner it shall be recorded, how it shall be shown in the accounts and statements, but it cannot arbitrarily determine the transaction itself.

It is a fact that, incidentally, section 20 does control management, but only in the indirect way in which all publicity of accounts tends to prevent questionable and dishonest acts of management.

To sum up, there does not appear to be anything in this twentieth section which authorizes the requirement that the accounts be made to contain anything but a record of transactions, nor does this section 20 authorize excluding from the accounts the record of any transaction which has been had. If this is so, then it would seem that an arbitrary depreciation charge cannot be ordered by the commission to be placed upon the books of a railroad company until such time as the commission has right to order the transaction itself—that is, the right to order the directors of a railroad to set aside such amount from the annual income as the commission may deem proper. I propose to show later why the commission should not desire this right, which now belongs strictly to the board of directors of a railroad, who alone are held responsible for the successful conduct of the property, including its financial policy, upon which, perhaps more than on anything else, depends the success or the failure of every legitimate business enterprise.

There is another reason for questioning the commission's power, under authority to prescribe a uniform system of accounts, to order an arbitrary charge for depreciation or any charge at all. This depends on the necessary nature of such a charge. It is an estimate. No definite or satisfactory rule can or ever has been found for determining the exact amount of depreciation in any manufacturing institution, and still less on a railroad. There are so many factors which enter into such a determination, and each factor varies so greatly with each branch of industry, and with each department of each branch of industry, and with each variety of condition surrounding each such department, and with every busy day as against every dull day, and with each rainy, dry, hot and cold day, each separate condition having an unequal bearing on the amount of depreciation accruing.

All of the difficulties make the problem one of great complexity—so much so that the theoretical advocate of a correct basis for depreciation seeks refuge in the claim that the law of averages must govern. This is really begging the question, for the bases for the averages exist only in men's minds and are not determinable facts. This shows that any annual depreciation charge can only be estimated—must be an estimate.

The idea of exercising supervisory control over railway operations, through the agency of accounts, did, I have been informed, originate in the statistical department of the commission, and it is not unnatural. Many of us railroad auditors have had the same dream. It is natural for one who feels that his ambition in the railroad world is limited to the formulating and the keeping of accounts. This auditor's dream of the control of operation through the accounts has invariably had a rude awakening when it bumped up against the practical question, With whom

does operating responsibility lie? The railroad director, looking far into the future and realizing his responsibility to the investing public which he represents, is continually confronted with new problems, to meet which ordinary prudence requires the setting aside of depreciation funds. Where these future problems take the shape of exceptionally large renewal charges, he should set aside out of the current year's income as much as can be spared to meet the future expenditures. If at this stage he finds that the Government has limited the amount which he may set aside, as result of which the misinformed stockholder clamors for and gets further dividends, who is responsible for this failure to provide for the future expenditure? In that case does the responsibility rest with the director or with the Government? Gentlemen, I do not believe that any-one of you is willing to relieve the director of that responsibility.

When the directors have decided that an amount shall be set aside to meet depreciation incident to future renewals the commission may properly, under the twentieth section of the interstate commerce law, insist on it being shown in the accounts and reports—that is publicity and is reasonable—and if there is a hearing before a commission or before a court, the railroad should be called on to explain its justification of the amount it has set aside, that the commission or the court may decide, on the evidence, whether the amount is too high or not high enough as affecting the question before it.

#### STANDARD BASIS FOR DEPRECIATION

After all, what would be gained by requiring roads to make monthly charges to depreciation on a fixed standard percentage basis?

The railroad manager would not be benefited, because in studying the monthly returns, he would have to discard this arbitrary figure before he could determine the actual results accomplished by his efforts to obtain business and by the exercise of his judgment in making renewals and in operating the property.

The investor would not be benefited, because including a charge for depreciation in the monthly accounts and published statements of a railroad is but a "penny wise, pound foolish" attempt to show the investor, by a present 30-day measure, how valuable or otherwise his investment is. As a matter of fact, the true investor bases his idea of value on past history and future prospects, and the immediate present snap-shot view given by a monthly statement misleads more than it helps him.

The public would not be benefited, for if railroads are to be regulated it must be on the basis of facts and not of estimates. The use of an arbitrarily based depreciation figure for all roads or for a group of roads is similar to a doctor giving the same pills for all ailments.

It is sacrificing broad policy in railroad financing to an attempt to get theoretical accounting.

The attempt to apportion depreciation by months may have been based on the common practice of including in the monthly accounts, on an estimate, certain regular monthly bills which are not received before the closing of the month's accounts, but this latter practice, like the monthly apportionment of bond interest, is the including of a part payment of an actual expense, and hence there is no parallel between that practice and the including of a monthly depreciation estimate. It has been contended that if an estimated depreciation rate is used and at the end is found to be too high or too low, an adjustment can then be made. This is an admission that the arbitrary monthly figure may be and probably will be wrong, and, furthermore, there is no cutting-off place; there is no time in the future when we may say, "Now we may take the measure of the correctness of all these past monthly depreciation charges."

To gain the imaginary advantage of having arbitrarily fixed depreciation, the railroad director would be deprived of the right to do that for which he is responsible to his stockholders and to the public; that is, to intelligently carry out that financial policy which will maintain the property for its owners and which will build up a successful and prosperous railroad, able to give high standard service to the communities through which it runs, and to give employment to thousands located along its line.

## ELECTRIC RAIL WELDING IN BERLIN, GERMANY

The Grosse Berliner Strassenbahn, Berlin, Germany, is now welding a large number of new and old rail joints by an electric arc welding process developed by its chief engineer of way and construction, Arthur Busse, and the Ac-

hand a large shield provided with a pane of dark-colored glass as a protection from sparks and the blinding light of the electric arc. The welded joints are completed in the open with the emery grinder illustrated in Fig. 2, which grinds both the head and groove of the rail.

Aside from a transporting wagon, this grinder consists of a frame mounted on wheels, the side of the frame being provided with slides on which the grinding apparatus moves to and fro. The latter consists of a vertical slide carried on a traverse, the slide having a 12-in. adjustable emery grinding wheel at its lower end and a small guide wheel running on a guide bar at its upper end. The face of the emery wheel has a profile to suit the shape of the rail, so that in grinding any alteration of the rail shape is excluded. The working range is 39.37 in. With a 6-hp motor and two men, this machine can grind down in one hour the rail ends for 8 to 10 joints, or an equivalent length of corrugated

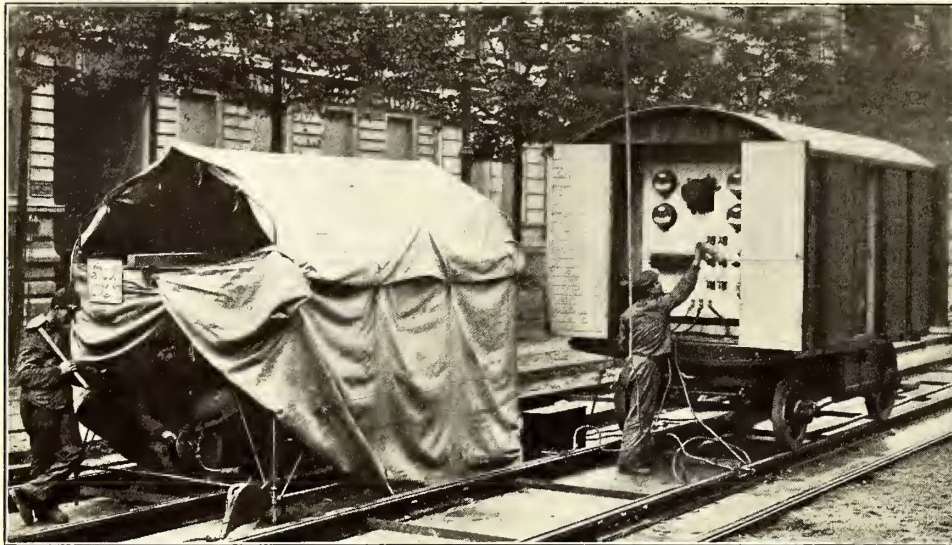


Fig. 1—Berlin Rail Welding—Motor-Generator and Tent Outfit

cumulatoren-Fabrik, Berlin. Over 12,000 joints were installed in 1908 by this method in a dozen Continental cities. The current for the electric arc is furnished by a generator which is operated at 60 volts to give a normal current of about 400 amp, and is driven by a shunt-wound motor which is connected to the trolley wire. This apparatus and control board are mounted in a car as shown in Fig. 1. In addition, there are two welding tents, with cable connections to the switchboard. The gang in one tent prepares a joint for welding while that in the second is carrying out a weld. The rail to be welded is connected to one pole of the circuit and the carbon rod is connected to the other pole. One workman then manipulates the arc over the portion to be welded. He is aided

by another, who supplies extra material in the form of small pieces of steel or of a bar, which is pushed forward to be melted off like solder. Under the intense heat produced by the arc both new and old materials are combined into a homogeneous mass. Each workman carries in one

rail. The machine was furnished by Ernst Schiess, Düsseldorf, Germany.

The welding description given covers this electric arc system only in a general way. The applications of the prin-

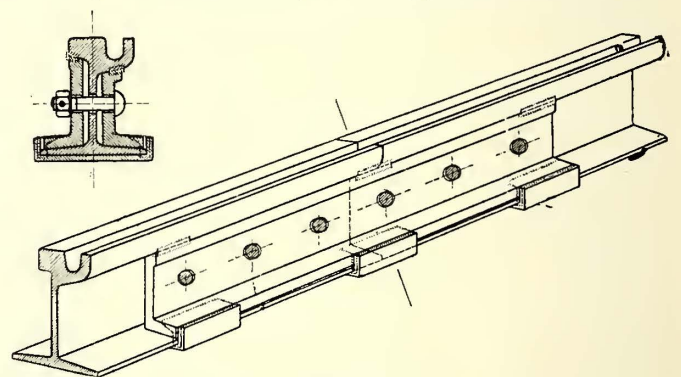


Fig. 3—Berlin Rail Welding—Three-Point Weld at the Base and Under the Head

ciple are numerous, but in the following paragraphs data will be given on the special welding designs used by the Berlin street railway company. Figs. 3 and 4 show how old fishplates are welded to the base and upper portion of the rail without touching the rail tread. On account of this concurrent use of plates and half a dozen welds, the vertical moment of resistance is very high. Even if several welds should break, the rail ends would still be held together firmly by the fishplates.

In some cases where the rails are not totally embedded a welded expansion joint is installed about every 120 meters (370 ft.). One of the plates is welded to one rail end and the opposite plate to the other rail end, while the bolts are tightened up throughout. This construction is not as good, of course, as the multiple weld, but the moment of vertical resistance is still far greater than a simple bolted joint.

The electric arc process is also used for repairing worn-out joints. After such joints have been raised to their



Fig. 2—Berlin Rail Welding—Emery Grinder

by another, who supplies extra material in the form of small pieces of steel or of a bar, which is pushed forward to be melted off like solder. Under the intense heat produced by the arc both new and old materials are combined into a homogeneous mass. Each workman carries in one



original level, the worn-off material is replaced by the direct welding on of new metal. To prevent the molten matter from running over the side of the rail, two cast-steel molds are fitted to the head of the rail and held in place by two pivoted and weighted levers, as shown in Fig. 5. The added material is always of the same composition as the rail and the weld is uniform throughout, since the dross naturally goes to the top, from which it is ground off afterward. In general, this form of welding is carried out on rails whose worn parts do not exceed 20 cm (8 in.) in length. Fig 5 also shows the U-shaped base plate which is laid under and welded to the base of the rail to increase the strength of the joint.

In some cases worn pieces of rail up to 6 ft. in length have been taken out and new sections have been welded

to 60 cm (23 in.) length may be welded on if necessary, and the base plate and other welds added as illustrated in the same drawing.

During 1908 and up to August, 1909, about 2000 new and old joints were welded electrically on the lines of the

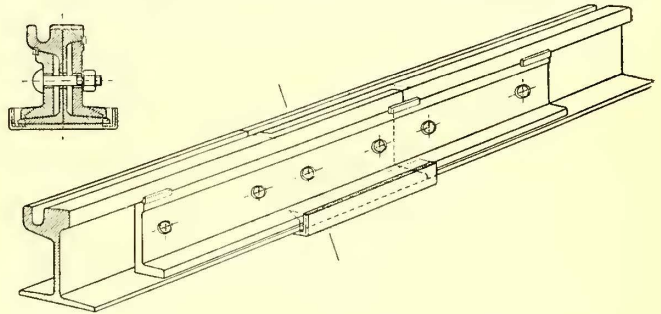


Fig. 6—Berlin Rail Welding—A Repaired Mitered Joint.

Grosse Berliner Strassenbahn. The welds were guaranteed by the contractor for four years. The new joints cost \$4.25 each and the old joints \$6.75 each.

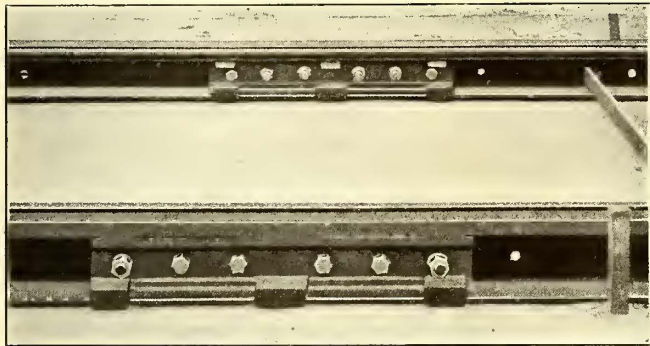


Fig. 4—Berlin Rail Welding—Top and Bottom Three-Point Weld Completed

into place. After the angle plates were attached, four welds were made at the junctions, two of the base plates to the base of the rail, and two of the angle plates to the head of the rail. The old pieces of rail were cut out by a machine carrying two circular saws driven by one motor. One of the saws is fixed, and the other is adjustable for lengths up to 6 ft. 6 in. To obtain a perfectly uniform cut, the saws are sharpened and adjusted by an emery wheel

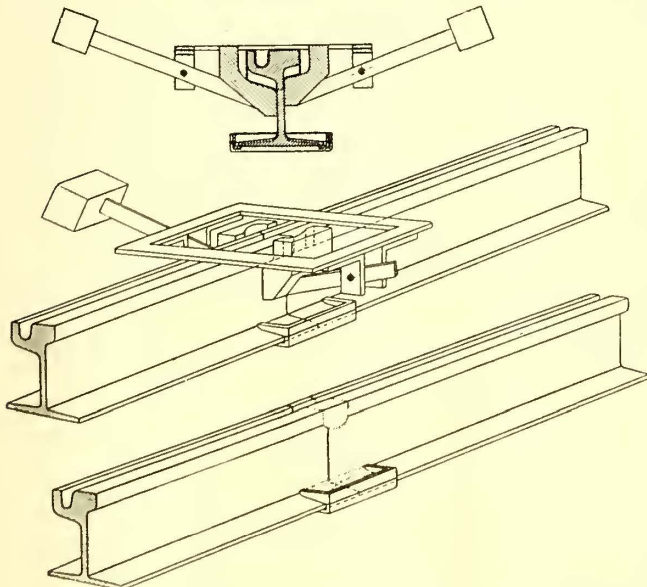


Fig. 5—Berlin Rail Welding—Welding an Old Butt Joint which is switched off automatically as soon as the teeth have reached a certain degree of sharpness.

In repairing worn mitered joints of the type shown in Fig. 6, it is usual to weld only the tread of the rail, as the contact surfaces of the inverted joint or splice are large enough to give ample strength. However, new material up

### SIGNS IN GERMAN STREET CARS

One of the transportation practices of the Grosse Berliner Strassenbahn is to give every route a distinctive Arabic number if it is a city line and a Roman number or letter if it is a suburban line. These symbols are not picked at random, but as nearly as possible neighboring numbers or letters are chosen for lines operating in the same territory. Thus lines "G" and "H" overlap one another for a considerable distance, so that most travelers can choose either route. The number assigned to each line is marked

Berlin-Charlottenbg. Street Railway (Office: Leipziger Platz 14). HALENSSEE	Schedule and Fares in Force from July 20, 1909. T KUPFERGRABEN
(Station of Belt Railway.)	
over Holtzendorff St.—Charlottenburg (City Court)—Leonhardt St.—Stuttgarter Square—Kant St.—Leibniz St.—Bismarck St.—Knie—Zoological Garden Station—Great Star—Brandenburg Arch—Dorotheen St.	
Cars leave Halensee every 15 minutes from *6:25 to 10:55 to Charlottenburg Car Depot; and every 15 minutes from 11:10 to 12:25. Cars leave Kupfergraben every 15 minutes from 7:10 to 11:40.	
Sundays and Holidays: Leave Halensee every 20 minutes from *6:24 to 11:24; every 15 minutes from 11:40 to 10:55 to Charlottenburg Car Depot; and every 15 minutes from 11:10 to 12:25. Leave Kupfergraben every 20 minutes from *7:09 to 12:09, and every 15 minutes from 12:25 to 11:40.	
* During the winter months, from Nov. 1 to March 31, the week-day service from Halensee begins at 7:25, at the Charlottenburg Court House at 6:31; Sundays and holidays cars leave Halensee at 7:24 and Kupfergraben at 8:09.	
The cars of lines T and U run over the same tracks between Halensee and the Charlottenburg Court House and between Bismarck, E. Leibniz St. and Kupfergraben to give a 10-minute and 7½-minute service respectively.	
Fare 10 Pf.	Running Time: 38 Minutes
Lap dogs, 10 pf., and the same for hunting dogs when accompanied by men in hunting costume.	

#### Translation of Sign Placed in All Cars on Line "T"

in black on the whitened glass disk of the end lantern alongside the destination sign of the cars. The numerals or letters are very large, and therefore visible at a considerable distance.

Besides the end signs, each car carries two long non-illuminated side signs, which bear a list of all important places on the route. It is, therefore, a simple matter for the stranger to pick the right car to his destination. Once inside the car, moreover, the passenger will notice a sign which gives still further details concerning the route, together with the schedule, fare, riding regulations and running time between the terminals. These signs are placed on cardboard and renewed with every change in the time card. They are of special importance on the Berlin system because many lines run no owl cars.

## THE COST OF HEATING CARS ELECTRICALLY

BY AN INSPECTION ENGINEER

In a recent issue of the *ELECTRIC RAILWAY JOURNAL* an operating official is quoted as estimating the power consumption for car heating at approximately half the total used for car operation during such times as the heaters are turned on at their maximum capacity. To a great many, including a considerable number of experienced railway men, this statement will appear to be an exaggeration, inasmuch as the amperes taken by the heater circuit are but a small fraction of that passing through the motor circuit. This view, moreover, is that naturally taken by the public, and by the municipal or State authorities, who, without technical knowledge of the facts in the case, attempt to compel the heating of cars to a point that would necessitate not only the installation of heater equipments of far greater capacity than are now commonly used, but would divert so large a proportion of current to their use, in the case of electric heaters, as to cripple seriously the efficiency of the power plants.

The demonstration of the truth of the foregoing statement is not difficult. Admitting that the current input to the motive circuits is large, it must be remembered that in city service such use of current is intermittent; in elevated and subway service, for instance, the trains are either coasting or stationary for approximately 60 per cent to 70 per cent of their runs, and the motors, therefore, are taking power only 30 per cent to 40 per cent of the time. In surface operation, particularly in the downtown sections of large cities, the proportion of time when motors are idle is even greater, in many cases reaching as high as 80 per cent of the run. On the other hand, the heaters are continually in circuit in severe weather from the time the car leaves the barn till it returns. In many cases heat will be turned on some time before the first trip is started and left on, through carelessness, for a considerable time after the car is in for inspection or lay-overs. However, considering only the time a car is in service, the following figures should give a fairly accurate idea of the actual proportion of power consumed by the two circuits, motive and heating. They are summarized from data obtained on cars in actual passenger service in one of the largest cities in the country.

Two elevated runs may first be considered, over two different lines of this company; the first, a round trip of 17.92 miles, the second of 18.30 miles. On both three-car service, consisting of two motor cars and a trailer, is maintained during the greater part of the day; but during the rush hours these are replaced by six-car trains of four motors and two trailers. The running time for both runs is practically the same, 80 and 82 minutes, respectively, for the round trip, with from 8 to 10-minute lay-overs at their respective terminals. The three-car train may be considered as the basis unit, inasmuch as the figures for six-car operation would be simply double those for the three cars. The constants used, it must be understood, are averages of many runs at different hours of the day and under varying loads, and may be accepted as substantially correct. A train makes in 12 hours eight round trips on the first route for a total of 143.36 miles, and 146.4 miles on the second route; in even figures, an average of 145 miles. The weight of a three-car train is approximately 90 tons, and the average power consumption of such equipment per ton-mile is 0.075 kw-hour. This gives a total consumption of 979 kw-hours for the 145-mile run, which includes the power

taken by the motors and air compressors, but not that for the heaters or lights.

The heater equipment on these trains is of several types. The greater number of the cars, however, are equipped with two-coil panel heaters, connected in series, and giving three points of heat as power is put through the large or small coils singly or through both in parallel. Tests of the current consumption of all the types of heaters used, with line potential at 550 volts, showed wide variations upon the third heating point; in some cases 15 amp was the maximum input, in others as high as 35 amp. All readings were taken after the coils had become thoroughly heated, to obviate their increase in resistance. The average of all cars in service upon the third point was found to be 24 amp. The total power consumption, therefore, was 13.2 kw-hours per car-hour, or 475.2 kw-hours for the three-car train on its 12-hour run.

In this case the heaters consumed 48.5 per cent of the power required for operation. This proportion of power taken by the two circuits, while it would vary somewhat on different roads, owing to differences in equipment, voltage, frequency of stops and number of passengers carried is a fair average for multiple-unit trains in city service.

On singly operated surface cars the results obtained are even more striking. Owing to the greater frequency of stops and the increased number of accelerating periods, the watt-hours per ton-mile are considerably higher for operation than on the elevated, and also vary to a far greater extent because of the greater variety of equipment used and to the personal efficiency of the motorman. The latter variant is an element largely eliminated by the automatic multiple control systems on the elevated and subway lines. On the other hand, the lower speeds and the more frequent stops on the surface cause a much slower schedule, which, in turn, increases the relative size of the heat consumption time factor as compared with the motors.

The performance of four cars, which may be considered representative of all classes of surface equipment in city service, will next be presented. These cars are of different weights, and include both four-motor and two-motor equipments. One was equipped with air brakes, the power consumption of which is included in the operating figures; the other three had hand brakes only. The average weight, light, of each car was 16 tons, and when loaded 18 tons. Their heater equipments were identical, being two-coil panel heaters in series, with a current at 550 volts of 6 amp, 12 amp and 18 amp on the three positions of the heater switch. Two runs were chosen, each starting in the suburbs and running to the center of the city. The mileage of the first was 8.6 miles for the round trip, and for the second 13.4 miles. The average running time for the first (including an eight-minute lay-over per trip) was 1 hour 22 minutes, and for the second 1 hour 54 minutes (including a 10-minute lay-over at the terminal). Hence the average speed of both cars, including stops, was but 6.74 m.p.h.

The power consumption varied widely, both between the different cars and between individual trips of the same car, running from 2177 watt-hours per car-mile to 3245 watt-hours per car-mile, and from 134.7 watt-hours per ton-mile to 173.5 watt-hours per ton-mile. The average, however, for six round trips of all four cars was 2731 watt-hours per car-mile and 147.4 watt-hours per ton-mile. The average loaded car, then, at 18 tons on a 12-hour run, traveled approximately 81 miles and consumed 215 kw-hours for operation, while its heaters consumed 118 kw-hours, or 54.9 per cent of the former amount.

It may be added, as a commentary upon the foregoing figures, that they were compiled from data obtained some time ago, when there was no idea of making use of them in this connection. It is not contended that they are by any means absolute, but they are, nevertheless, the results of tests made in actual service, and as such afford a basis for estimating the additional load placed upon the power station equipment of any Northern road during the winter months.

It is apparent that an increase of approximately 50 per cent above their normal load thrust upon the feeder stations, especially upon days when snow and sleet already are putting an extra burden upon them, calls for very heavy overload capacity or for reserve units that will add a large item of cost to the substation equipment. Thus, both directly and indirectly, the question of adding to the amount of heat furnished the cars assumes a most serious aspect, and it cannot be wondered at that the managements of electric railway properties are more than anxious to avoid the additional expense involved in such an increase.

### WINTER PUBLICITY CAMPAIGN IN LONDON

The London Underground Electric Railways has just prepared some new advertising pamphlets and posters for attracting winter travel. Pocket cards have been issued calling attention to the increased theater train service and in contrast thereto a handy time-table folder gives the locations and study periods of the night schools of London. Renewed attention is given to the encouragement of suburban traffic through the non-stop trains, bus connections at terminals, etc. The company is now getting out a card giving a diary of all the special events in London during the month such as concerts, fairs, art exhibitions and football matches with full data on fares and running time. The new posters are fully up to the standard set by those reproduced in the Dec. 4 issue of the *ELECTRIC RAILWAY JOURNAL*. A very simple yet most interesting poster shows several tints of what may be a London fog and bears the legend "Avoid the Weather—Waste No Time—Travel Underground." The last word is printed in the company's standard boxed letters, but has been ingeniously used on the upper side elevation of a car, the first and last letters covering the vestibules and the remainder covering the windows. The poster for the museums and picture galleries shows a brilliantly colored group of nine persons, dressed in the costumes of different historical periods, who are standing in a hallway flanked by Assyrian human-headed lions. The lettering beneath the picture informs the reader that the station agent is ready to supply particulars concerning every museum and art gallery in town. Two posters have been prepared to lure shoppers, one showing the snow-bedecked streets of London and the other the dry, cheerful interior of a subway car at the same time.

The monthly report of delays to passenger trains on the steam railroads in the State of New York, just issued by the Public Service Commission, Second District, shows that for the month of October 56,230 trains were run, of which 84 per cent were on time at division terminals. The average delay for each late train was 24 minutes, and the average delay for each train run was 3.9 minutes. The principal causes of delay were waiting for trains on other divisions, 30 per cent; train work at stations, 16.5 per cent; waiting for train connections with other railroads, 14.7 per cent; meeting and passing trains, 7.5 per cent; wrecks, 5.2 per cent.

### DISCUSSIONS AT QUARTERLY MEETING OF NEW YORK STREET RAILWAY ASSOCIATION

The discussions on a number of topics at the quarterly meeting of the Street Railway Association of the State of New York, held last week in Albany, brought out many interesting points of view. The report of the meeting published in the *ELECTRIC RAILWAY JOURNAL* of Dec. 11 summarized very briefly the remarks of the speakers. A more complete abstract of the discussions is given below.

#### REMUNERATION FOR HANDLING UNITED STATES MAIL

In response to a question by Edgar S. Fassett, United Traction Company of Albany, Joseph K. Choate, Otsego & Herkimer Railroad, and Frederick H. Beach, Eastern New York Railroad, said their companies had direct contracts with the Government for the transportation of United States mail. In relation to his notice to the Government that the United Traction Company was losing money on its mail service and would discontinue it unless the remuneration was increased, Mr. Fassett said that on part of the system the rate was raised from 3 to 14 cents per car-mile.

Mr. Choate said that the existing rates on the electric lines for carrying mail overlooked entirely the fact that an electric car was equivalent to a steam locomotive hauling a train. The steam roads could run from 8 to 11 cars in a train, while the electric railway was limited to one car.

Mr. Fassett referred to some of the conditions affecting the transportation of mail. While it was frequently an accommodation to the communities reached by electric lines to have the service, the question should not be one of sentiment, but one of adequate remuneration. He had found that conductors and motormen, who were required by the rules to keep their clothes clean, had been obliged to handle mail bags which were dirty, and he had insisted that the Post Office Department place the mail bags on the cars, and also remove them.

Raymond H. Smith, Albany & Southern Railroad, said the compensation for that line had been reduced since the reweighing to 2.45 cents per car-mile.

W. H. Collins, Fonda, Johnstown & Gloversville Railroad, said that property was classed by the Post Office Department as a steam road, and the arrangement was very unsatisfactory. At the time the mail was reweighed the compensation was reduced 16 per cent, notwithstanding that the general mail had increased, a star route included without extra compensation and one post office on the line raised to the first class. The explanation made by the Post Office Department was that instead of taking 90 working days as a factor in securing the average weight, the Government included Sundays during that period. The company had asked the Postmaster-General's department for a rehearing.

John H. Pardee, J. G. White & Company, Inc., cited an experience in Pennsylvania where mail had been carried at an unprofitable rate, and notice was given that if the Government did not increase the compensation the service would be stopped in 30 days. The company discontinued the service and the Government then increased the compensation.

Mr. Choate stated that it was generally admitted that the compensation was unfair, but the authorities were unable to remedy the situation, as the appropriation was limited. The Post Office authorities attributed the situation to the extension of the rural free delivery system, which involved enormous expenses that had to be overcome in other branches of the department.

Mr. Beach said apparently the Post Office Department did not have sufficient money to carry on all its work satisfactorily.

Mr. Fassett said the actual tendency of Congress and the Post Office Department was to decrease the units of revenue and to increase the facilities constantly.

J. W. Hinkley, Jr., of Poughkeepsie, told an incident of one company which had received 3 cents a mile, or at the rate of  $1\frac{1}{2}$  cents a trip, and after complaint to the Government was given an increase to 4 cents a mile, or 2 cents a trip.

C. Loomis Allen, New York State Railways, referred to the provisions of the Public Service Commission's law requiring schedules to be filed, and prohibiting discrimination. Officials of companies seemed to be of one mind, that the transportation of United States mail did not pay. Were they not weak, however, in arraigning that fact before the Government if they did not suggest at the same time what they did consider would be a fair rate? What would be the effect if electric railways carried United States mail at the lowest rates for which they transported other property of the same value and importance? No other property was as valuable unless it might be perishable material. If railway officials who had considered the subject carefully should urge a conclusion as to rates that would be fair and equitable, the companies would be in a much stronger position in presenting their case.

J. E. Duffy, Syracuse Rapid Transit Company, had been carrying mail in closed pouches for some years. The Government established substations and asked the company for what compensation it would carry mail to these substations, intimating that the rate for star route service would amount to about \$450 a year. In presenting an estimate to the Government for this service, the average earnings of \$2 per car-hour were taken as a basis. It was figured that it would take a car 14 hours a day to give the service demanded, and a price of \$10,500 per annum was fixed in the tender to the Government. The offer had not been accepted.

Mr. Hinkley thought the discussion showed how necessary it was that the committee should be prepared to suggest to the Government rates that the lines should receive.

Frank Rhea, General Electric Company, had had experience in steam railroad service, and referred to an incident where an exchange office was built in accordance with the requirements of the department at the crossing of nine roads. This location was much more convenient for most of the merchants in the town than the main post office, and they used it at the expense of the railroads until, after a long time, this unsatisfactory condition was finally remedied.

Mr. Allen thought that if a company was carrying perishable goods 365 days in the year, it would endeavor to find out something about the cost of the service. The compensation should be figured at the same rate as for a standard passenger car. It seemed to him that the committee could be furnished with statistics giving an idea of what would be just compensation for the service.

J. T. Smith, Fishkill Electric Railway, had received an increase from 3 to 4 cents per car-mile for the service. The facilities were a convenience to the people, who had five or six deliveries a day, whereas if they depended upon the steam roads they would have but two deliveries daily.

Mr. Allen thought the railways and the Government were placed in the position of giving one class of service discriminatory rates, with little equity and justice. Governor Hughes had vetoed a law providing for free or reduced

rates to postal employees. Under existing laws electric lines were in a position to demand just and proper compensation.

Mr. Allen stated in answer to a question that he would suggest for closed pouch service an arbitrary rate of  $1\frac{1}{2}$  cents for 100 lb. per mile.

Mr. Fassett thought that there should be a definite statement of the situation. The Post Office Department sent on his lines heavy boxes of postal cards and iron posts with mail boxes attached.

W. R. W. Griffin, Rochester Railway, referred to the Government report on mail rates in Great Britain, indicating that English railroads were allowed rates high enough to make the earnings of mail trains equal to those of passenger earnings.

The committee appointed by President Peck to take up this subject, as stated in last week's issue, has not yet announced its plan of action.

#### REPAIR SHOP AND CAR HOUSE TESTS OF ELECTRIC EQUIPMENT OF CARS

H. A. Benedict, chief engineer, United Traction Company, of Albany, opened the discussion on this subject with the following outline of tests commonly made:

The constituent parts of the electric equipment of cars which require testing are the motors, controllers, circuit breakers, fuse boxes, resistances, wiring, air compressor motor and governor. The repair shop is in one sense the factory where all parts of the electric equipment are remade after having failed in service. It may be well, therefore, to consider first what tests are made upon the various parts of the electric equipment before they are delivered to the railway company by the manufacturer. The following is an outline of the factory tests usually made on railway motors:

The tests applied to motors are divided into two classes, special tests and commercial tests. Special tests are made to determine the electric characteristics of a given type of motor, such as core loss, saturation, thermal characteristics, commutation, input-output efficiency test and speed curves. Commercial tests include a series of high potential tests of commutator, armature coils, field coils and complete motor; heat run and speed test.

The detail insulation tests are as follows:

The completed commutator, after all the bars are assembled with insulation and bolts pulled up, is given an insulation test of 4800 volts to ground and 300 volts between consecutive bars. After the commutator is pressed on the armature shaft it is given a test of 4400 volts to ground. After armature coils are in position on the core with the bottom leads connected to the commutator and before the top leads are connected, the armature is given an insulation test of 4400 volts to ground and 300 volts between adjacent leads. After the top leads are connected to the commutator and before banding, the armature is given an insulation test of 4000 volts to ground, and a transformer test for short-circuits. After banding, the completed armature is tested with 3600 volts to ground. Completed field coils before being installed in the motors are tested for short-circuits, and after being placed in the motor and connected in series are tested with 3600 volts to ground.

In the heat run and speed test two motors are mounted upon the same shaft with the pinion of each meshing in the same gear. One motor runs as a driver and the other as a generator at three-fourths of its full load for one hour. The following readings are taken:

Speed in both directions of rotation at the beginning and end of the test.

Voltage across the field coils at the beginning and end of the test.

Insulation resistance before and after test.

Upon completion of the heat run the complete motor, while hot, is given an insulation test of 2800 volts to ground for one minute.

When motors pass through the repair shop it is necessary that repairs be made so that the motor is in as good

operating condition as when it left the factory. In order to determine this fact the commercial factory tests should be applied: Insulation and conductivity tests should also be applied to controllers, circuit breakers, fuse boxes, resistances, cables and air compressor motor, and load tests applied to the circuit breaker and air governor.

The tests applied to the electric equipment of cars in the car house may be divided into two classes:

1. Those tests applied to locate defects which have not as yet reached that stage where they cause trouble in the operation of the equipment.

2. Those tests applied to locate defects which have caused trouble in operation.

The test of the electric equipment of cars which have not shown defects in operation may be made by a test car equipped with motor generator set, resistance coils and galvanometer. In making these tests the resistance is taken from trolley to ground at each step of the controller, and for each motor separately. Circuit breakers and air governors are given current tests at 10 volts. The tests applied to locate defects which have caused trouble in operation are insulation tests, short-circuit test, and conductivity test.

E. H. Anderson, General Electric Company, described the manufacturer's method of developing a new type of motor. After the general characteristics of the motor are decided upon the necessary calculations of windings are made and the details of the mechanical construction are worked out in the drafting room. Two or more sample motors are then built and submitted to the special tests to determine their speed and current consumption under different conditions of load, tractive effort, input-output efficiency and commutation. One sample motor is geared to the shaft with a gear and pinion of normal ratio, and another is geared to the same shaft to act as a load when driven as a generator. The gears and pinions used are moderately worn and represent average service conditions. Tests of input-output efficiency made in this way include gear and bearing losses. If the motors pass these tests they are put under cars of different weights and operated for long periods under different conditions of speed, stops per mile, grades, etc. Test runs of 12 to 14 hours' duration are made to determine the temperature rise in the motors under normal operating conditions. On the temperature rise depends to a great extent the life of the motors. The weight and speed of the test car are usually sufficient to produce a temperature rise in the motors of not less than 65 deg. Cent.

Wire-wound armatures are insulated with cambric and varnish. When the varnish is heated above 80 deg. Cent. it will begin to deteriorate, and the higher the temperature rise in the motor the shorter will be the life of the insulation.

The speaker had made a study of the practice of overloading motors on a number of roads a few years ago and found that when motors were loaded to give a temperature rise of from 45 deg. to 50 deg. Cent. the life of the insulation was limited only by the mechanical wear and tear. With a rise of 65 deg. Cent. the life of the varnish was about six years; with a 70-deg. rise the life was from two to three years, and with a 90-deg. rise, corresponding to a heat much higher than the boiling point of water, the life was less than one year. One company used very small motors and operated them with a temperature rise of 85 to 90 deg., which required the armatures to be rewound as often as once every three months. This company made its own coils and considered it to be more economical to overload light motors and rewind them frequently than to pay more for heavier motors and also to pay for hauling around the extra weight. A 40-hp motor weighs about

2700 lb. and a 75-hp motor weighs 4000 lb. The difference in first cost is nearly proportional to the weight.

In large motors using ribbon or bar windings sheet mica can be wrapped around the separate conductors of the main or polycoils, and this type of insulation is unaffected by high temperatures. Some motors for one of the Chicago elevated railways were operated for three years with a temperature rise of 125 deg. Cent. without developing trouble. The problem in small motor construction is to get a flexible insulation which will withstand excessive temperatures. Asbestos had been tried, but it absorbed moisture readily and thus introduced danger from grounds and short-circuits. Another solution of the problem of keeping down the weight and cost of railway motors would be to use high-speed armatures, but this would involve innumerable commutator, brush and bearing troubles.

Commercial tests of motors, the speaker explained, were intended to insure simply that all motors manufactured of one type correspond in their characteristics with those of the first sample motors. The high potential tests used were necessary to detect faulty workmanship or material during construction of the motors. The potential used should be reduced as the motor progressed toward completion since high-potential current if continually applied would ultimately break down perfect insulation. The tests prescribed by the American Institute of Electrical Engineers require a high potential test of 2800 volts for one minute while the motor is still hot after a run under load. Great care should be used in applying a high potential test to an armature taken from service in order to repair only a few coils. The insulation of the remaining coils while good for further service might be punctured easily by the high potential current and the whole armature would have to be rewound. A test of 1000 volts was usually sufficient for the purpose. The speaker did not believe a resistance test of insulation was of any real value.

T. Scullin, master mechanic, New York State Railways, used a break-down test on commutators of 3000 volts for two minutes and a bar-to-bar test of 200 volts. He made weekly tests of the carrying capacity of circuit-breakers, which required about one minute for each instrument. His experience had been that complete reliance could not be placed on the manufacturer's commercial tests of motors before delivery. New motors which may have tested satisfactorily in the factory sometimes failed after 20 minutes of service when put under a car.

C. Remelius, superintendent of rolling equipment, Public Service Railway, described a testing car used by his company for inspecting the condition of the electrical apparatus on cars at isolated car houses. An old single-truck car had been equipped with a high-current low-voltage motor generator set for testing circuit-breakers and a Herrick galvanometer with the necessary appurtenances had been installed for testing the resistance of motor fields and armatures and car wiring. The motor-generator set supplied current at 7 volts. This car was manned by two experts and was run from car house to car house making tests. It could only get over about half the system each year and the company was considering building one or two more similar cars. Referring to Mr. Scullin's experience with new motors failing in service, Mr. Remelius believed that most failures were due to the motors having absorbed moisture in the windings and insulation while being stored after delivery.

H. S. Williams, electrical engineer, Utica & Mohawk Valley Railway, said that his company gave armatures

which had been completely rewound a break-down test of 2000 volts and 1000 volts to armatures which had only been repaired. All cars were sent to the shop after completing 20,000 miles and the circuit-breakers and car wiring were thoroughly tested for defects. A potential of 1000 volts was used in testing car wiring.

#### BEST TYPE OF ROADBED CONSTRUCTION IN PAVED STREETS

Mr. Benedict, in opening the discussion on this topic, described the standard track construction of the United Traction Company, of Albany. The subgrade, which is firm clay, is first thoroughly rolled and the trench is then filled in with 6 in. of crushed stone, which is also rolled. On top of this 6-in. x 8-in. yellow pine ties, untreated, are placed on 2-ft. centers. The rails are spiked down and the track surfaced by tamping, after which broken stone is put in between the ties up to the level of the base of the rail. A thin concrete foundation for the paving is then placed on top of the ties. In order to drain the roadbed a row of agricultural tile is laid down each side with cross drains at intervals leading to the curb line of the street. With this construction the ties last as long as the rails. In a piece of track laid with girder rail 14 years ago the ties were recently found to be in almost as good condition as when laid. The speaker believed that steel ties laid in concrete at the same cost as wood ties would corrode in time and would have little if any longer life, certainly no longer than the life of the rails laid on them.

E. P. Roundey, engineer maintenance of way, Syracuse Rapid Transit Railway, thought the weak point of steel tie construction was the fastening between the ties and the rail which had a tendency to work loose and allow the rail to pulverize the surrounding concrete. For track carrying light city cars he thought a crushed stone foundation, such as was used in Albany, was quite satisfactory, but for track carrying heavy interurban cars rigid concrete construction was preferable.

M. J. French, engineer maintenance of way, Utica & Mohawk Valley, thought that heavy vehicular traffic did more damage to the pavement and track foundation than the passage of cars. The life of the pavement was the real criterion, and he believed that a rigid concrete foundation would prolong the life of the pavement.

E. J. Cook, vice-president, New York State Railways, said that the most important point in laying concrete track foundations was to keep the cars off the track for at least seven days, and preferably 10 to 14 days, after the concrete was laid in order to permit the cement to take a permanent set. In laying track on a crushed stone foundation, however, it was advisable to tamp the track to surface while the cars were running over it as in no other way could perfect and lasting surface be obtained.

Mr. Benedict did not think rails laid on a rigid concrete foundation would have as long a life as if laid on crushed stone. He also called attention to the marked deterioration of concrete pavement foundation near street car tracks in Albany, which he believed could be ascribed to the effects of electrolytic action from stray return current.

Martin Schreiber, engineer maintenance of way, Public Service Railway, Newark, N. J., thought that engineers had gone too far in advocating rigid concrete foundations for all track in paved streets. If the soil in the subgrade was such that the track could be held to surface and alignment on a crushed stone foundation it was not worth while to put in the more expensive concrete construction, which would be ruined if the street was opened for sewer,

water or gas pipe excavation. Steel ties could not be used to advantage on a crushed stone foundation because so many ties were required per mile of track that the expense was almost prohibitive. If steel ties are used in a concrete foundation they should be rigidly fastened to the rails to prevent vibration and disintegration of the concrete. Wooden ties when embedded in concrete gave some flexibility to the track structure which the speaker believed was desirable. Mr. Schreiber thought that some form of preservative treatment would eventually be used with all wooden ties. The cost of this treatment was constantly decreasing.

Referring to the relative merits of Bessemer and open-hearth steel rail the speaker said that open-hearth rails had not yet been in service long enough to determine their increased life, if any. They were harder than Bessemer rails. Manganese steel rails for curves and points of heavy wear were coming into general use. Two curves on the Public Service Railway, on which Bessemer rails formerly wore out and had to be renewed every nine months, were laid with manganese rail two years ago and to-day show little appreciable wear.

The life of rail joints should equal the life of the rails, but not mechanical joint with which the speaker was familiar had a long life under heavy traffic. The ordinary bolted fish-plate joints gave out in about three years. Some form of welded or rigidly riveted joint should be used. It was most important, however, to finish perfectly by grinding the surface of the rails at welded joints so as to prevent any pounding. A difference of as little as 0.01 in. would cause trouble in time.

Mr. Schreiber called attention to the desirability of adopting a few standard rail sections. At the present time more than 200 sections, many of them differing only slightly from others, were being rolled. He believed that 10 standard sections would cover all requirements and the general use of these standards would result in lowering the cost of rails and promote prompt deliveries from the mills.

#### HAS SLOTTING COMMUTATORS ELIMINATED MOST OF THE COMMUTATOR AND BRUSH TROUBLES?

W. J. Harvie, chief engineer, Utica & Mohawk Valley, opened the discussion on this topic. He had been told by an engineer whose opinion he valued highly that slotting commutators was unnecessary and that good commutation was dependent entirely on the kind of mica used for insulation between the segments. His own experience had been that slotting the commutators of any type of motor reduced trouble from sparking and flat spots and reduced the wear on the brushes.

E. H. Anderson, General Electric Company, said that if the softest grade of amber mica was used it might not be necessary to slot commutators, but very soft mica caused trouble by having insufficient resistance against compression. It tended to squeeze out and distort the shape of the commutator. A carbon brush sliding on a commutator is in effect an arc lamp of high temperature which burns away the copper and disintegrates the mica. The problem is to cut down the mica as fast as the copper wears away. There had been great improvements made in carbon brushes recently and less commutator trouble might be expected. He cited some motors used in extraordinarily hard service in Kansas City, Mo., in which brushes containing 1½ per cent of carborundum had solved the difficulty of cutting down the mica as fast as the copper wore off. He did not believe, however, that this was the proper solution. The best method was to use mica hard enough to prevent the

commutator losing its shape and then slot out the mica to a moderate depth at regular and frequent intervals.

Slotting commutators too deep may cause as much trouble as not slotting at all. The Boston Elevated Railway attempted to overcome commutator trouble on a large number of WP-50 motors by slotting  $\frac{1}{4}$  in. deep. The commutators still gave trouble and the company is now slotting only  $\frac{1}{32}$  in. deep, but doing the work frequently. A possible method of overcoming most if not all commutator trouble would be to use the very hardest mica of double the thickness now employed and keep the mica constantly cut out to a moderate depth.

D. E. Blair, superintendent rolling stock, Montreal Street Railway, said he had had no trouble with commutators which were not slotted, but he was planning to experiment with slotting and had designed a machine to do the work. In repairing commutators he always used the softest grade of Canadian amber mica and commutators made or repaired in the company's shop had a life nearly three times that of the commutators on the motors when received from the manufacturer.

Mr. Benedict said he did not slot the commutators of small motors, but did slot large motor commutators. He did not believe the results on small motors warranted the expense.

Mr. Williams said that the Utica & Mohawk Valley began to slot all commutators about a year ago and that the results on small motors were as satisfactory as on large motors. In 1908 before slotting was tried, an average of 82 commutators were repaired each month, but in 1909 this had been reduced to 32 a month. There had also been an equally large reduction in brush consumption. In 1908 an average of 789 brushes were used per month, while in 1909 this had been reduced to 471 brushes per month. The value of slotting lay not so much in the better commutation obtained and freedom from break-downs as in the marked saving in general motor maintenance.

#### INTERURBAN CODE

C. Loomis Allen, in discussing the interurban rules adopted at the Denver convention of the American Street & Interurban Railway Transportation & Traffic Association, stated that there was a long time when it was a question of doubt in the minds of many whether the American Association as reorganized in St. Louis in 1904 would survive. There was a period of considerable trial in the early years of the association, and great credit was due to a few of the first officers and supporters of the movement to make the association a representative one in the industry. Those who attended the last Denver convention realized that the future of the association was now assured.

Mr. Allen said that the work in which electric railways were engaged was live work. It changed as the day changed, and what was good practice a year ago was not good practice now. For a number of years the committee of the American Association had considered rules governing the operation of trains, and was most active last year, giving time and experience freely in the consideration of the subject. The first report submitted at the convention of 1908 was not adopted, but was referred back to the committee for further consideration. Another report was made at the last convention, after consultation between the railroads and public service commissions. It was without doubt the unanimous sentiment of the officers and the executive committee of the Transportation & Traffic Association and the American Association that the interurban and city rules as presented and amended represented the

best thought and practice of the industry. While there were some radical amendments at the convention, the clearing house of votes reconciled all the differences.

Mr. Allen then referred to the movement for the adoption of rules in Ohio involving differences from the American code. He said, as announced in last week's issue, that at the next annual meeting of the New York State Association, he would move the adoption of the American code with such amendments as might be needed to fit it for local conditions in New York.

#### HEARING ON LIGHTING OF SUBWAY TRAINS

The hearing before the Public Service Commission of the First District of New York regarding the lighting of trains in the subway was continued before Commissioner Eustis on Dec. 10, 1909, with Chairman Willcox also in attendance and H. H. Whitman as counsel for the commission. Frank Hedley, vice-president and general manager, and Theodore Waugh, attorney, represented the Interborough Rapid Transit Company.

The first witness was an expert for the commission who had conducted photometric tests to ascertain the relative efficiency of 16-cp frosted lamps with prismatic reflectors and 16-cp lamps without the reflectors. The efficiency of the 16-cp frosted bulbs with prismatic shades as light diffusers was 10 per cent to 15 per cent greater than the unshaded, unfrosted lamps. To equip the trains of the company with the frosted lamps and shades would involve an initial expenditure of \$7,500. He cited the auxiliary storage battery installation on the cars of the Hudson & Manhattan Railroad, which was automatically cut into circuit when the power current failed. This equipment added 180 lb. to the weight of each car and cost \$70.

Mr. Hedley said that the 16-cp plain lamps were so far superior to the 10-cp lamps now in use that he felt they would meet all the requirements. He was certain that the slightly increased efficiency with the frosted lamps and reflectors did not justify the additional expense which they would entail. Moreover, they would be costly to maintain, and would detract from the appearance of the car if the reflectors were damaged and not replaced at once.

E. G. Connette, transportation engineer of the commission, had inspected the train being operated by the company which is equipped with the 16-cp plain lamps and from a layman's viewpoint felt that these lamps were better suited to the requirements than the frosted lamps with reflectors. It was true that the distribution of light was better with the reflectors and frosted globes, but the difference did not seem to justify the additional expense involved and the car equipped with the unfrosted, unshaded lamps certainly appeared to be better lighted than the other. Mr. Eustis and Mr. Whitman both agreed with Mr. Connette about the relative attractiveness of the two methods of lighting and their probable effect upon the passengers.

Mr. Hedley had 50,000 10-cp lamps on hand at the time of the hearing and thought it would take about 30 days to secure enough 16-cp plain railway lamps to replace those now in use. He agreed to change from the 10-cp lamps to the 16-cp unfrosted lamps on both the elevated and the subway rolling stock, the one case before the commission being made to cover both the subway and the elevated lines, pending an order from the commission to this effect. The subjects of station lighting and storage battery equipment to supplement the lighting circuits on cars were to be heard on Dec. 17.

## MEETING OF THE CENTRAL ELECTRIC ACCOUNTING CONFERENCE

The eleventh regular meeting of the Central Electric Accounting Conference was held at the Algonquin Hotel, Dayton, Ohio, on Dec. 11, 1909.

There were present, representing the accounting departments of electric railways within the States of Ohio, Indiana, Illinois, Kentucky and Western Pennsylvania, W. H. Forse, Jr., A. F. Elkins, C. B. Baker, W. B. Wright, S. C. Rogers, E. D. Gault, Herbert M. Burington, C. E. Thompson, Kinney Sprague, Walter Schroyer, E. J. Skehan, F. K. Young, A. Katterheinrich, Gus A. Kohler, William H. Neikirk, L. T. Hixson, A. J. Lamb, E. L. Kasemeier, O. Burgett, O. J. Davis, J. E. Hirshey and W. D. Mertins. C. C. Collins was present as a representative of the Central Electric Traffic Association. W. H. Forse, Jr., acting president, was chairman. Following is an abstract of the report of the executive committee:

### REPORT OF EXECUTIVE COMMITTEE

The conference during the past year has again had its influence recognized in a national way. The rules for settlement of interline transactions, which were adopted by the conference in March, 1907, and the set of uniform blanks adopted in March of this year were used as a basis for the report submitted by the committee on interline accounts of the American Street & Interurban Railway Accountants' Association. After a full discussion of that report at the Denver convention, in October, it was adopted, and the National Association is now on record as recommending the methods which were formulated by the Central Electric Accounting Conference.

The question of affiliation with the Central Electric Railway Association has not yet been discussed in a formal manner with the members of that association, because it has been impossible on account of sickness or absence of members of our executive committee, to meet the appointments requested by the Central Electric Railway Association. When the meeting is held your committee will present whatever proposal is made, to be voted upon by the conference as a whole.

The report of the committee on "Uniform Practice in the Treatment of Car-Miles and Car-Hours" included an abstract of the proceedings of the Denver convention of the American Street & Interurban Railway Accountants' Association, and was presented by S. C. Rogers, the chairman.

The plan outlined by the committee as a uniform practice in the treatment of car-miles and car-hours, as published elsewhere in this issue, was on motion adopted as the standard of the Central Electric Accounting Conference.

The abstract of the proceedings of the Denver meeting of the Accountants' Association, presented by the same committee, said in part:

### REVIEW OF DENVER MEETING

The convention held at Denver was attended by a fair representation of the members.

Denver is an ideal city in which to hold a convention. About the first thing a person observes upon arriving in the city is the narrow-gage railway track and its very light and well-kept cars. The mountain scenery about Denver is very beautiful. The hospitality shown and the entertainment furnished by the local company have never been excelled by any company.

While there were fewer meetings, the prompt and regular attendance of every delegate showed the deep interest in the convention. The meeting was called to order by President R. N. Wallis and he delivered a very able and interesting address.

The paper on "Interurban Statistics," by S. C. Rogers, treasurer, Mahoning & Shenango Railway & Light Company, was read in his absence by Wm. H. Forse, Jr., treasurer, Indiana Union Traction Company. There was considerable discussion which brought forth the fact that

almost all companies represented were using revenue miles. A number thought that dead miles should also be included as it cost almost as much to operate cars to and from starting point as for regular service, which consumes a certain amount of power, including maintenance of equipment, platform time, etc. After some further discussion as to whether or not the "ton-mile" was not the most accurate the subject was referred to the committee on standard classification of accounts for a report.

The paper on "Electric Railway Auditor and His Duties and Relation to the Organization," by W. B. Brockway was a very able paper, and in his absence was read by W. F. Ham, of Washington.

The paper on "Pay Rolls and Time-Keeping," by N. E. Stubbs, auditor, United Railways & Electric Company, of Baltimore, was also a very able paper. Almost all companies pay twice a month. The Denver company trainmen receive their pay each day. Mr. Ham, of Washington, stated his company used the same method. Both companies think this is a very good practice and lessens the desire of the trainmen to hold out fares, as they always have money of their own by being paid each day. Mr. Ham stated it did not entail a great deal of additional labor to keep this record. From the discussions brought forth it seemed that most companies present paid by cash and took receipts, while a number paid by check and gave very good reasons for that system, which is far in advance of the cash envelope system, where companies operate interurban lines or other properties that are pretty well scattered, as it reduces the labor in making up a pay roll. It also is a better protection to the company. There is less chance for leakage, as a check is made payable to the order of the employee and this can be sent out to the different foremen through registered mail, while in the case of paying cash it would be taking quite a risk, unless a company runs a pay car, which is quite expensive.

The paper on "Stores Accounting and Inventory," by E. S. Pattee, was a very interesting paper.

The report of the standing committee on standard classification of accounts and forms of reports urged the members of the association to use the new classification as adopted by the Interstate Commerce Commission whether or not they were subject to Federal or State supervision. It seems the majority of roads present were not using the new classification. Everybody that was using the standard classification as adopted by the Interstate Commerce Commission was very much in favor of it and found it more satisfactory than the old classification formerly used, especially those operating interurban lines.

The report of the committee on interline accounting recommended the unit type of way-bill for each shipment, instead of the blanket way-bill such as is used by steam lines and a few electric lines, as the unit way-bill answers the purpose of the interurban lines better than the blanket way-bill. This is the same form that has been adopted by the Central Electric Accounting Conference. The committee also recommended the same use of forms and manner in reporting interline ticket sales as adopted by the Central Electric Accounting Conference.

### PAPERS PRESENTED

The paper on "Conductors' Fare Collections," by C. E. Thompson, auditor, Chicago & Milwaukee Electric Railroad, which is published elsewhere in this issue, resulted in a discussion that brought out a number of important points in connection with the collection of fares. This paper will no doubt be followed in the near future by another taking up other features in connection with the same subject.

A paper was read by E. D. Gault, auditor, Mahoning & Shenango Railway & Light Company, on the "Accounting Features of the Corporation Tax Law." This paper and the subsequent discussion served to give a very much better understanding as to the requirements of this law. Mr. Gault said there were possibilities of changes in the law by Congress as business men expected to make objections to some of its provisions. Companies were not, however, justified in assuming that any changes would be made, but



should prepare to observe the law and render reports within the specified time.

The committee on resolutions, composed of S. C. Rogers, L. T. Hixson and Kinney Sprague, prepared suitable resolutions expressing the appreciation of the work done in the interests of the conference by the former president, M. W. Glover. The resolutions were adopted and ordered spread upon the minutes of the meeting and a copy forwarded to Mr. Glover.

#### OFFICERS ELECTED

The nominating committee consisted of C. E. Thompson, F. K. Young and E. D. Gault. The election was by ballot and resulted as follows: President, W. H. Forse, Jr., treasurer, Indiana Union Traction Company; vice-president, S. C. Rogers, treasurer, Mahoning & Shenango Railway & Light Company; secretary and treasurer, L. T. Hixson, auditor, Terre Haute, Indianapolis & Eastern Traction Company; to fill places on the executive committee, C. B. Baker, assistant auditor, Western Ohio Railway; C. E. Thompson, auditor, Chicago & Milwaukee Electric Railroad.

The next meeting of the conference will be held at Fort Wayne, Ind., on March 12, 1910.

### UNIFORM PRACTICE IN THE TREATMENT OF CAR-MILES AND CAR-HOURS\*

BY S. C. ROGERS, W. H. FORSE, JR., AND H. E. VORDERMARK

Your committee, after careful consideration, would respectfully submit the following plan of uniform practice in the treatment of car-miles and car-hours:

#### REVENUE CAR-MILES

The miles run by all cars when in use for revenue earning purposes only.

Revenue car-miles to be divided into two classes:

- a. Cars used in passenger service (including chartered and special cars).
- b. Cars used in freight, express and mail service.

#### NON-REVENUE CAR-MILES

The miles run by all cars for other than revenue earning purposes.

##### *Subdivisions of Non-Revenue Car-Miles*

First. Non-revenue car-miles of revenue earning cars.

The miles run by all cars between the car house and initial route terminal prior to their use for revenue earning purposes, divided into two classes:

- a. Cars used in passenger service (including chartered and special cars).
- b. Cars used in freight, express and mail service.

Second. Non-revenue car-miles of cars for repair and transfer.

The miles run by all cars while being transferred from one point to another for the purpose of repair or to be placed in service (not including movement of cars within car houses or car yards).

Third. Non-revenue car-miles of company service cars.

The miles run by all cars used in the service of the company, the expense of which is chargeable to the company itself, including work cars, sand cars, sprinklers, sweepers, snow plows, wrecking cars, etc.

#### TRACTION MILES

The miles run by locomotives or other forms of motor vehicles used for traction purposes only.

#### TRAIN CAR-MILES

When cars are operated en-train, either in passenger or freight service, the miles run by the train as a unit should be computed, but should not be used in the division of revenue or operating expenses except as it may apply to the revenue or expense incident to the operation of the train

itself. The miles run by the motor car and each trailer car individually to be used in applying to division of revenue and operating expenses.

#### REVENUE CAR-HOURS

The hours of all cars when in use for revenue earning purposes only.

Revenue car-hours to be divided into two classes:

- a. Cars used in passenger service (including chartered and special cars).
- b. Cars used in freight, express and mail service.

#### NON-REVENUE CAR-HOURS

The hours of all cars for other than revenue earning purposes.

##### *Subdivisions of Non-Revenue Car-Hours*

First. Non-revenue car-hours of revenue earning cars.

The hours of all cars between the car house and initial route terminal prior to their use for revenue earning purposes, divided into two classes:

- a. Cars used in passenger service (including chartered and special cars).
- b. Cars used in freight, express and mail service.

Second. Non-revenue car-hours of cars for repair or transfer.

The hours of all cars while being transferred from one point to another for the purpose of repair or to be placed in service (not including hours of cars within car houses or car yards).

Third. Non-revenue car-hours of company service cars.

The hours of all cars in the service of the company, the expense of which is chargeable to the company itself, including work cars, sand cars, sprinklers, sweepers, snow plows, working cars, etc.

#### TRACTION HOURS

The hours of locomotives or other forms of motor vehicles used for traction purposes only.

#### TRAIN CAR-HOURS

When cars are operated en-train, either in passenger or freight service, the hours of the train as a unit should be computed, but should not be used in the division of revenue or operating expenses except as it may apply to the revenue or expense incident to the operation of the train itself. The hours of the motor car and each trailer car individually to be used in applying to division of revenue and operating expenses.

#### METHOD OF OBTAINING DATA NECESSARY FOR COMPUTATION OF CAR-MILES AND CAR-HOURS

The data for the computation of the car-miles and car-hours should be obtained from the daily report of conductors, which report should be so arranged in form as to indicate the exact movement of the car or cars under the conductor's direction and the hours such car or cars are operated, supplemented by a daily report from the mechanical department as to the movement and car-hours of cars under their direction. In other words, the accounting department should have, each day, a report as to the exact movement of each and every car of the company or system and the car-hours in operation, and all computation should be made directly from such daily reports.

Your committee recommends the foregoing plan, with the belief that it will furnish data of great value to the management engaged in operation of railway property. It also forms a better basis of comparison between companies, particularly as it serves to define many of the questions that arise when an analysis of car-miles and car-hours is made for comparative purposes, namely:

First. Car-miles and car-hours that apply to revenue earning purposes exclusively.

Second. That apply as an expense in the movement of cars between the car house and the initial route terminal, as to which point they enter upon their revenue earning.

Third. That apply as an expense in the movement of cars over the system for the purpose of repair or transfer to other points for service.

Fourth. That apply as an expense in the movement of cars used exclusively in the company's service.

Fifth. That apply to locomotives or other forms of motor vehicles used exclusively for traction purposes.

We believe that many economies can be effected by the

\* Report presented at the meeting of the Central Electric Accounting Conference, Dayton, Ohio, Dec. 11, 1909.

management having an accurate knowledge of the car-miles and car-hours under the above plan, as the lines are drawn very clearly between the miles run and the hours in service of cars when in use for revenue earning purposes only and the miles run and hours of all cars when operated for non-revenue purposes, segregated in a manner that will allow of the cost per car-mile and per car-hour being determined under each of the subdivisions.

Your committee has in the foregoing plan simply laid down fundamental principles that will be practical in uniform practice operative on all companies, and under which further segregation of car-miles and car-hours can be made as may be desired by individual companies.

### CONDUCTORS' FARE COLLECTIONS\*

BY CHARLES E. THOMPSON, AUDITOR, CHICAGO & MILWAUKEE  
ELECTRIC RAILROAD

The proper accounting for all fares collected by conductors is one of the most difficult problems which confronts the accountants of electric railroads and it is also one of vital importance to the companies because of the fact that the conductors' collections represent, in almost every case, at least 90 per cent of the revenue of the company.

Every one who has studied the question of checking employees who handle cash in any business, must realize that there is a limit to every system beyond which he must rely upon the honesty of the men. We will probably all agree that honest men are greatly in the majority and that most men who become dishonest become so because proper methods are not used to prevent their first step in wrong doing. The accountant, therefore, has a responsibility to the men as well as to the company he represents, when devising and conducting a system for accounting for money handled by them; and he finds it his duty to throw as many safeguards around the men as possible.

The aim of every system of accounting for fare collections is to insure that all fares collected will be turned in and to provide traffic statistics. No one method may be relied upon entirely to insure that all fares will be turned in, but all methods must be combined to obtain the best results. The principal methods include the fidelity bond, the fare register, cash fare receipts, reports of over and shortages and secret inspection. Requiring trainmen to give a fidelity bond insures the company that no men will get into their employ who have not clean records, and the fact that they are under bond has a splendid moral effect upon the men. The fare register and the cash fare receipt give each passenger the opportunity of discovering and reporting the conductor who does not register the fare promptly and correctly. The report of overs and shortages, if properly followed up by the superintendent, keeps him informed as to the conduct of his men and makes them feel that they are being checked closely and are subject to discipline.

Much may be accomplished by inspiring the spirit of rivalry among the men. This can be done by a system of grading the men and furnishing each man a report at stated intervals which shows his standing. Secret inspection, while seldom productive of direct results, has a good moral effect upon the men and is of value when combined with the general scheme of preventing men from wrongdoing.

In preparing traffic statistics, the accountant must know the total number of fares collected, the amount of each fare, whether ticket, cash fare or transfer, and if he provides the transportation department with the required information he must know between what points the passenger rides. The cash-fare receipt is superior in many ways to the fare register. We find it equally as good a check upon the conductors and it gives information as to points between which passengers ride as well as the amount of fare collected. The cash-fare receipt, however, requires more time than the register, and for this reason cannot be used to advantage by companies having a large volume of short-ride patrons. There are many kinds of registers in use, all of which are good under certain conditions, but none of which is entirely satisfactory to companies having fares of more than \$1 in

amount. By registering the amounts of fares most frequently received and issuing cash-fare receipts for all other cash fares, we are enabled to get from the register the total passengers carried, and from the register reports and the cash-fare receipts, the number of transfer passengers, ticket passengers and cash passengers of the different denomination of fares. We are not able to determine, however, the points between which the passenger paying cash fare rode.

Great care must be taken in establishing a system of fare collections in order that the conductors shall not be so burdened with red tape that they cannot properly operate the car and collect the fares from all passengers in the running time allowed between stations.

The collection of fares on our city lines has been greatly simplified by the introduction of the pay-as-you-enter cars. These cars place the conductor in a position where he can collect fares easily and rapidly and at the same time be where he can look after the safety of passengers boarding and alighting from his car; and the companies using these cars are enjoying largely increased revenue as the result. Interurban roads are coming to realize the advantages gained by inducing their patrons to purchase tickets before boarding cars. The conductor can collect ticket fares much more rapidly than cash fares, is relieved from handling large amounts of money and of making change, and the money is handled by a few agents whose accounts are much more easily audited. Patrons of electric railroads have been accustomed so long to paying a cash fare on the electric cars that it is now largely a matter of education to get them to purchase tickets, but liberal advertising will bring results even where there is no saving and business can be greatly stimulated by inducing patrons to purchase return tickets at a rate slightly lower than double the one-way rate. Companies that have established cash-fare rates, which are as low or lower than consistent with the service rendered, are greatly handicapped in inducing patrons to purchase tickets. Companies not so handicapped can reduce their cash fares to a very small percentage of the total by selling tickets at a lower rate than the cash-fare rates.

The solution of the question of proper methods of accounting for conductors' fare collections is to reduce to a minimum the number of passengers paying cash fares and by so doing relieve the conductors of much labor, furnish the accounting department a source of information from which any statistics desired may be compiled and to a much greater degree insure the company against loss.

### COLLECTION OF CORPORATION TAX

The rules which will govern the United States Treasury Department in the collection of the corporation tax have been made public by Secretary Franklin MacVeagh. The definitions of net and gross income are as follows:

"Net income" means not only net profits arising from the operation of the principal business of the corporation, but all items of income received from other sources, such as investments, holdings in other companies and businesses, etc. The expression "net income" is used because there can be no question as to its embracing amounts of income received from these outside sources, whereas there might be some question as to whether or not such items would be included in the expressions "net profits" or "net earnings."

In the same manner the term "gross income" includes gross profits, the expression being used because there can be no question but that it embraces all items of income received by any corporation from any source, while there might be some question as to whether "gross profits" or "gross earnings" would embrace such items.

Corporations are divided into six classes, and the following definitions apply to transportation companies:

Gross income consists of the gross revenue derived from the operation and management of the business and property of the corporation making the return, together with all amounts of income (including dividends received on stock of other corporations, joint stock companies, and associations subject to this tax) derived from all other sources, as shown by the entries on its books from Jan. 1 to Dec. 31 of the year for which return is made.

\* Abstract of paper read before the Central Electric Accounting Conference, Dayton, Ohio, Dec. 11, 1909.

## PROGRAM FOR MID-YEAR MEETING OF THE AMERICAN STREET & INTERURBAN RAILWAY ASSOCIATION

The American Street & Interurban Railway Association is planning to hold its mid-year meeting in January at which time there will be a meeting of the executive committee and a number of concurrent meetings of other committees of the association. The dates set for the mid-year meeting are Jan. 27 and 28, the last Thursday and Friday of the month, and it will be held at the headquarters of the association, 29 West Thirty-ninth Street, New York. On Thursday morning the committees which will meet will be those on public relations, Interstate Commerce Commission affairs, compensation for carrying United States mail and revision of associate membership. The chairmen of the committees on active and associate membership will also be present.

On Thursday afternoon the executive committee of the association will hold a session and will receive the reports of the committees which have met during the morning so as to act on their conclusions and draw up a tentative program for the work during the ensuing year and for the convention of 1910.

In accordance with the resolution passed at the recent Denver convention, a general conference will be held on Friday, Jan. 28, which will be open only to the officials or representatives of member companies who fix the policies of the member companies they represent. This conference has been arranged with the idea of bringing together the representative men of the street railway field to discuss the important subjects which bear directly on the question of return upon capital invested, and it is expected that, with a large attendance and a general interchange of ideas, results beneficial to street railways will be derived.

On Friday evening the Manufacturers' Association will tender a banquet to the executive committee and other visiting officials. Arrangements have been made for addresses at this banquet by several gentlemen prominent in national affairs who have an intimate knowledge of the electric railway industry.

## ANNUAL MEETING OF THE AMERICAN STREET & INTERURBAN RAILWAY MANUFACTURERS' ASSOCIATION

A meeting of the executive committee of the American Street & Interurban Railway Manufacturers' Association was held in New York on Dec. 10. The members of the outgoing executive committee who were present were the following: Jos. R. Ellicott, Eastern manager, Westinghouse Traction Brake Company, New York, N. Y.; Charles C. Peirce, manager railway department, General Electric Company, Boston office, Boston, Mass.; Charles C. Castle, vice-president, Hildreth Varnish Company, New York, N. Y.; C. S. Hawley, vice-president and general manager, Consolidated Car Heating Company, New York, N. Y.; K. D. Hequembourg, general sales agent, Walker & Bennett Manufacturing Company, New York, N. Y.; James H. McGraw, president, McGraw Publishing Company, New York, N. Y.; Henry C. Evans, Lorain Steel Company, New York, N. Y.; Howard F. Martin, general manager of sales, Pennsylvania Steel Company, Philadelphia, Pa.; Arthur S. Partridge, president, Arthur S. Partridge & Company, St. Louis, Mo.; J. W. Porter, first vice-president, Electric Service Supplies Company, Chicago, Ill.; A. H. Sisson, general manager, Forsyth Brothers Company, Chicago, Ill.; W. L. Conwell, Westinghouse Electric & Manufacturing

Company, New York. Otis H. Cutler, president American Brake Shoe & Foundry Company, New York, N. Y., was represented by William McGowan.

The outgoing committee approved the secretary-treasurer's report, which showed that on Dec. 8, 1908, the balance on hand was \$6,851.88; that receipts for the year since were \$24,007.17, the disbursements \$25,989.76, and the balance on hand \$4,869.29. The secretary-treasurer's report also showed that the association had 274 members, of whom 60 had been initiated during the past year.

The election of officers followed, and Joseph R. Ellicott was re-elected president. The four vice-presidents were also re-elected, as follows: Mr. Peirce, in charge of entertainment; Mr. Hawley, in charge of finances; Mr. Hequembourg, in charge of exhibits, and Mr. McGraw, in charge of relations with the American Street & Interurban Railway Association. Mr. Conwell was appointed chairman of the committee on hotels; Mr. Castle, chairman of the committee to report on changes in the method of issuing badges; Mr. McGraw, chairman of the press committee, and Mr. Partridge, chairman of the membership committee.

## ASSISTANCE TO PASSENGERS IN ALIGHTING

BY HOWARD C. LAKE

In the discussion of the report of the city rules committee at the Denver convention a written communication was contributed by James L. Quackenbush, general attorney for the Metropolitan Street Railway Company in New York City, and was printed on page 753 of the *ELECTRIC RAILWAY JOURNAL* for Oct. 7, 1909. This communication called particular attention to Rule 110, which refers to conductors assisting elderly and feeble persons, etc., from the cars, and stated that the highest court in New York State had decided that such action on the part of the conductor imposes a duty upon the company that it shall be done carefully and that if a passenger falls by reason of an employee's negligence, the company is liable. In other words, liability may be imposed for the negligent doing of a gratuitous act. The letter has suggested the inquiry as to whether the law on this point was the same in other States.

A reading of the case cited by Mr. Quackenbush (*Hanon vs. Central Railroad Company*, 187 N. Y. 73) shows that plaintiff was a passenger on a train which had arrived in Jersey City and that, while she was in the act of descending the car steps, the conductor reached out his hand to help her, took her arm by the elbow, but before she stepped down withdrew his support and she fell. The plaintiff received a judgment which was unanimously affirmed in the Appellate Division of the Supreme Court, though no opinion was rendered. It was then taken to the Court of Appeals, the highest tribunal, where it was again unanimously affirmed, so that question may now be said to be definitely determined.

The negligence alleged was that the servant, without warning, removed his hand. There was no claim of defective steps or platform. This the jury was distinctly told and further: "That the defendant was under no duty, through its employees or otherwise, to assist this plaintiff in alighting from the train." The counsel for the company was refused the requested instruction: "That the defendant was not liable for the carelessness, if any, of the conductor in performing a gratuitous courtesy to the plain-

tiff." The only question was said to be whether the company's contractual relation extended to a responsibility for the act of its servant in charge of the train. The reasons for the decision are quoted below:

A conductor is placed in a position of responsible control by the company and he is bound to exercise the greatest care in seeing to the safety of passengers. He is invested with such apparent authority over them as, reasonably, to induce their confidence in and compliance with his directions and, as well, their reliance upon his acts. The situation, in this case, it is true, was not such as to suggest any serious danger to the plaintiff in leaving the car; but, when the conductor assumed to extend his aid in doing so, she had the right to accept it and to rely upon his act being a careful one.

The action was apparently decided *de novo*, and at the time did not attract the attention which its novelty and importance deserved.

This New York decision, twice unanimously made by two different courts, would doubtless be followed should the question arise in other States, but so far as the writer of this article has been able to find, it has never been adjudicated elsewhere in exactly this form, but there will be general assent to Mr. Quackenbush, who has had considerable experience in defending the suits of the largest street railway litigant in this country, as to the practicability as a business proposition of continuing the rule and assisting certain classes of passengers in alighting. The reasons advanced in his letter seem convincing.

A somewhat similar case was decided by the Supreme Court of Wisconsin in 1900, in the case of *Werner vs. Chicago & Northwestern Railway Company* (81 N. W. Rep., 416). It appeared that a railway employee invited a lady passenger weighing over 200 lb. to alight on the side of the car where the lowest step was over 2 ft. above the frozen ground. She was the last to leave the car, and her little boy got off just ahead of her. When she reached the platform and came down the steps the employee, who "had a uniform on," took hold of her left hand, gave her a little pull and caused her to lose her balance. The uniformed employee of the railway, whose duty it was to stand by the steps as passengers entered or left the car, testified that preceding passengers had alighted on the west side, that when plaintiff and her son approached she was not looking toward him and he said: "Step off on this side, please." As she neither looked nor made answer, he crossed to the opposite side, helped the boy off, turned around to put down her shawl-strap, which she had handed him, did not get hold of her until she was getting off the step and that after she got upon the ground her legs gave way. He had asked her to wait until he could put down the bundle.

The Appellate Court said that it would have to accept plaintiff's version as correct, but observed that both agreed in testifying that tendering his services to assist her off the east side of the car must be regarded as an invitation for her to get off on that side of the car. Plaintiff's verdict of \$3,000 was affirmed on the authority of other Wisconsin cases, the court saying:

The defendant, as a common carrier of passengers, was certainly bound to provide a safe place for the plaintiff to alight on reaching her destination, and, in view of her age and condition, to render her such reasonable assistance as to enable her, if in the exercise of ordinary care on her part, to alight in safety.

Cases in Texas and New Hampshire, where the facts varied somewhat, also consider this question of assisting passengers to alight, but the two cases mentioned above are those which possess particular interest to operating departments in formulating rules.

## COMMUNICATIONS

### RULES FOR OHIO INTERURBAN RAILWAYS

WASHINGTON, BALTIMORE & ANNAPOLIS ELECTRIC RAILWAY COMPANY

BALTIMORE, MD., Dec. 13, 1909.

To the Editors:

The writer has read very carefully the letter published in the *ELECTRIC RAILWAY JOURNAL* of Dec. 11, page 1192, bearing date of Nov. 29, and signed by John C. Sullivan for the Railroad Commission of Ohio, and Frank A. Davis, for the committee of electric railway operating officials of Ohio, dealing with the subject of operating rules for Ohio interurban railways.

Referring particularly to the last paragraph in their letter, it is stated that "It will be understood that the book of rules which has been prepared by us is not a standard code of rules in the sense that it will have to be adopted by the interurban roads of Ohio." It is fair to assume, however, that the rules changed by these gentlemen must not be incorporated in the form they were adopted at Denver. In other words, they brand as unwise or dangerous these rules as shown in the Denver code. The interurban lines of Ohio do not differ in any essential particular from those of Indiana, or of New York, yet rules which are believed by the operators of those States to represent the best practice, and to be entirely safe, entirely change their character when they are intended for use in Ohio. The American Association has no feeling that the Denver code should not be modified, but undoubtedly does hope that in the form adopted, or some modified form, the code can be made standard throughout this country. If the rules as adopted at Denver are unwise, or dangerous, surely this can be clearly shown, and in that event the American Association would not only consent to a modification, but would insist that such change be made.

In suggesting a code for operation in their State, it was hoped that the Ohio operators would feel that they could use as a basis the Denver code, with such modifications as were made necessary by local conditions. If on the other hand they found there were certain broad rules of general application that they could not consistently incorporate without change, then a conference with the rules committee of the American Association might have brought about an agreement on disputed points.

The efforts of the American Association for several years past have been directed toward harmonizing the rules of the various State and sectional associations in the belief that eventually a code could be formulated capable of general adoption. This was precisely the case with the steam railroads a number of years ago, and it was eventually found that the operating conditions of railroads in widely separated parts of this country did not differ to the extent that had generally been supposed. The standard code of the American Railway Association, I believe, has been almost universally adopted by the steam railroads in the United States.

I am at present of the opinion that most of the changes suggested and recommended by the Ohio Commission are unwise and ill advised, but I am perfectly willing to be shown my error.

J. N. SHANNAHAN,

Chairman Committee on Interurban Rules of the American Street & Interurban Transportation & Traffic Association.

## THE CONNECTION BETWEEN VENTILATION AND HEATING

McKEEN MOTOR CAR COMPANY

OMAHA, NEB., Dec. 7, 1909.

To the Editors:

There is an enormous amount of misunderstanding on the subject of the connection between the ventilation and the heating of passenger cars. Unless the air is perfectly fresh, passengers will often not be satisfied with a temperature of even 75 deg. in a car, and many of them will not even be comfortably warm. On the other hand, it is equally impossible to expect them to be satisfied even with perfect ventilation, if the temperature is from 40 to 50 deg. and if they are obliged to occupy uncomfortable seats. This is particularly true in the ordinary passenger car where the floor is many degrees colder than the roof.

An almost perfect system of ventilation can be obtained if a continuous supply of fresh air is taken in near the floor of the car and then evenly distributed, and if suction ventilators in the deck exhaust the foul air. This plan assumes that the windows are kept closed and are air tight so that there are no drafts. Under these conditions the temperature of a passenger car can be lowered to 60 deg. without any discomfort to the passengers. In other words, the proper blood circulation is kept up by means of the fresh-air supply and the passengers are comfortable even though the temperature is 12 deg. below that often considered necessary. The truth of this principle is exemplified in an ill-ventilated sleeping car where usually some of the occupants feel too cold and others feel too warm, while an insignificant per cent is comfortable.

The fundamental law of heating and ventilation is that foul air affects different people differently, and temperature conditions cannot make up for a lack of ventilation. With a proper ventilating system and with the temperature between 65 and 70 deg., conditions most attractive to the general public will be obtained.

W. R. McKEEN, JR.

President and General Manager.

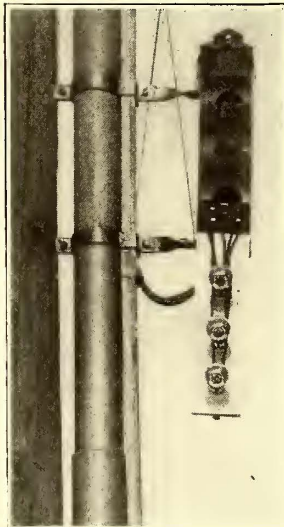
## A MODERN BOILER FACTORY

Under the title of "A Modern Boiler Shop," a paper was presented on Nov. 13 before a joint meeting of the Engineers Club of St. Louis and the St. Louis branch of the American Association of Mechanical Engineers on the new works of the Heine Safety Boiler Company. The area of the ground occupied is 6½ acres. The buildings are of steel frame construction with brick walls and reinforced concrete slab roofs, and the structures consist of a main shop and flange shop wing, power house, toilet and wash house, oil house and general offices, totaling about 2½ acres of floor space. The whole area of both the main and flange shops is served by cranes, while a 24-in. Koppel industrial railway encircles the buildings with connections to the interior. The power equipment is steam-electric, hydraulic and pneumatic. Most of the tools are electric-driven by individual Wagner motors. The lighting of the shop is very good, about 75 per cent of the walls being made up of windows. Artificial lighting is mainly by flaming-arc lamps and incandescent lamp clusters. The main shop is furnished with an indirect heating system.

On Sept. 30, 1909, there were 155 miles of electric tramways in operation in New South Wales.

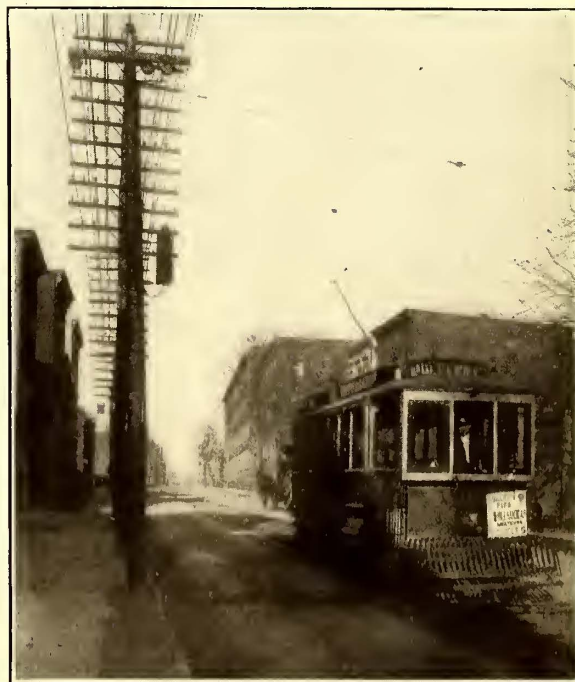
## BLOCK SIGNAL SYSTEM ON TEST IN NEWARK, NEW JERSEY

Among the block signal systems which the Public Service Railway of New Jersey is now using is an equipment on Ogden Street, Newark, N. J., furnished by the Kinsman Block System Company, New York. This apparatus differs from other types of electric railway block signals in using insulated sections of one of the running rails instead of overhead contacts to close the signal circuits. Power for operation may be obtained either from the trolley wire or from storage batteries, as used in the Newark installation.



Lamp Signal

When the system is in normal condition the orange lamps at both ends of the block indicate safety. As a car enters one end it passes over an insulated rail section, thereby shunting the setting track magnet at the entering end without operating the restoring track magnet until the car has passed beyond the adjoining insulated section. The shunting of the setting magnet causes the dropping of its several armatures, thereby closing a circuit through the setting magnet of the controller which operates a step-by-step mechanism. The latter moves one tooth forward for every car entering the block in the same direction. At the entering end of the block this change of contacts extinguishes

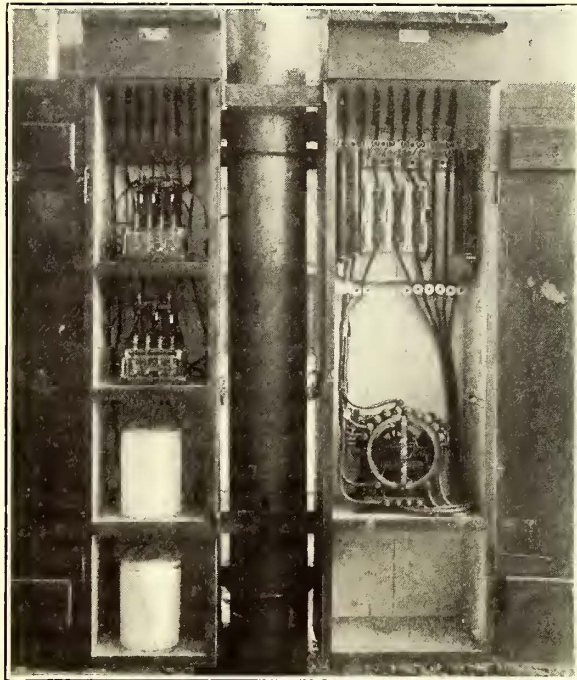


Car Entering a Signal Block

the orange safety lamp and lights the green caution lamp, while the line circuit magnet at the exit end is de-energized. The distant line circuit magnet, therefore, drops an armature which at the exit end of the block extinguishes the safety lamp and lights the red danger lamp. In other

words, when a car enters a clear block it sets a cautionary signal for following cars and a danger signal for opposing cars. Without entering into a lengthy explanation, it may be added that following cars cannot change the signals set by the first car. As the car leaves the block it passes over two adjoining insulated rail sections, thereby de-energizing the restoring track magnet at the exit end, causing it to drop several armatures. One of these armatures closes the cir-

a coil has a resistance of but one-quarter ohm, so that the current consumption is practically a negligible factor. The truck employed in the Lowell tests and shown in the accompanying view is equipped with two G-67 GE 35-hp, 550-volt standard railway motors. Repeated tests under widely varying load conditions show that the voltage at the axle commutators does not exceed 50 volts in starting, while the



Boxes Containing the Magnets, Storage Batteries and Step-by-Step Mechanism

cuit through the releasing magnet of the controller at the entering end of the block, thereby causing the step-by-step mechanism to move back one tooth. This backward movement is repeated by every car as it leaves the block until the last car has restored the controlling mechanism to its original position, whereupon the danger and caution lamps are extinguished and the safety lamps are again lighted. The step-by-step mechanism in Newark is made for a maximum of 17 cars in the block at one time.

Where this signal system is installed in the open country, it is practicable to install contact rails which close a trolley to ground circuit in the car to actuate a valve for the emergency application of the air brake.

### MAGNETIC TRACTION WHEEL

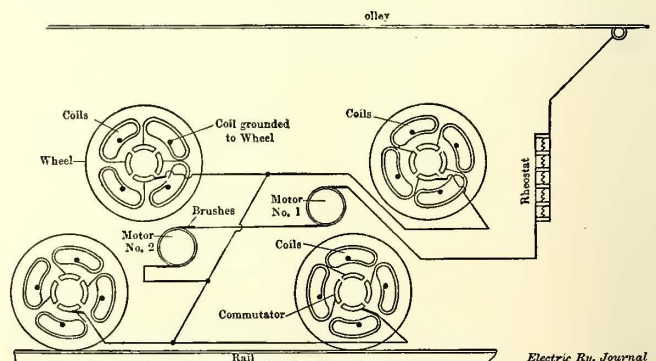
Experiments with a method of increasing traction by magnetic wheels have been conducted for some time by John O. Heinze, of Lowell, Mass., whose final wheel contains four magnet coils. Outside of the coils are four segments which themselves comprise part of the tread of the wheel, and a ring of 12 per cent manganese steel is clamped between them and the wheel proper to send the magnetic circuit into the rail. The energizing of the magnets is so timed that each succeeding section of the wheel is attracted to the rail just in advance of making contact with it, so that the device besides giving increased traction also assists acceleration. The current is cut off from each given segment as soon as it is no longer in contact with the rail. Experiments show that coils wound with 50 lb. of No. 6 B. & S. wire produce the best results. Such



Truck Equipped with Magnetic Car Wheels on Heavy Grade

normal average under running conditions is about 25 volts. The absence of sparking at the brushes and the small number of segments make these commutators very simple and reliable.

The weight of the truck illustrated is 13,000 lb. and with the traction due to weight alone, the motors develop a drawbar pull of 2500 lb. With the wheels magnetized, the tractive effort is increased to 8500 lb. or more than



Wiring Diagram for Magnetic Car Wheel

300 per cent. However, the inventor does not claim to increase the traction by such a liberal percentage on an ordinary car, but states that a car equipped with his device should be able to mount grades that are otherwise impossible. The truck illustrated is on an incline slightly greater than 50 per cent.

An electric funeral car has recently been put in operation in Stahnsdorf, near Berlin, Germany.

## ELECTRIC RAILWAY LEGAL DECISIONS

### CHARTERS, ORDINANCES AND FRANCHISES

**Indiana.**—Street Railroads—Ordinances—Nature—Acceptance—Repair of Street—Charter from City—Construction.

A city ordinance accepted by a street railroad for whose benefit it was made becomes a contract between the city and the railroad.

If a street railway ordinance merely requires those operating the railway to keep the street between and near its tracks in repair they are not required to pave.

A city ordinance empowering the construction and operation of a street railway in the city streets is to be strictly construed against the railway company; and, if there are doubtful provisions therein, they are to be taken in favor of the city.

Under an ordinance granting the right to construct and operate a street railway, which provided that the portion of the street between and adjacent to the tracks should be kept in as good repair, considering the nature of the use, as other parts of the street are kept by the city, those operating the railway must pave that portion when it becomes necessary to keep it in as good condition as the rest of the street is kept by the city. (Columbus Street Ry. & Light Co. v. City of Columbus, 86 N. E. Rep., 83.)

**Michigan.**—Corporations—Invalidity of Organization—Defense—Street Railroads—Contracts—Ultra Vires Acts—Defense of Ultra Vires—Availability—Franchises—Construction—Acceptance of Franchise.

A street railway company, formed by the consolidation of two street railway companies, cannot, when sued on an obligation incurred by one of the two, assert the invalidity of its own organization.

A contract between a city and a street railway company, authorized by its charter to construct a street railway from the State line to B., and to make connections into the county in which the city lies and other enumerated counties, which permits the company to construct and operate a street railway in the city, and binds the company to pay a part of the cost of paving a street, is not ultra vires, on the ground that the charter of the company does not authorize it to extend its line into the city.

In an action against a street railway company, formed by the consolidation of two companies, on a contract made by one of them, the defense that the contract is ultra vires is not available in the absence of notice of it under Circuit Court rule 7.

A street railway company agreed in its contract with a city to pay a part of the cost of paving a street, as a consideration for the granting of a franchise. The street was paved, the amount to be paid by the company was agreed on, and a part of it was paid. An agreement by the city to release the company from further payment, and by the company to surrender its franchise in the street, and the grant by the city of a franchise to another company in the street, and the assumption by the latter company of a part of the cost of the pavement, were a part of the same transaction. Held, that there was a novation, and the latter company was unconditionally bound to pay its part of the cost of the paving, though the franchise to it bound it to prosecute its application to secure a grade crossing over railroad tracks on the street, and stipulated that if the right to make the crossing was not granted its rights should cease at the election of the City Council, etc.

A city granted to a street railway company the right to construct and operate a street railroad on a street, and the company agreed to pay a part of the cost of paving the street, and to diligently prosecute its application to secure a grade crossing over railroad tracks on the street. It was agreed that if the right to make the crossing was not procured, and the street railway tracks were not constructed within a year, all rights granted should cease on the city so directing. Held, that, assuming that the payment of a part of the cost of paving the street was conditional on the company obtaining permission to cross the railroad tracks, the street railway company or its successor must, to relieve itself from liability to pay, show diligent prosecution of its application for permission for a grade crossing, and a mere showing that permission was not obtained was insufficient.

A franchise giving a street railway company the right to construct and operate a street railroad in a street, and requiring it to pay a part of the cost of paving the street, and to prosecute its application to secure a grade crossing over railroad tracks on the street, and stipulating that if the right to make the crossing is not granted, and the tracks on the street are not constructed within one year, the rights under the franchise shall cease, if the city so direct, gives to the city the option to terminate the rights of the company on its failure to procure the grade crossing; and,

where the city has not exercised its option the company is bound to pay its part of the cost of paving the street, though it has not obtained the right to construct a grade crossing.

A written acceptance of an ordinance granting a franchise to a street railway company, which is signed in the name of the company by its president and secretary, accompanied by the seal of the company is prima facie an acceptance by the company. (City of Niles v. Benton Harbor-St. Joe Ry. & Light Co., 117 N. W. Rep., 937.)

**New York.**—Injunctions—Preliminary Injunction—Denial Grounds—Statutory Provisions—"General and Ordinary Business of a Corporation"—Street Railroads—Rights to Use Streets—Temporary Injunction Against Corporation—Affecting Public Generally.

Code Civ. Proc., sec. 1809, providing that an injunction shall not be granted ex parte which operates to suspend "the general and ordinary business of a corporation," contemplates only injunctions extending to a total suspension of corporate business, and has no application to an injunction restraining a single act or duty. A railroad company occupying a public street may run its cars back and forth through the street, stop on switches for the passing of other cars, and take on passengers and freight upon the street to a reasonable extent; but if its freight becomes so extensive that to place a car in the highway and receive freight there amounts to a practical obstruction of the highway or unreasonable interference with its use by the public, the company must receive its freight at a private station. What amounts to an unreasonable obstruction of the highway is a question of fact for the trial court, and not only the actual obstruction, but any littering of the highway by reason of receiving freight thereon so as to frighten horses, would be chargeable to the railroad both as cause and occasion thereof. An injunction interfering with the loading of freight in the street by a railroad company operating over the streets, on the ground that the company was obstructing the highway, should not be granted except upon a full investigation by trial, since not only the company, but the public offering its freight for carriage, is affected. (Town of Ft. Edward vs. Hudson Valley Ry. Co., 111 N. Y. Sup., 753.)

**New York.**—Street Railroads Paving Between Tracks—Repaving—Notice by City.

Under Railroad Law (Laws 1890, p. 1112, c. 565) § 98, a city railroad company is required to keep in permanent repair all portions of the street between its tracks and 2 ft. outside, and to make such repairs when the city determines to repave the street.

A notice given under Railroad Law (Laws 1890, p. 1112, c. 565) § 98, to a street railroad company to repave between its tracks, and that on its default the city would pave, with a definite statement as to the extent of the repaving required, did not conclude the municipality as to the amount of repaving required, because it erroneously stated that the area was about 140 yd., when it was in fact 1200 yd.—(City of New York v. New York City Ry. Co., 113 N. Y. Sup., 860.)

**New York.**—Street Railroads—Injuries from Construction and Maintenance—Presumption—Corporations—Actions—Pleading—Corporate Existence—"Duly"—Admission.

Under Laws 1890, p. 1108, c. 565, as amended by Laws 1901, p. 1520, c. 638, providing that whenever a railroad shall be in operation for one year, or the motive power thereon has been or shall be changed and put in operation for one year, such fact shall be presumptive evidence that the construction and operation of such railroad, or change of power, has been duly obtained, where it was conceded that defendant had constructed and equipped its road with an overhead trolley system more than one year prior to the accident complained of, and there was no claim that defendant was negligent, it was not liable because of a nuisance in maintaining such system.

A complaint, alleging that defendant is a domestic corporation "duly" organized and existing, and engaged in operating street railroads, means that defendant has been legally organized and existing for the purpose alleged.

In an action against a street railroad for injuries from an alleged nuisance in maintaining an overhead trolley system, an allegation of the complaint that defendant was duly organized and engaged in operating street railroads was not controverted by the further allegation that defendant "knowingly and wrongfully jeopardized the lives," etc., of persons on the highway, nor by the further allegation that the injury was caused "solely by the wrongful acts of the defendant," so that it stood admitted, by failure of the answer to deny, that defendant was lawfully organized and existing and engaged in operating a street railroad.—(Hollis v. Brooklyn Heights R. Co., 113 N. Y. Sup., 4.)

## LIABILITY FOR NEGLIGENCE

**Indiana**—Carriers—Injuries to Passengers—Care—Witnesses—"Privileged Communications"—Physician and Patient.

A street car passenger exercising due care may assume that the street car company will do its duty under the circumstances.

Statements by passenger, injured in alighting from a street car, on the day of the injury, to her physician, as to how the injuries occurred, in the presence of her daughter and another, were in the nature of "privileged communications," within Burns' Ann. St. 1908, sec. 520, cl. 4, declaring that physicians, as to matter communicated to them as such, by patients in the course of their professional business, shall not be competent witnesses, and plaintiff was not obliged to testify thereto on cross-examination. (*Indiana Union Traction Co. vs. Thomas*—No. 6468—88 N. E. Rep., 356.)

**Massachusetts**—Damages—Personal Injuries—Impairment of Earning Capacity—Married Women—Pleading and Proof.

In an action by a married woman to recover damages for a personal injury, an impairment of her capacity to perform labor may be considered as an element of damages, whether she ever worked or not.

A declaration, in an action for injuries to a married woman, alleging that "the plaintiff was thrown to the ground and caused to suffer great and severe bodily injury and anguish of mind," is sufficient to admit proof of the impairment of the plaintiff's capacity to perform labor as an element of damage.—(*Millmore v. Boston Elevated Ry. Co.*, 84 N. E. Rep., 468.)

**Massachusetts**—Carriers—Injury to Passenger Thrown from Car—Instruction.

In an action for injury to a street car passenger, who was thrown to the street while the car was rounding a curve, a request for a ruling that passengers are not required to expect that on turning a curve the car will be driven at a rapid rate, etc., was properly refused for ignoring the character of the curve in question.

In an action for injury to a street car passenger, who was thrown to the street while the car was rounding a curve, a request for a ruling that passengers may assume that a car will be operated in view of the fact that some of the passengers may be standing in the car or on the platform was properly refused, where the car was almost empty, making it unnecessary for plaintiff to stand, and where there was no showing that the motorman knew plaintiff was on the platform with the conductor's consent.—(*Zamore v. Boston Elevated Ry. Co.*, 84 N. E. Rep., 858.)

**Massachusetts**—Carriers—Street Railroads—Protection of Passengers—Care Required—Master and Servant—Contract of Employment—Conditions—Ignorance of Rules of Employment—Excuse.

A street railway company is, as to its passengers, bound to exercise through its employees the highest degree of care reasonably consistent with the transaction of its business; and that a motorman did not have time to read the rules of the company, where he had been in its service nearly two weeks after having been instructed for 12 days, is no excuse.

The contract of employment of a street railway motorman is subject to the implied condition that he will study and apply rules prescribed by the company and furnished to him.

The experience of one as a motorman consisted of 12 days while receiving instructions from employees and nearly two weeks of employment, during which time he was employed as spare motorman. The company gave him two rule books of 56 pages. The notice on the first page of the books expressly enjoined on him the duty of reading the rules. All the rules in the books pertaining to motormen could be read in less than half an hour. Held that, in the absence of any excuse for his ignorance of the rules pertaining to motormen, he was subjected to the same responsibility as if he actually knew them.—(*Foley v. Boston & N. St. Ry. Co.*, 84 N. E. Rep., 846.)

**Massachusetts**—Carriers—Injuries to Passengers—Personal Injuries—Taking Up Passengers—Due Care of Person Injured—Question for Jury—Due Care of Person Injured—Standard for Determining—Carriage of Passengers—Negligence of Defendant—Duty of Carrier—Determination of—Appeal—Harmless Error—Examination of Witnesses—Error in Question Cured by Answer—Negligence of Carrier—Instructions—Construction—Taking Up Passengers—Comment on Evidence—Conformity to Issues—Province of Court and Jury—Instructions Invading.

Whether the plaintiff, in an action for injuries received by her while attempting to board a car, exercised due care in attempting to pass over a sliding platform into the car, held, under the evidence, a question for the jury.

The standard for determining whether a person injured by falling into a hole in attempting to board a car used due care is not whether she could by looking have seen the hole, and did not look, but whether it was reasonable conduct for ordinarily prudent people under the circumstances surrounding the accident to so look as to discover the danger.

In an action against an elevated railroad company for injuries to a person attempting to board a train, whether or not the defendant was guilty of negligence in opening a side door of its train for the reception of passengers before the train was properly adjusted to a movable platform provided by the defendant, without having some one at the place to warn persons attempting to board the car of the open space, held, under the evidence, a question for the jury.

The liability of a railroad company for injuries to a person attempting to board a train, caused by the inadequacy of a movable platform to cover the entire space between the permanent platform and the entrance to its train, was to be determined upon the footing of what might reasonably be required of it in the light of knowledge existing at the time of the accident, and not that acquired afterward.

Asking an expert witness, on cross-examination, in an action against a railroad company for injuries caused by the inadequacy of a movable platform to cover the entire space between the permanent platform and the entrance to a train, to state, "with all the information he has now," whether it would not have been proper to put in more than one platform, or wider platforms, was harmless, where the witness stated that his answer was based upon knowledge possessed at the time of the accident.

Though a movable platform constructed by a railroad to enable passengers to board a train without danger of stepping into an open space was the most perfect device known and was perfectly constructed, the railroad would still be negligent as to the means provided passengers for entering cars, where the operation of the platform in connection with the train was wanting in the degree of care required in a carrier of passengers.

Though ordinarily the bald statement of an employee of a railroad telling passengers to "Step lively" is not negligence, still, where a dangerous place, not existing with trains and platforms in their normal condition, existed between the station platform and the car entrance by reason of the act of the employee who called to passengers to step lively, it cannot be said as a matter of law that the request was not negligence.

In an action for injuries to a passenger attempting to board a train, in which action plaintiff claimed that the negligence by the defendant respecting the management of a movable platform in relation to the train which he attempted to board had created a particular danger apart from those naturally to be apprehended, an instruction was given that the act of an employee of the defendant in calling to passengers to "Step lively" would not be negligence, assuming that everything was in proper condition for the people to step lively. Held, that the qualifying assumption must not be taken abstractly, but in connection with the claim that negligence of defendant had created a particular danger, and must be confined to acts of the defendant, and not construed as applying to permanent conditions.

Whether or not a motorman was negligent in failing to stop his train, so that the door of a car in its whole width would be opposite to a platform furnished by a railroad company, held, under the evidence, a question of fact for the jury.

In an action for injuries to a passenger attempting to board a car, an instruction, standing alone, that plaintiff was not obliged to assume that there were dangerous places where she was invited to go into the car, would be erroneous.

Where, in an action against a railroad company for injuries to a passenger received while attempting to board a car, the defendant's evidence showed that it was the custom for trains so to stop that a movable platform furnished by defendant would cover the entire door space of the car, the court, in charging on the due care of plaintiff, stated that if she had been in the habit of taking cars at the place where she was injured, and had observed that it was the practice to have a space of the kind that caused her injury, then that would be notice to her. Held, that it was not inaccurate for the court to summarize the evidence by adding to the instruction that the court did not understand that it was claimed on the part of the defendant that it was the custom to have such a space uncovered by the movable platform, so that perhaps it was unnecessary to say she was called upon to notice if there was such a space there, when it was not claimed that it was the custom.



In an action for injuries to a passenger, received while attempting to enter the middle door of a car, caused by falling into a space between the door and the station platform, an instruction charging that if defendant could have opened the end doors of the car and taken the passengers in there with safety, but failed to do so, because it was not paying attention to the safety of the passengers, its failure to do so would be negligence, was erroneous, as not justified by the issues, where neither the pleadings nor the evidence raised any issue as to the company's duty to open the end doors.

**Michigan.—Carriers—Injuries to Passengers—Actions—Proof—Variance—Damages—Assessment—Physical Examination of Plaintiff—Discretion of Court—Instructions—Items of Damage.**

In an action by a passenger against a street car company, where the declaration alleged that plaintiff was a machinist when he was injured, the fact that the evidence showed that he was a tool maker did not prevent him from recovering damages for decreased earning capacity as a skilled workman, the proof showing that tool makers were machinists, as the word "machinist" was broad enough to cover skilled machinists.

In an injury action by a passenger against a street car company, where defendant's physician had examined plaintiff and testified to his injuries, the court did not abuse its discretion in refusing to permit another examination of plaintiff by a physician who testified for defendant that he had treated plaintiff for injuries some years before in another place, and in offering to order an examination by a physician appointed by the court, if the parties desired.

In a personal injury action by a passenger, a statement by plaintiff's counsel in argument that plaintiff had offered to submit to an examination by a physician in the jury's presence was not reversible error, where the court suggested that it would be better not to refer to it, and there was no request to caution the jury further as to counsel's remarks.

In a personal injury action by a passenger, a requested charge that if plaintiff's injuries resulted in part from physical defects caused by previous injuries, so that his present injury was greater than it would otherwise have been, plaintiff cannot recover for those injuries resulting partly from the previous injuries, was sufficiently covered by a charge that, if plaintiff was suffering from a nervous disease when injured, that alone would not prevent recovery for that part of his condition caused by defendant, and the jury should determine what pain and suffering resulted from his injury, and only allow for such suffering, and not for disease existing when he was injured.—(Fillingham v. Michigan United Rys. Co., 117 N. W. Rep., 635.)

**Missouri.—Evidence—Carriers—Injuries to Passengers—Premature Starting of Car—Physical Facts—Damages—Personal Injuries—Evidence—Instructions.**

Where plaintiff was injured by the premature starting of a street car as she was endeavoring to alight, while facing outwardly at right angles to the car, her evidence that when the car started she fell so the back of her head struck the step of the car was not necessarily contrary to natural law.

In an action for injuries to a female passenger who earned a living by washing and sewing for families, evidence that she was of unchaste character, while irrelevant on the damages sustained from pain of mind and body in consequence of the injury, was admissible, as bearing on the damages recoverable for future loss of earnings.

An instruction that if the jury found that plaintiff prior to receiving her injuries was of unchaste character, such fact could only be considered as affecting her credibility as a witness, and did not affect her right to recover, and should not be considered in determining defendant's alleged negligence and plaintiff's right to recover, was erroneous in limiting the evidence of unchastity to plaintiff's credibility.—(Carlton v. St. Louis & Suburban Ry. Co., 106 S. W. Rep., 1100.)

**Missouri.—Carriers—Injury to Passenger—Complaint—Negligence—Allegations—Pleading—Variance.**

A petition alleging that defendant allowed the car, controller, motor and electrical appliances "to become out of order, and allowed the controller \* \* \* to burn out, causing an explosion, setting said car on fire and causing a panic among the passengers, and plaintiff was thrown, pushed and knocked from the car by the persons frightened \* \* \* striking upon his head," etc., specifically charges negligence.

A petition in an action against a street railroad company for injuries to a passenger charged that defendant negligently allowed the car and appliances to become out of order, so as to cause such an explosion as caused a panic

among the passengers, whereby they threw, pushed, or knocked plaintiff off the car. Plaintiff testified: "This flash struck me in the face, and I don't know, the current or something must have carried me off the car. I don't know how I got off, whether I jumped off or that knocked me off; didn't know anything," etc. Held, that plaintiff's evidence failed to show that the explosion caused the panic, and the knocking him off the car by the other passengers, and amounted to a failure to sustain the petition.—(Kennedy v. Metropolitan St. Ry. Co., 107 S. W. Rep., 16.)

**New York.—Carriers—Injuries to Passengers—Evidence.**

In an action for injuries to a passenger by the alleged premature starting of a car as she was attempting to alight, evidence held to require a finding that she attempted to alight before the car stopped.—(McNeece v. Brooklyn Heights R. Co., 108 N. Y. Sup., 317.)

**New York.—Street Railroads—Operation—Actions for Injuries—Questions for Jury—Persons Crossing Track.**

Whether plaintiff, a pedestrian who was struck by defendant's street car while she was crossing the street, was guilty of contributory negligence in failing to look and listen, held, under the evidence, to be a question for the jury.—(Thornton vs. Interurban St. Ry. Co., 113 N. Y. Sup., 127.)

**New York.—Street Railroads—Actions for Injuries to Pedestrians—Contributory Negligence—Duty to Warn—One Knowing Conditions.**

Plaintiff was struck at a crossing by a trolley car, which he saw 50 or 60 ft. distant when he stepped from the sidewalk, about 15 ft. from the track. He saw that the car was coming rapidly, and thought he could get across in time, but failed to do so. Held, that plaintiff was negligent and could not recover.

Where a pedestrian is aware of the approach of a car, and the peril is apparent, the motorman owes no duty to give him warning and slow down the car. (Mullen v. Joline et al., 111 N. Y. Sup., 776.)

**New York.—Carriers—Street Railways—Subways—Injuries to Passengers at Stations—Actions—Instructions.**

In an action by a passenger against a subway carrier for injuries from stepping into an opening in the station platform while boarding a car, a charge that, if certain circumstances were found to exist, the carrier was negligent in not providing sufficient light in and about the platform and guards around the opening to avoid injury, "as testified to by the plaintiff," was erroneous, as requiring a higher degree of care than the law requires; since the carrier was not an insurer of the safety of passengers, but was only required to exercise reasonable care in that respect. (Dinkelspiel vs. Interborough Rapid Transit Co., 113 N. Y. Sup., 187.)

**New York.—Death—Contributory Negligence—Burden of Proof—Street Railroads—Collision with Person on Track—Evidence—Questions for Jury.**

Where, in an action for death, the evidence as to negligence of defendant was not such as to excuse contributory negligence, the burden of proving that decedent was in the exercise of due care was on the plaintiff.

In an action for death of a person by collision with a street car, evidence as to decedent's freedom from contributory negligence held to require a nonsuit at the close of plaintiff's evidence.

Where, in an action for death, the circumstances point as much to the negligence of the deceased as to its absence, or point in neither direction, a nonsuit should be granted. (Lamb vs. Union Ry. Co. of New York City, 88 N. E. Rep., 371.)

**New York.—Street Railroads—Crossing Accident—Injuries to Traveler—Contributory Negligence—Negligence—Imputed Negligence—Driver of Vehicle.**

Plaintiff, while riding on the seat of a furniture truck beside the driver, was injured in a collision between the truck and a street car. The driver testified that he stopped his horses 6 ft. from the track, at which time the car was at a crossing two blocks away, and that without making any other observations he drove on the track and stopped his team before the truck cleared the last track, and that the collision occurred immediately after. Plaintiff testified that he paid no attention to the car, did not look to see if a car was coming, and used no care to avoid the accident. Held, that plaintiff was negligent as a matter of law, he being bound to show that he exercised the care which the circumstances required.

Where plaintiff was riding with the driver of a furniture truck at the time plaintiff was injured in a collision between the truck and one of defendant's street cars, plaintiff was not chargeable with the negligence of the driver, but was bound to show that he exercised the care the situation demanded. (Caminez vs. Brooklyn, Q. C. & S. R. Co., 111 N. Y. Sup., 384.)

# News of Electric Railways

## Cleveland Traction Situation

At noon on Dec. 13, 1909, it was thought that the questions to be settled relative to the Cleveland Street Railway by Judge Tayler as arbitrator would be submitted to him within a short time. At that time Mayor Johnson was still to make a final argument in favor of considering the guarantee of the Forest City Railway stock as a debt of the Cleveland Railway, and Horace E. Andrews, president of the Cleveland Railway, was expected to oppose this plan on the ground that the guarantee was a personal matter.

On Dec. 9 Mr. Andrews introduced a schedule in which the physical property of the Cleveland Railway was valued at \$21,470,806, exclusive of franchises and good will. This is \$6,436,191 more than allowed by the Goff-Johnson settlement. Some of the items of increase were represented by an allowance of 10 per cent for contractors' profits on the idea that the system is to be rebuilt; 10 per cent for financing, interest charges at 9 per cent during the period of construction, and general overhead charges.

During the discussion of the valuation of the property of the Forest City Railway, Judge Tayler said that the Mayor had attacked the valuation made by Engineer Clark after the valuation had been accepted, by proposing to value the property at \$193,000 instead of \$289,904, as given by Mr. Clark, and \$440,555 by the Goff-Johnson settlement. An attempt was made to show that the East Cleveland contract is a burden upon the system and should be considered so in the valuation. Mr. Andrews replied that East Cleveland is virtually Cleveland, and that he believed in five years more one-half the earnings of the Euclid Avenue line would come from beyond the city limits.

The hearing on Dec. 10 was adjourned at noon to permit the officers of the Cleveland Railway to prepare some figures that were needed. Mayor Johnson thought that April 15, 1910, would be a good date for the referendum vote. Judge Tayler said that Feb. 15, 1910, would do as well. The judge refused to separate the franchises for valuation.

On Dec. 11 L. W. Blyth, of Ernst & Ernst, presented a report showing a comparison of values as disclosed by his investigation of the records of the Forest City Railway contrasted with the values claimed by Engineer R. H. Bunning. Mr. Blyth had been commissioned by Judge Tayler to do this work. Mr. Blyth's report showed that more than \$50,000 had been charged in duplicate and had been allowed under the Goff-Johnson settlement. Judge Tayler made no comment on the report, but Mayor Johnson made an effort to discredit it.

The Cleveland Underground Rapid Transit Company has asked the Common Pleas Court to dissolve the injunction secured by Attorney George B. Harris to prevent the company from accepting the new franchise. The Cleveland Recorder has also been restrained from publishing the ordinance. The idea is to delay the ordinance in order that new propositions in the hands of Mr. Hidy can be presented to the City Council, which ignored the request that the vote on the ordinance be delayed so that the proposal from Mr. Hidy might be presented.

## Transit Affairs in New York

E. J. Farrell, John J. Hopper and their associates have presented to William R. Willcox, chairman of the Public Service Commission, a plan for a system of subways to surround the Boroughs of Manhattan and the Bronx, with five crosstown loops connecting the east and west side and extending under the East River to Brooklyn, there to connect with the Fourth Avenue subway now building, and later, when practicable, by way to Fort Hamilton and the Narrows to Staten Island, and also by a Fifty-ninth Street crosstown under the East River into Queens, reaching several Long Island points. The proposal involves an expenditure of \$130,000,000. Just who are associated with Messrs. Farrell and Hopper has not been announced. Mr. Farrell's first work of this sort was in connection with the building of the Hoosac Tunnel. He took charge of the completion of that tunnel work after the disagreement of Shanley Brothers and the State. Mr. Farrell was connected with the building of sections A and B of the Canadian Pacific Railway by the Dominion Government, the heavy rock section, at Lake of the Woods, between Prince Arthur's Landing and Winnipeg, Manitoba. He was also connected with later Government contracts on the Lachine Canal and St. Gabriel Basin at Montreal between the years 1879 and 1883. Since that time he has been engaged in

construction work in New York, Maryland, and Pennsylvania, most of which has been tunnel work, which included the Baltimore Belt Line tunnel.

Reference was made in the *ELECTRIC RAILWAY JOURNAL* of Dec. 4, 1909, page 1161, to the unofficial reports of the vote on the four proposed amendments to the Constitution of the State of New York at the election on Nov. 2, 1909. Secretary of State Koenig announced on Dec. 12, 1909, that all the amendments were passed. One amendment, known as the "debt-limit amendment," is designed chiefly to extend the borrowing powers of the City of New York by permitting the city, under control to be prescribed by the Legislature, to exclude from the computation of the debt-limit bonds issued exclusively for rapid transit and dock improvements so long as such bonds are self-sustaining and self-extinguishing.

Justice McLean in the Supreme Court has granted an injunction restraining Collector of Assessments and Arrears Moynahan of New York from selling the city's tax lien on the Metropolitan Street Railway. The court held that because of oversight, neglect or other official fault exorbitant sums are stated to be due for the taxes on the road between 1901 and 1907. Justice McLean has also granted an injunction restraining the city from selling its tax lien against the Second Avenue Railroad.

On Nov. 16, 17 and 18 the Public Service Commission, working with the Bridge Department, made a count covering one 24-hour period of the people crossing the Brooklyn Bridge which showed that apparently 3311 more persons traveled into Manhattan than went back to Brooklyn. The total count showed that in the 24 hours 882,511 persons passed back and forth between New York and Brooklyn.

The present Board of Estimate and Apportionment cannot pass upon proposed modifications of the franchise of the South Shore Traction Company, which operates surface cars over the Queensboro bridge and through certain streets in Queens Borough, according to a decision handed down by Justice Seabury, in the Supreme Court, in which he holds that the action taken by the board is illegal. William Jay Schieffelin, a taxpayer, asked for an injunction to restrain the board from granting extension of the franchise of the South Shore Traction Company on the ground that to do so would work to the detriment of the city.

## Philadelphia Transit Talks

Transit Talk No. 36 of the Philadelphia (Pa.) Rapid Transit Company was dated Dec. 1, 1909. It was entitled "Cutting Down the Accident Roll." The talk follows:

After a year's trial of the pay-within car we are able to show the actual results achieved by its adoption. We believed that the car would lessen accidents; now we know it.

For example, in October, 1909, accidents on the Twelfth and Sixteenth Streets division decreased 74 per cent, as compared to the same month of 1908. This can only be credited to the effectiveness of the closed doors and steps in eliminating boarding and alighting accidents.

In the five heaviest months of the year—April, May, June, July and August—accidents on the Fifty-second Street division decreased 79 per cent, as compared to the five months' accident record of 1908, when no pay-within cars were in use.

Similar results are shown on all lines where the pay-within car is operated, and this is true notwithstanding the fact that, as a result of especial effort, car crews are reporting all accidents, however trifling, while a year ago this was not the case.

It happens that while this decrease of accidents is being brought about here other cities report increases in the accident roll. In New York in October there were 1202 boarding and alighting accidents. The latest Chicago report for the month of September shows an increase of 7 persons killed and 32 injured, as compared to August, and an increase of 142 injured over the month of July.

The greatest number of injuries in Chicago were caused by boarding and alighting accidents (128 out of a total of 350), a class of accidents that has been almost entirely avoided here by the pay-within car.

Transit Talk No. 37 was dated Dec. 8, 1909. It was entitled "Safety Comes First," and contained an illustration from one of the bulletins issued semi-monthly to the employees of the company by the bureau for the prevention of accidents, showing how a horse and wagon left in the street carelessly by the driver menaces passengers on the cars.

Transit Talk No. 38 was dated Dec. 11, 1909. It was entitled "How You Can Help," and contained a subject for a New Year's resolution by passengers which would materially expedite the movement of cars.

## Reports of Earnings Not Compulsory in California

U. S. Webb, Attorney-General of California, has recently expressed the opinion to C. F. Curry, Secretary of State of California, that the provisions of Section 480 of the Civil Code which stipulate that "every railroad corporation must make an annual report to the Secretary of State or other

officer designated by law, of its operations for each year ending Dec. 31, verified by oaths of the president," etc., do not apply to street railways. The opinion of Mr. Webb reviews a number of decisions in California in which the courts were called upon to determine the question of whether or not the term railroad includes street railroads and street railways. Mr. Webb concludes his opinion as follows:

"Considering the object that was to be accomplished by compelling a report from commercial railroads, under the provisions of Section 480, we are led to the conclusion that commercial railroads being under the control of the State in the regulation of service and charges, whereas the control over street railroad corporations is exercised by the municipality in which such road is operated, the reason for requiring such a report from commercial railroad corporations is apparent, it being incidental to the proper exercise of the State's powers; whereas, for any purpose of State government, a report of such character is not necessary from street railroad corporations.

"Having considered these two sections of the Civil Code from the standpoint of the early legislation that led to their enactment, their relative location in the codes, the construction placed upon the word 'railroad' by our Supreme Court, the words used in and the context, and purpose of the sections, I am of the opinion that Section 480 of the Civil Code does not apply to street railroad corporations, and no obligation is placed upon them under the provisions of the same."

**Office of Auditor of Ohio Electric Railway Moved.**—The Ohio Electric Railway has moved the office of E. L. Kase-meier, auditor of the company, from Cincinnati, Ohio, to Springfield, Ohio, where temporary quarters have been taken pending the completion of the company's new building in Springfield.

**Rapid Transit Legislation Urged in Illinois.**—The call of Governor Deneen for a special session of the Legislature of Illinois outlines 24 subjects on which action is requested as early as is consistent with thorough consideration of the problems involved. He especially advocates legislation to authorize cities to construct, maintain and operate subways and to control and regulate them.

**Another Gyroscope.**—The experiments conducted by Louis Brennan in England in the application of the gyroscope to railway transportation have resulted in the study of the subject by others and it is announced from Berlin that August Scherl, proprietor of the *Lokal Anzeiger*, Berlin, has arranged to exhibit a model of the system invented by him in the United States under the direction of Hart O. Berg, who has lately been associated with the Wright brothers.

**Meetings of Central Electric Traffic and Central Electric Railway Associations.**—The Central Electric Traffic Association will hold its annual meeting at the Great Southern Hotel, Columbus, Ohio, on Jan. 26, 1910, at 9 a. m. The morning session will be devoted to the routine business, and in the afternoon the annual election will take place, at which a chairman will be selected for the ensuing year. The executive committee will meet on the evening of Jan. 26. On Jan. 27, 1910, the Central Electric Railway Association will hold its annual meeting at the same place at 10 a. m. The morning session will be devoted to the reading of several papers. In the afternoon officers will be elected for the ensuing year.

**Subway Legislation in Massachusetts.**—A petition has been filed with the Secretary of State by Edmund D. Codman and others asking for legislation under which the Boston Transit Commission may construct a subway loop from Park Street to the Cambridge Bridge in Boston, in connection with the Cambridge subway. It is planned to provide a loop terminus for the Cambridge subway in this way, from Park Street under the old Tremont Street subway to Scollay and Bowdoin Squares, and thence to the Charles River, a distance of nearly a mile. The estimated cost is \$1,750,000. The Boston & Eastern Electric Railroad has filed a petition with the Secretary of State asking for legislation to permit it to build a tunnel and subway under Boston Harbor and the city proper, from East Boston to Post Office Square.

**Draft of Maryland Public Utilities Bill.**—At the request of Governor Crowthers of Maryland, Attorney-General Straus of that State has completed the draft of a bill creating a public utilities commission in Maryland. According to the terms of this bill the commission will consist of three members, to be appointed by the Governor for terms of two years, the limit fixed by the constitution. Their authority will extend over the entire State. The salary of each commissioner is to be \$3,000, paid by the State, and supplemented by an amount not yet determined

upon, to be paid by Baltimore. The commission is given authority to regulate railroads and street railways, gas, electric, refrigerating, heating, telegraph, telephone and water companies and other public service corporations. If it is approved by the Governor the measure may go before the Legislature.

**Hearing by Massachusetts Commission on Boston & Providence Electric Railroad Plans.**—The Massachusetts Railroad Commission gave a hearing on Dec. 14, 1909, on the plans of the Boston & Providence Electric Railroad, which have been held in abeyance for the last two years on account of general business conditions. R. M. Saltonstall, of the firm of Gaston, Snow & Saltonstall, Boston, Mass., counsel for the company, announced the intention of the company to proceed as soon as various legal obstacles were overcome. During the hearing Chairman Hall of the commission stated that the commission was aware of the conditions which prevented the company from proceeding. Revised surveys now in process will shortly be completed. Mr. Saltonstall said that the company desires to change the route by about 12 miles, passing through North Attleboro instead of crossing the Rhode Island State line at Seekonk. Within a month the company would be prepared to submit its detailed locations to the town authorities. The route now desired extends from the Forest Hills station of the Boston Elevated Railway, through Hyde Park, Dedham, Westwood, Norwood, Canton, Sharon, Foxboro, Mansfield and North Attleboro to Rhode Island, where connection could be made with the lines of the Rhode Island Company.

**Railroads Oppose Electrification in Chicago.**—Thirteen steam railroad trunk lines were represented at a meeting of the local transportation committee of the Chicago City Council on Dec. 8, 1909, at which the electrification of the lines was considered. The officers of the railroads contended that "electrification is impracticable; first, because of cost; second, because of danger to employees; third, because the science of electrification is not sufficiently matured to make it applicable to freight terminals." It was stated that the Illinois Central Railroad was the only steam railroad entering Chicago which had seriously considered electrification, but that the company had abandoned the idea of changing the motive power of its lines as the result of the study which it had made of the problem. It was suggested that a commission composed of representatives of the city and experts from the railroads be appointed to investigate the subject of smoke, because it was principally to abate the smoke nuisance that the city had ordered electrification. L. C. Fritch, chief engineer of the Chicago Great Western Railroad, who was formerly employed by the Illinois Central Railroad to study the advisability of changing the motive power on that company's lines into the city, suggested that the commission proceed on the assumption that electrification is not practical and that the members of the committee consider such matters as fuel, a central passenger terminal and the arrangement of a system for handling freight whereby most of the trains would be kept outside of the city limits. Before announcing whether or not this committee will be appointed the local transportation committee will send letters to the engineering departments of all the railroads operating into Chicago, asking for operating data.

**Advanced Instruction in Electrical Engineering at the Massachusetts Institute of Technology.**—During the last year the requirements for the degree of Doctor of Engineering at the Massachusetts Institute of Technology have been made substantially equivalent to those of the degree of Doctor of Philosophy, so far as the period of study and the candidate's attainments are concerned. The number of candidates for the doctor's degrees in engineering and philosophy has this year increased largely over the number of candidates last year. The number of students entered as candidates for the Master's degree is also larger than last year. Advanced instruction in the theory of alternating currents and electrical transmission of power, accompanied by advanced research, is being continued this year under the direction of Dr. Harold Pender, whose investigations in these branches are well known. Other work carried on by the department for the benefit of students desiring to do original research, or who are studying with a view to obtaining advanced degrees, includes lectures and investigations under Professor Jackson on the organization and administration of public service corporations, and instruction in the designing of electric plants by Professor Wickenden. Forty per cent of the men who were graduated from the Institute as electrical engineers at the last commencement had previously received college degrees, and had thereafter spent from one to three years in the electrical engineering studies at the Institute of Technology. The number of student hours of instruction in the electrical engineering laboratory is about twice as great as it was three years ago.

# Financial and Corporate

## New York Stock and Money Market

December 14, 1909.

Trading in Wall Street during the last week has been moderate in volume but firm in tone, with few distinct advances recorded. Traction shares continue to be more or less active. Interborough-Metropolitan issues and Brooklyn Rapid Transit are strong and higher, while Third Avenue is weak at about the lowest record in its history.

The money market is practically unchanged. There is very little pressure upon the domestic banks and foreign financial institutions have shown no disposition to increase the prevailing rates of discount. Quotations to-day were: Call, 4½ to 5 per cent; 90 days, 4½ to 4¾ per cent.

### Other Markets

In the Philadelphia market, Rapid Transit stock continues to be fairly active. There have been a few sales of Consolidated Traction of New Jersey at about 77. Other tractions have been dull.

Massachusetts Electric shares have been the traction feature in Boston. The preferred has been especially active, but both issues have recorded slight gains. There have also been some sales of Boston Elevated at about 130.

In the Chicago market some trading developed last week in Series 1, 2 and 3 of the Chicago Railways Company. All of these issues have been a trifle stronger than at any period during recent months. Some sales of Kansas City Railway & Light stocks were made at better prices.

In Baltimore the trading in the bonds of the United Railways Company continues to be active. Prices are practically unchanged.

At the weekly auction of securities in New York the following were sold: \$10,000, 5 per cent bonds Second Avenue Railroad Company, at 69¾; 5 shares Brooklyn Union Elevated Railroad, at 75.

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

	Dec. 7	Dec. 14
American Railways Company.....	445½	a47¼
Aurora, Elgin & Chicago Railroad (common).....	a60	a57
Aurora, Elgin & Chicago Railroad (preferred).....	a92½	a92
Boston Elevated Railway.....	a130	a131
Boston & Suburban Electric Companies.....	a16	a16
Boston & Suburban Electric Companies (preferred).....	75½	75
Boston & Worcester Electric Companies (common).....	a12	a12
Boston & Worcester Electric Companies (preferred).....	a50	a49
Brooklyn Rapid Transit Company.....	82½	80
Brooklyn Rapid Transit Company, 1st pref., conv. 4s.....	88	88¾
Capital Traction Company, Washington.....	a133½	a132½
Chicago City Railway.....	a190	a185
Chicago & Oak Park Elevated Railroad (common).....	*2	*2
Chicago & Oak Park Elevated Railroad (preferred).....	*10	*10
Chicago Railways, ptcptg., ctf. 1.....	a100	a105
Chicago Railways, ptcptg., ctf. 2.....	a31	a31
Chicago Railways, ptcptg., ctf. 3.....	a21	a15
Chicago Railways, ptcptg., ctf. 4s.....	*10	*10
Cleveland Railways.....	*84	*84
Consolidated Traction of New Jersey.....	a76½	a76½
Consolidated Traction of New Jersey, 5 per cent bonds.....	a106	a106
Detroit United Railway.....	*65	*63
General Electric Company.....	160	160¾
Georgia Railway & Electric Company (common).....	a101	101
Georgia Railway & Electric Company (preferred).....	87	87
Interborough-Metropolitan Company (common).....	25¾	24
Interborough-Metropolitan Company (preferred).....	61¾	64¾
Interborough-Metropolitan Company (4½s).....	84¾	83¾
Kansas City Railway & Light Company (common).....	a38½	a42
Kansas City Railway & Light Company (preferred).....	*82	*79
Manhattan Railway.....	*140	*140½
Massachusetts Electric Companies (common).....	a16	a16
Massachusetts Electric Companies (preferred).....	a76	a78½
Metropolitan West Side, Chicago (common).....	a17	a18½
Metropolitan West Side, Chicago (preferred).....	a52	a56½
Metropolitan Street Railway.....	a23	*20
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	82¾	85¾
Northwestern Elevated Railroad (common).....	a18	a17½
Northwestern Elevated Railroad (preferred).....	a68	a70
Philadelphia Company, Pittsburg (common).....	a49¾	a50¾
Philadelphia Company, Pittsburg (preferred).....	44	a45
Philadelphia Rapid Transit Company.....	25¾	a28¾
Philadelphia Traction Company.....	a90	a89½
Public Service Corporation, 5 per cent. col. notes.....	*100½	*100½
Public Service Corporation, ctf. s.....	a100¾	a100¾
Seattle Electric Company (common).....	a117	a116½
Seattle Electric Company (preferred).....	a104	104
South Side Elevated Railroad (Chicago).....	a52	a53
Third Avenue Railroad, New York.....	16	13
Toledo Railways & Light Company.....	*8	*8
Twin City Rapid Transit, Minneapolis (common).....	113	111¾
Union Traction Company, Philadelphia.....	a54	a52¾
United Rys. & Electric Company, Baltimore.....	a14¾	a14
United Rys. Inv. Co. (common).....	41	42¾
United Rys. Inv. Co. (preferred).....	72¾	73¾
Washington Ry. & Electric Company (common).....	a42¾	a44¾
Washington Ry. & Electric Company (preferred).....	a91½	a91¾
West End Street Railway, Boston (common).....	a93¾	93
West End Street Railway, Boston (preferred).....	a106	106
Westinghouse Electric & Mfg. Company.....	84	83¾
Westinghouse Elec. & Mfg. Company (1st pref.).....	135	*135

a Asked.

\* Last Sale.

## Jamestown Central-Station Property Sold

Following the recent special taxpayers' election in Jamestown, N. Y., at which the voters rejected the proposal to purchase the property of the Jamestown Lighting & Power Company by a small majority, comes the announcement that the property of the company has been sold to A. N. Broadhead and associates, who control the Chautauqua Traction Company and the Jamestown Street Railway, for \$90,000, the sum for which the plant was offered to the board of lighting commissioners of Jamestown, to be incorporated with the municipal plant. The company has a 50-year franchise, granted about 23 years ago. It is possible that by combining the electric light and power service with the street railway, a sufficient demand for electricity may be created in Jamestown to make it profitable to use power transmitted from Niagara Falls. Niagara power is already transmitted to Dunkirk, and if brought into Jamestown it will be delivered to the Chautauqua Traction Company's power station at Mayville and there reduced in voltage for distribution throughout Jamestown. Ultimately the two local plants will be combined at the street railway power house near the boat landing in Jamestown. The Jamestown Lighting & Power Company is the successor of a company organized in 1887. The business progressed satisfactorily for a number of years, but declined after the establishment of a municipal plant. However, the company was reorganized and of late years the business has increased. A majority of the stock and bonds of the company was held by the United Electric Securities Company, Boston, Mass.

**Anderson (S. C.) Traction Company.**—The court has directed the receivers of the Anderson Traction Company to turn the property of the company over to Ellison A. Smith as the representative of the new owners. The property was sold for \$154,750 at receiver's sale on Oct. 12, 1909.

**Chicago Consolidated Traction Company, Chicago, Ill.**—The United Railway Company has been incorporated with a nominal capital stock of \$100,000 by Charles G. Dawes, Emile K. Boisot, George P. Hoover and Andrew Cook, of the reorganization committee of the Chicago Consolidated Traction Company, as the successor to that company. The city will probably be asked very soon to grant the company a franchise similar to that under which the Chicago Railways operates.

**Columbus, Delaware & Marion Railway, Columbus, Ohio.**—The protective committee, representing holders of the first mortgage consolidated bonds of the Columbus, Delaware & Marion Railway, consisting of Guy M. Walker, New York; N. S. Keith, Cincinnati, Ohio, and W. H. Netherland, Louisville, Ky., has been enlarged by the addition of Judge O. M. Gottschall, Dayton, Ohio, representing Dayton and other bondholders, and L. L. Stanton, vice-president of the Standard Trust Company, New York, representing the General Electric Company.

**Eastern Ohio Traction Company, Cleveland, Ohio.**—In the ELECTRIC RAILWAY JOURNAL of Dec. 11, 1909, page 1203, mention was made of the order of sale of the property of the Eastern Ohio Traction Company at foreclosure, entered by Judge Phillips of the Common Pleas Court at Cleveland. The holders of the \$200,000 of first mortgage bonds of the company now plan to bid in the property and form a new company with \$300,000 of stock and \$300,000 of bonds, the bondholders to get par in new bonds for their holdings plus 12 per cent for accrued interest.

**Frederick (Md.) Railway.**—At a recent meeting of the stockholders the consolidation of the Frederick & Middletown Railway, the Washington, Frederick & Gettysburg Railway and the Jefferson & Braddock Heights Railway was ratified, the consolidated company to be known as the Frederick Railway. The capital stock will be \$1,500,000, of which \$1,250,000 is common stock and \$250,000 preferred stock. All the bonds of the old companies were retired and a new bond issue to the amount of \$480,000, covering the entire property, was made.

**Indianapolis & Louisville Traction Company, Louisville, Ky.**—The Indianapolis & Louisville Traction Company has executed a mortgage of \$600,000 to the Colonial Trust Company, Pittsburgh, Pa. There is a first mortgage of \$1,250,000 outstanding against the property.

**Johnstown (Pa.) Passenger Railway.**—T. C. du Pont, Wilmington, Del., president of the Johnstown Passenger Railway, is reported to have given the American Railways Company, Philadelphia, Pa., an option on 25,000 shares of the total of 40,000 shares of the stock of the company owned by himself and members of the du Pont family.

**New York, West Chester & Boston Railway, New York, N. Y.**—A special hearing was held at the office of the Public

Service Commission of the First District of New York on Dec. 8, 1909, on the application of the New York & Port Chester Railway and the New York, West Chester & Boston Railway to consolidate under the name of the latter, at which Frank W. Stevens, chairman of the commission of the Second District, presided. Both companies are controlled by the Millbrook Company, the stock of which is in turn owned by the New York, New Haven & Hartford Railroad. The commission for the first district objected to the plan of the company to abandon about half of its branch from West Farms to Throgg's Neck. Francis Lynde Stetson, counsel for the companies, stated that the management was prepared to concede this point and would ultimately build the line as originally proposed if the commission insisted upon the construction of the West Farms-Throgg's Neck branch. The hearing was adjourned.

**Ocean Shore Railway, San Francisco, Cal.**—The Circuit Court of the United States at San Francisco has appointed Fred S. Stratton, collector of the port of San Francisco, receiver of the Ocean Shore Railway on the application of the Baldwin Locomotive Works, Philadelphia, Pa. Mr. Stratton has announced the continuation of J. Downey Harvey as general manager of the company.

**Pittsburgh & Allegheny Valley Railway, Leechburg, Pa.**—W. D. Patton, judge of the Court of Common Pleas of Armstrong County, on Nov. 30, 1909, filed his findings in the proceedings by the Safe Deposit & Trust Company, Pittsburgh, trustee, against the Pittsburgh & Allegheny Valley Railway to foreclose the mortgage of \$1,100,000 against the property and franchise of the company. In the decree the court finds that the mortgage is a first lien and that the trustee is vested with the power to sell the capital stock of the Leechburg Electric Light, Heat & Power Company, Apollo Light, Heat & Power Company and the Leechburg Bridge Company at public sale. The court also finds that there are \$533,500 of bonds outstanding and that George M. Hosack holds \$295,500 of these. In addition to the bonds held by Mr. Hosack in his own right, he holds, under certain agreements relating to reorganization, \$166,000 of bonds, thus giving him \$461,000 of the total of \$533,500 of bonds to be turned in to the trustees if he should purchase the property.

**Pittsburgh & Westmoreland Railway, Pittsburgh, Pa.**—The petition of Manning Stires, receiver of the Pittsburgh & Westmoreland Railway, to sell the property of the company to the Pittsburgh, McKeesport & Westmoreland Railway, organized to take over the Pittsburgh & Westmoreland Railway, was argued in the Court of Common Pleas of Allegheny County on Nov. 27, 1909. The Pittsburgh & Westmoreland Railway operates 8 miles of line between Irwin and McKeesport and has an outstanding bond issue of \$330,000. The petitioners filed with the court a sworn summary of the company's business from Nov. 16, 1908, to Aug. 31, 1909, which showed total receipts of \$16,657 and operating expenses of \$20,720, making the net loss from operation \$4,063. The disbursement for betterments amounted to \$2,514, and the unpaid contract for betterments to \$5,083. Objections were made to the sale by attorneys representing the bondholders and unsecured creditors. The court asked for more complete information regarding the new company, stating that, if all the bondholders and creditors could agree, perhaps it might consent to make the order, but not on the information now before it.

**Southwestern Street Railway, Philadelphia, Pa.**—When the property of the Southwestern Street Railway was offered for sale under foreclosure on Dec. 9, 1909, no bids were received. The United States Circuit Court ordered that no offer of less than \$300,000 should be accepted.

**Toledo & Indiana Railway, Toledo, Ohio.**—The bid of \$1,006,000 made by J. M. Longnecker, Delta, Ohio, and his associates, representing the minority stockholders of the Toledo & Indiana Railway at the foreclosure sale mentioned in the *ELECTRIC RAILWAY JOURNAL* of Dec. 11, 1909, was set aside by Judge Manton in the Court of Common Pleas at Toledo, Ohio, on Dec. 4, 1909, on the application of the majority bondholders. The court ruled that the appraisal was not filed until after the sale had taken place, and announced that a new appraisal would be made and the property re-sold. At the sale on Nov. 27, 1909, D. J. Cable made a bid of \$1,004,500 in the interest of the Ohio Electric Railway, and after the sale notified C. F. M. Niles, receiver, of the willingness of the interests which he represents to pay \$1,500,000 for the property.

**Wilkes-Barre (Pa.) Railway.**—The Wilkes-Barre Railway has been incorporated with a nominal capital of \$10,000, with Charles W. Laycook, Kingston, Pa., as treasurer, with the end in view, it is said, of leasing the property of the Wilkes-Barre & Wyoming Valley Traction Company for a long period of years.

## Traffic and Transportation

### Cases Before Interstate Commission Involving Through Routes and Joint Rates with Steam Roads

The case before the Interstate Commerce Commission in which the Southern California Sugar Company is the complainant, and which involves through rates between electric railways and steam railroads in Southern California, was heard in San Francisco on Nov. 29, 1909. As stated in the *ELECTRIC RAILWAY JOURNAL* of Sept. 4, 1909, page 379, complaint was made against the San Pedro, Los Angeles & Salt Lake Railroad, the Atehison, Topeka & Santa Fé Railway, the Southern Pacific Company and the Pacific Electric Railway for discriminating against the Southern California Sugar Company in the matter of freight rates to the Missouri River and other Eastern points, and asking that the defendants publish joint through rates on Eastern business that will enable the company to compete with sugar factories at Chino, Los Alamitos and Oxnard.

The district which lies southeast of Los Angeles is served by the Pacific Electric Railway, which has a spur direct to the factory of the Southern California Sugar Company at New Delhi, and collects the beets from the various ranches by means of a branch line through the valley. On Eastern rates from Los Angeles, however, a local rate of 2½ cents per 100 lb. is charged by the Pacific Electric Railway for the haul from New Delhi to the transfer point, Los Angeles, and this handicaps the company in competing with sugar factories located on the lines of the railroads which enjoy through rates.

The testimony was taken before Special Examiner Edward Brown and its presentation occupied two days, including an evening session. The first witness for the complainant was F. B. Case, manager of the Southern California Sugar Company. He testified at length regarding practically all the points covered by the complainant. J. McMillan, general manager of the Pacific Electric Railway, and W. F. Towne, general agent of the freight department of that company, also testified. Other witnesses were Thos. A. Graham, a Los Angeles freight official, and Harvey B. Titecomb, engineer for the Southern Pacific Company; W. B. Barnwell, general freight agent for the Santa Fé Railway, and Messrs. Ward and Flavan, two celery growers who reside in the vicinity of the sugar plant.

Evidence was introduced to show that the company actually produced and shipped sugar from its plant at New Delhi; that it had asked for through joint rates over the Pacific Electric Railway and the railroads; that although the electric railway had been willing to enter into an agreement for such a rate, it had been impossible to obtain concessions from the railroads, and furthermore, that because of the additional local rate which the sugar company had to pay, not only for shipments of sugar East, but also for shipments received from the East, such as raw products, coke, etc., and because these rates were not fixed it could not accurately estimate its business, profits, etc.

It was shown that the Pacific Electric Railway had an extensive railway system covering a large section of the country in the vicinity of Los Angeles; that it had a spur track to the sugar company's plant; that it received freight from the company and shipped same; that it had transfer points with the steam railroads at Los Angeles and several points near the city, and that it transferred transcontinental freight shipments to and from the railroads; that it had some 600 freight cars and about 40 electric locomotives; that it complied fully with the requirements of the Interstate Commerce Commission regulations as to standard couplers, air brakes, trucks, etc.; that it had published its own freight tariff, and in general that it was thoroughly equipped to handle through freight business.

It was also shown that not only was the Southern California Sugar Company interested in the question of rates, but that there were celery growers and other producers who would profit by through rates. Along the line of the electric railway were 21 originating points for Eastern freight. Although the Pacific Electric Railway was named as a defendant, the company announced that it was ready at any time to enter into a joint through Eastern rate with any or all of the steam railroads. One significant point was a letter introduced as evidence showing that some time ago Fred Warren, general freight agent of the San Pedro, Los Angeles & Salt Lake Railroad, in connection with the Transcontinental Traffic Association had ordered a joint rate with the Pacific Electric Railway from all shipping points on its lines. The Pacific Electric Railway had written a letter in which it had concurred in the rate, agreeing to take 10 per cent of the Missouri River rate for its portion of the haul (the customary percentage for local

steam lines transferring to other steam lines being 20 per cent). Testimony was introduced to show that this rate was withdrawn before it went into effect, on telegraphic orders.

The officials of the steam railroad claimed that the territory in question was well served by their lines; that they had offered to build a connection from the Southern Pacific Railroad to the factory for \$5,000 to cover the  $\frac{3}{4}$  mile of track necessary, and also that a transfer point with the Southern Pacific Railroad and Santa Fé System at Santa Ana was practical. Mr. McMillan said a transfer at Santa Ana would be very expensive, whereupon the representatives of the Southern Pacific Railroad said they would build a branch line to the factory if right-of-way was given, but that the branch would have to cross a main line of the Pacific Electric Railway. Mr. Barnwell said that the Santa Fé System did not deem it advisable to make a joint traffic arrangement with the Pacific Electric Railway, because a precedent would be established which might result in the loss of business for his company.

Seth Mann, San Francisco, was the attorney for the Southern California Sugar Company. The Southern Pacific Company was represented by C. W. Durbrow, who also looked after the interests of the Los Angeles & Salt Lake Railroad. E. W. Camp represented the Santa Fé System, and Judge Gibson appeared for the Pacific Electric Railway. The complainant has until Jan. 10, 1910, to file its brief, the reply by the defendants must be filed before Jan. 25, 1910, and the concluding brief, if one is deemed advisable by the complainant, must be filed before Feb. 15, 1910.

One of the cases pending before the Interstate Commerce Commission in which the question of through routes and joint rates between electric railways and steam railroads is involved is that of the Cincinnati & Columbus Traction Company, Norwood, Ohio, versus the Baltimore & Ohio Southwestern Railroad and others. The evidence offered on behalf of the traction company in this case was composed principally of testimony by merchants, farmers and manufacturers located on its line as to the public advantage that would be offered by the interchange of facilities. It was also testified on behalf of the traction company that its physical conditions were safe for interchange of cars. The defense of the steam railroad included expert testimony tending to show that the business that would be offered by the Cincinnati & Columbus Traction Company was not sufficient in volume to justify interchange and that through routes and joint rates in this case would interfere with the service furnished to shippers reached directly by the steam railroads and its regular connections.

#### Near Stop and New Transfers Introduced in Rochester

The New York State Railways recently began to stop its cars in the downtown district of Rochester, N. Y., on the near side of the street. For the convenience of patrons signs with arrows have been suspended from the span wires to indicate the location of the stops. The plan of entering cars at the rear and leaving them at the front is continued. Heretofore cars have been stopped at both the near and the far sides of the street in downtown Rochester, a plan which frequently delayed cars at streets where the wagon traffic is heavy. In explanation of the new crossing stop and a new transfer arrangement, E. J. Cook, general manager, issued the following statement on Dec. 9, 1909:

"This company fully realizes and appreciates that the good will of the public is essential in the successful conduct of its business, and that its success financially and otherwise as a transportation company is dependent upon this same good will.

"The present transfer system was not conceived, developed or put in service hurriedly, but with careful consideration. We undoubtedly have made some mistakes. These will be rectified as rapidly as possible. On the other hand, we request the public not to pass hasty judgment upon the present transfer system. This city is no longer a village—it can no longer have one transfer point. The present system has been devised and planned for an increasing population, so that a revision of the transfer system will not be necessary every two or three years, with its attendant inconveniences and discomfort to the traveling public.

"We also request the public not to confuse the Main Street congestion, which is the principal cause of late cars and consequent crowding, with the recent change in the transfer system. The congested condition existed before the new transfer system was placed in operation and would continue to a less or greater extent with the new or old transfer system, until there was a re-routing of some of the car lines now operating through Main Street. We believe the general public is well informed regarding this fact.

"It is the intention of this company to re-route some lines at the time the 25 new pay-as-you-enter cars which the company has recently purchased are placed in operation. The order for these cars was placed with the understanding that the last car would be received in Rochester on Dec. 7, 1909. This would have enabled us to place these lines in operation in time to take care of the heavy holiday shopping traffic. The builders of the equipment now inform us that it will be impossible for them to make the delivery as promised, and we will not be able to put this line in operation until after the first of the coming year.

"The inability to place these new cars in service before the holidays has been a keen disappointment to us. With the re-routing of some of the Main Street lines and the placing of 25 additional cars on the system, the majority of the complaints now based on the transfer system will be removed.

"For this reason we respectfully ask the public to give the new transfer system a fair trial for at least 30 days, until the above can be done, and after that, if it is generally complained of, we will cheerfully assist in placing the transfer system before the Public Service Commission, Second District, for its decision."

#### New Freight Service Over Illinois Traction System

On Nov. 18, 1909, the Illinois Traction System, Peoria, Ill., had the traffic officials of the Chicago & Eastern Illinois Railroad as its guests on a tour of the lines of the Illinois Traction System which was made in the private car of H. E. Chubbuck, general manager. The car left Danville at 7:00 a. m. for East St. Louis, running via Champaign, Decatur, Bloomington, Mackinaw, Springfield, and stopping at stations en route. Lunch and dinner were served on the car and the members of the party thoroughly enjoyed the trip, one of them remarking in the evening that the slogan of the company, "No dust, No dirt, No smoke, No cinders," certainly was a fact. As a result of the trip, it was decided to establish a through merchandise service from Chicago, and on Dec. 1, 1909, a car was put on running from Chicago to Glover via the Chicago & Eastern Illinois Railroad. This car arrives at Glover at 12:50 a. m. and leaves at 2:00 a. m., unloading the Urbana and Champaign freight and proceeding to Decatur, delivery being made at most points on the company's line the next morning and not later than noon to every point on the system.

The following officials of the Chicago & Eastern Illinois Railroad made the trip over the lines of the Illinois Traction System: F. C. Reilly, general freight agent, Chicago; R. M. Stannage, chief clerk to the general freight agent, Chicago; T. O. Jennings, general agent, Chicago; G. E. White, commercial agent, Chicago; G. H. Hume, chief clerk to the commercial agent, Chicago; J. J. Hazzard, W. F. Rothwell, C. E. Pierce, T. J. McDermott, F. L. Hasten, J. A. Wallace, A. W. Sheerer, contracting freight agents; J. W. Kelly, district freight agent, Danville; C. B. Anderson, agent at Chicago; M. Thomas, chief clerk to the agent at Chicago.

The officials of the Chicago & Eastern Illinois Railroad were accompanied by the following traffic representatives of the Illinois Traction System: H. H. Roseman, traffic manager, Springfield; J. A. Glover, district freight and passenger agent, Urbana; T. P. Gallagher, traveling freight agent, Urbana; C. C. Hurin, district traffic agent, Decatur; E. E. Kester, general agent, Peoria; T. T. Thompson, district traffic agent, Springfield; H. E. Morris, district freight and passenger agent, East St. Louis; C. F. Handshy, general superintendent; M. Connor, superintendent, Danville; H. J. Vance, assistant general superintendent, Peoria, and F. G. Buffe, publicity agent, Peoria.

#### Proposed Increase of Fares on Oneida Railway

The Oneida (N. Y.) Railway has filed with the Public Service Commission of the Second District of New York for approval a new schedule of rates between Utica and Syracuse, to go into effect Jan. 1, 1910, based upon the following rates, namely: From Genesee Street, Utica, to Sherrill, and from Wampsville to the city line of Syracuse, 2 cents per mile for cash fare to the nearest cent; 1.8 cents per mile for single trip ticket fare to the nearest cent; 1.6 cents per mile for round trip ticket fare to the nearest cent. The fares between Sherrill and Wampsville are franchise conditions fixed with Oneida and are 5 cents. The present rates of fare on the West Shore Railroad were based upon the following: 1.75 cents per mile for cash fare; 1.55 cents per mile for single trip ticket fare; 1.45 cents per mile for round trip ticket fare. No fare accepted to be less than 5 cents. C. Loomis Allen, general manager and vice-presi-

dent of the company, bases his application to increase the fares on the ground that the line does not pay a sufficient profit on the investment. A comparison of fares at present and those which will prevail after Jan. 1, 1910, follows:

	—At Present.—			—After Jan. 1, 1910.—		
	Cash.	Ticket.	Round trip.	Cash.	Ticket.	Round trip.
Glatt's H'y .....	\$0.10	..	..	\$0.11	..	..
Clark Mills .....	.15	\$0.13	\$0.25	.17	\$0.16	\$0.30
Westmoreland .....	.20	..	..	.20	..	..
Cheese F. R'd .....	.20	..	..	.21	..	..
Hecla .....	.25	.18	.35	.25	.23	.43
Bronson's .....	.30	..	..	.30	..	..
Vernon .....	.35	.25	.50	.35	.32	.58
Sherrill .....	.40	..	..	.40	..	..
Oneida .....	.45	.38	.75	.45	.42	.80
Wampsville .....	.45	.38	.75	.45	.42	.80
Canastota .....	.50	.43	.85	.50	.46	.88
Sullivan .....	.55	..	..	.57	..	..
Chittenango .....	.60	.53	1.00	.62	.58	1.10
Kirkville .....	.65	.58	1.10	.70	.65	1.23
Manlius Cr .....	.70	.62	1.20	.75	.70	1.31
E. Syracuse .....	.75	..	..	.80	..	..
Syra. C. Line .....	.80	..	..	.85	..	..
Syracuse .....	.85	.75	1.40	.90	.85	1.60

**Shortage of Labor in Bridgeport.**—The Connecticut Company, New Haven, Conn., has advertised in that city for motormen and conductors for service on its lines in Bridgeport.

**Increase in Fare on Westchester Street Railroad.**—The Westchester Street Railroad, which on Dec. 8, 1909, succeeded the Tarrytown, White Plains & Mamaroneck Railway, sold recently under foreclosure, has increased the fare between Tarrytown and Mamaroneck from 10 cents to 20 cents.

**Complaint Against Fonda, Johnstown & Gloversville Railroad.**—The Public Service Commission of the Second District of New York has received a complaint from H. E. Heidenrich against the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., regarding the operation of passenger cars between Schenectady and Hoffmans, particularly cars between the hours of 5:30 p. m. and 6:30 p. m.

**Heating Order Must be Posted.**—The Public Service Commission of the First District of New York has refused to modify the order regarding the heating of street cars recently promulgated by eliminating the provision stipulating that the order shall be posted in the cars. A brief account of the hearing at which the arguments were presented to induce the commission to modify the order was published in the ELECTRIC RAILWAY JOURNAL of Dec. 11, 1909, page 1190.

**Hearing on Air Brakes Before Railway Commissioners of Canada.**—The hearing which was to have been held before the Board of Railway Commissioners of Canada on Dec. 7, 1909, in accordance with a letter addressed on Nov. 25, 1909, to the electric railways subject to the jurisdiction of the commissioners that they would consider an order requiring the railways to equip their cars with automatic air brakes as well as hand brakes as an additional safeguard in case of damage to the air-brake equipment was postponed indefinitely.

**Injunction Restraining Electric Railway From Complying with 2-Cent Fare Law.**—Judge Smith McPherson, of the United States Circuit Court of Appeals for the Eighth Circuit, has granted a temporary injunction forbidding the Cedar Rapids & Iowa City Railway & Light Company from complying with the Iowa 2-cent fare law. The action was based on a petition by Elizabeth D. McClintock, Haverford, Penn., a stockholder of the company, who declares the company is no longer paying dividends because of the hardship worked by the 2-cent fare law.

**Through Service Between Allentown and Bethlehem.**—R. P. Stevens, president and general manager of the Lehigh Valley Transit Company, Allentown, Pa., and H. R. Fehr, president and general manager of the Easton (Pa.) Transit Company, have effected an agreement under which cars of the Easton Transit Company will after Jan. 1, 1910, run through to Allentown from Easton instead of to Bethlehem as at present. Crews will be changed at Bethlehem as usual. With through cars, the trip of 18 miles between Easton and Allentown will be made 15 minutes quicker than at present.

**Pay-As-You-Enter Cars in Jacksonville.**—The Jacksonville (Fla.) Electric Company placed pay-as-you-enter cars in service on its Main Street line on Dec. 8, 1909. Previous to commencing the service the company carried a half-page advertisement in the daily papers showing a plan of the cars and instructing passengers how to use them properly. Hardy Croom, manager of the company, also addressed a letter to the editors of the newspapers, in which he set forth the reasons of the company for adopting the cars,

paying particular attention to the advantages that will accrue to the public by their use.

**Continuous Service Rewarded in Brooklyn.**—The Brooklyn (N. Y.) Rapid Transit Company has announced a new wage schedule effective on Jan. 1, 1910, by which all motormen and conductors on its surface lines who have been in the employ of the company six years or more and have no demerits will receive an increase in wages of one cent an hour. The present pay of motormen and conductors, regardless of length of service, is 23 cents an hour. The company has also announced that a general pension plan is under consideration. At present a number of employees receive pensions, but their cases have been dealt with individually.

**Sunday Cars in London, Ont.**—The official declaration of Sir James Whitney that he would not declare the population of London to be 50,000 in compliance with the request of the City Council was received in London on Dec. 3, 1909, and will be presented to the Council at the next meeting. In his letter the Premier says that on the figures submitted he would not be justified in declaring the population to be that required by law. As the Council had not asked for a census, he would not order it, though he declared himself willing to order one if the Council wished it and would pay for it. The Council will not ask for a census, and the subject goes over for another year.

**San Francisco's Car Fare Bill.**—The ordinance which has been pending for six months before the Board of Supervisors of San Francisco to compel street railways to issue checks to passengers when traffic is suspended has been voted down. The ordinance, as originally framed, required street railways to refund the fare in cash, but this was modified, as it was demonstrated that such a regulation would lead to abuse by the conductors and perhaps entail financial loss. William M. Cannon, counsel for the United Railroads, contended that the bill was in violation of the Constitution and made a disbursing agent of the conductors. He thought the use of emergency transfers was sufficient to meet all requirements.

**Louisville Accident Fakirs Sentenced.**—Luke Hubbard and James Hubbard in the criminal court at Louisville, Ky., on Dec. 8, 1909, pleaded guilty to charges of obtaining money from the Louisville Railway under false pretense and were sentenced to serve one year each in the penitentiary. James Hubbard posing as John Thompson, pretended to suffer injuries when he fell from a car at Fifteenth and Jefferson Streets, Louisville. Luke giving the name of C. T. Martin, became the witness of the accident. An unsuspecting lawyer was employed to prepare a suit, but the claim for damage was settled by the company paying \$30, which the prisoners divided between them. The alleged accident occurred in June, 1909, and the indictment was returned by the October jury. Luke Hubbard will also face another indictment in which he is accused of further attempting to defraud the company through a similar conspiracy. Named jointly with him in this indictment is E. W. Stokes.

**Traffic Circulars of Texas Companies.**—James P. Griffin, general passenger agent of the Texas Traction Company and the Dennison & Sherman Railway, Dallas, Tex., has issued printed matter regarding these companies which includes a booklet descriptive of the properties, a time card and a placard giving the time-table of trains between Dallas and Dennison and the local service between Sherman and Dennison. This placard also contains at the left-hand side a map of the routes of both the Texas Traction Company and the Dennison & Sherman Railway, 3½ in. wide by 7 in. high. The pamphlet describing the properties is entitled "The Convenient Way." It contains 30 pages and includes time cards of through service between Dallas and Dennison and Dennison and Dallas and time cards of service between Sherman and Dennison in both directions. There is a brief history and description of the properties followed by a short article entitled "Imperial Texas." The counties through which the companies operate are then taken up in turn and their natural resources and facilities outlined. Following this there is a similar outline of the resources of the cities and towns through which the companies operate. Full information is given regarding the sale of tickets, the arrangement made for special cars, theater service and handling express and packages. The publication is concluded with an article entitled "Parks and Resorts," in which Kirkland Park, Woodlake Park and Coursing Park, all of which are reached by railways, are briefly described. Mr. Griffin has also issued a desk blotter and a series of picture post cards, some in black and white and some in colors, showing scenes along railways.

## Personal Mention

**Mr. George M. Kirchmer** has been appointed claim agent of the Coney Island & Brooklyn Railroad, Brooklyn, N. Y., to succeed Mr. John C. Hamilton.

**Mr. H. M. Beardsley**, secretary and treasurer of the Elmira Water, Light & Railroad Company, Elmira, N. Y., has also been appointed acting general manager of the company.

**Mr. W. C. Gray** has resigned as vice-president and superintendent of the Geneva & Auburn Railway, Seneca Falls, N. Y., which has succeeded the Geneva, Waterloo, Seneca Falls & Cayuga Lake Traction Company, and Mr. S. H. Dailey has been appointed to succeed him as superintendent, but his successor as vice-president has not been elected.

**Mr. C. F. Handshy**, general superintendent of interurban transportation of the Illinois Traction System, Champaign, Ill., has been given the title of general superintendent of the company. Mr. Handshy became connected with the Illinois Traction System about two years ago. Before that he was in the employ of the Wabash Railroad for 15 years, serving in turn as telegraph operator, train dispatcher, chief dispatcher and trainmaster.

**Mr. Emil Swenson** has been appointed by the State Railroad Commission of Pennsylvania to study street railway conditions in Pittsburgh, and has taken up the work in that city following a conference with the commission. Mr. Swenson is a resident of Pittsburgh and has had previous experience as an engineering expert on street railway and other engineering matters. He was employed on the construction of the New York subway.

**Mr. P. V. See** has been appointed superintendent of car equipment for the Hudson & Manhattan Railroad, New York, N. Y. Mr. See is a graduate of Armour Institute, Chicago, Ill. Since the spring of 1909 he has been general shop foreman of the Illinois Traction System, with headquarters at Decatur, Ill. Previous to becoming connected with the Illinois Traction System Mr. See served for more than two years as shop foreman of the Metropolitan West Side Elevated Railroad, Chicago, Ill.; as superintendent of the Dorner Truck Company, and as general shop foreman of the Twin City Rapid Transit Company, Minneapolis, Minn., for two years.

**Mr. M. H. Hovey** has been appointed as expert in signaling and interlocking on the engineering staff which jointly serves the Railroad Commission of Wisconsin and the Wisconsin Tax Commission, reporting to Prof. W. D. Pence, who is engineer for the two State commissions. Mr. Hovey has served as signal engineer in the signal staff of several railroads and signal companies, and has recently served as signal expert for the Federal Block Signaling & Train Safety Board, having withdrawn from that service to become superintendent of construction of the American Railway Signal Company, Cleveland, Ohio. In resigning from the American Railway Signal Company he will resume his former service with the Federal board in connection with his duties for the Wisconsin commissions. After Jan. 1, 1910, Mr. Hovey's headquarters will be at Madison.

**Mr. S. H. Dailey** was appointed general superintendent and purchasing agent of the Geneva & Auburn Railway, Seneca Falls, N. Y., which has succeeded the Geneva, Waterloo, Seneca Falls & Cayuga Lake Traction Company, on Dec. 1, 1909, to succeed Mr. W. C. Gray, resigned. Mr. Dailey entered electric railway work in his home city, York, Pa., about 1894, in the repair shops of the York Street Railway. Since that time he has been connected with the engineering department of several large railway systems and manufacturers of railway appliances. For six years he was with Ford, Bacon & Davis, New York, N. Y., as car and equipment engineer, but resigned from this firm to accept a similar position with E. W. Clark & Company, Philadelphia, Pa., at their engineering headquarters in Columbus, Ohio. While in the employ of E. W. Clark & Company Mr. Dailey directed the construction and equipment of electric cars for the properties controlled by the Clark interests in the Central West and on the Pacific Coast. Early in 1909 Mr. Dailey became connected with the engineering department of Meikleham & Dinsmore, New York, N. Y., supervising managers of the Geneva & Auburn Railway.

**Mr. Frank R. Phillips** has resigned as master mechanic of the Cleveland (Ohio) Railway to become superintendent of equipment of the Pittsburgh (Pa.) Railways, effective on Jan. 1, 1910. After leaving the high school in Cleveland Mr. Phillips decided upon a railway career and entered the employ of the Cleveland City Railway in 1894. He advanced gradually until he became a foreman and then master mechanic of the company. When the Cleveland City Railway and the Cleveland Electric Railway were consolidated

in 1903 as the Cleveland Electric Railway Mr. Phillips accepted the position of master mechanic of the Cincinnati, Newport & Covington Railway. Subsequently he became chief engineer in charge of all but the transportation department of the Michigan United Railway, Lansing, Mich. In 1906 Mr. Phillips entered the employ of the Ohio Brass Company, Mansfield, Ohio, as designing engineer in charge of railway overhead work, and made a study of the street railway conditions of most of the large cities of the United States east of the Mississippi River for that company. In July, 1908, he became master mechanic of the Cleveland Traction Company, in charge of buildings, shops and equipment. Mr. Phillips is the inventor of a number of railway devices and has appeared before several railway commissions as an expert. He is an associate member of the American Institute of Electrical Engineers.

**Mr. S. J. Dill**, who has been resident general manager of the Elmira Water, Light & Railroad Company, Elmira, N. Y., since July 20, 1908, has been appointed assistant to Mr. George Bullock, president of the Susquehanna Railway, Light & Power Company, New York, N. Y., a holding company which controls 15 public service corporations, including the electric railways in Elmira, N. Y., and Lancaster, Pa. Mr. Dill has also been elected vice-president of the Railway Equipment Company, New York, N. Y., through which purchases are made for the Susquehanna Railway, Light & Power Company. He succeeds to the duties with these companies previously performed by Mr. Edwin Withersby, whose resignation was announced in the *ELECTRIC RAILWAY JOURNAL* of Dec. 11, 1909. Although Mr. Dill will have his headquarters in New York, he will retain the title of general manager of the Elmira Water, Light & Railroad Company, of which he has been elected vice-president. Mr. Dill began his railway career with the Metropolitan Street Railway, New York, N. Y. He was promoted by the company to division foreman and was in charge of the Forty-second Street and Crosstown and the Boulevard lines when they were equipped with electricity. In 1901 he became superintendent of the Detroit, Ypsilanti, Ann Arbor & Jackson Railway, and later was appointed general superintendent of the Michigan Traction Company, Kalamazoo, Mich., in charge of the operations of the city lines in Kalamazoo and Battle Creek and the interurban railway connecting the two cities. In 1904 Mr. Dill was appointed general manager of the Youngstown & Southern Railway, then under construction, and continued in that capacity until appointed to the Elmira Water, Light & Railroad Company.

**Mr. Lloyd Lyon**, whose appointment as treasurer of the Mexico Tramways and the Mexican Light & Power Company, Ltd., was noted in the *ELECTRIC RAILWAY JOURNAL* of Dec. 11, 1909, was born on June 20, 1877. After attending Beloit College he entered the accounting department of the Augusta Railway & Electric Company, Augusta, Ga., in 1897. At the outbreak of the war with Spain in 1898, Mr. Lyon received an indefinite leave of absence from the company allowing him to enlist and serve until discharged in the fall. He returned to his duties with the Augusta Railway & Electric Company and remained in Augusta until 1902, when he resigned to enter the accounting department of the Birmingham Railway, Light & Power Company, Birmingham, Ala. In March, 1903, Mr. Lyon was appointed auditor of the Montgomery (Ala.) Traction Company, then owned and operated by J. G. White & Company, New York, N. Y. On Feb. 28, 1905, he resigned from the Montgomery Traction Company to accept a position in the lighting department of the Little Rock Railway & Electric Company, but in April, 1905, he was sent to Porto Rico by J. G. White & Company as auditor and assistant treasurer of the San Juan Light & Transit Company and in May, 1905, was made assistant manager of the property. In April, 1906, J. G. White & Company began to rehabilitate the railway and lighting systems at San Juan, construct a railway extension of 20 miles and complete the development of a water-power, including substations and a transmission line of 20 miles. For all of this work Mr. Lyon was appointed auditor by J. G. White & Company, in charge of the finances. Mr. Lyon resigned his position in Porto Rico in November, 1907, to become secretary and auditor of the Mobile Light & Railroad Company, Mobile, Ala., and assumed his duties in Mobile on Dec. 1, 1907. Mr. Lyon will assume the duties of treasurer of the Mexico Tramways and the Mexican Light & Power Company, Ltd., on Jan. 15, 1910. At the first annual convention of the Alabama Light & Traction Association, held in Mobile in 1908, Mr. Lyon was elected secretary-treasurer of the association and was re-elected to this position at the second annual convention, held in Birmingham in November, 1909. Mr. Lyon is an associate member of the American Institute of Electrical Engineers.



# Construction News

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

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

## RECENT INCORPORATIONS

**\*Birmingham & Gulf Railroad, Birmingham, Ala.**—Incorporated in Alabama with a capital stock of \$3,000 for the purpose of establishing of street and interurban railways. Officers and incorporators: J. M. Dewberry, acting president; R. D. Johnston, Jr., secretary; Lewis Minor, treasurer. The incorporators are also connected with the Birmingham & Gulf Railway & Navigation Company, which operates an electric railway between Tuscaloosa and Holt. Office, Birmingham.

**\*Gadsden (Ala.) Railway.**—Incorporated to build an electric street railway in Gadsden. The company is also given the right to conduct a light and power business. Headquarters, Gadsden. Capital stock, \$2,000. Incorporators: J. B. Carrington, Anniston; W. N. Malone and A. B. Mitchell, Birmingham.

**Chicago United Railway, Chicago, Ill.**—Incorporated in Illinois to take over the properties of Consolidated Traction Company, Chicago. Capital stock, \$100,000. Incorporators: Charles G. Dawes, Emile K. Boisot, George P. Hoover and Andrew Cook.

**\*Thayer Junction Railway, Chicago, Ill.**—Incorporated to construct a railway, to be operated by steam or electricity from Thayer to Thayer Junction. Capital stock, \$65,000. Incorporators: A. L. Sweet, Walter Famer and E. E. Jones.

**\*Inter-City Viaduct Freight Railway, Kansas City, Mo.**—Incorporated to build a 7-mile freight-connecting belt railway on the viaduct between Kansas City, Mo., and Kansas City, Kan. Several steam roads are interested. It is reported that electricity will be the motive power. Capital stock, \$70,000. Incorporators: J. W. Reinhardt, A. R. Ash, Howard Ross, H. J. Curran and William J. Knepp.

**\*Ottawa, Rideau Valley & Brockville Railway, Ottawa, Ont.**—Application has been made to the Dominion Parliament by D. H. McLean, Ottawa, for the incorporation of the Ottawa, Rideau Valley & Brockville Railway. Permission is asked to construct a railway to be operated by electricity or other motive power, from Ottawa to Brockville; to operate a ferry service across the St. Lawrence River to Morristown, N. Y., and to build an extension from the main line, from Ottawa to High Falls.

**\*Titusville Central Railroad, Titusville, Pa.**—Incorporated to construct a gasoline motor railway in the vicinity of Titusville. Capital stock, \$120,000. W. J. Smith, Titusville, president.

**\*Greenville, Spartanburg & Anderson Railway, Greenville, S. C.**—Application will be made on Dec. 20 by this company for a charter to build an electric railway from Greenville to Spartanburg, 31 miles. The organizers are Charles W. Ellis, H. H. Prince and O. K. Mauldin.

**\*Nashville & Adairville Railway, Nashville, Tenn.**—Chartered in Tennessee to build an electric railway from Nashville through Goodlettsville to Whitehouse and thence to Adairville. Capital stock, \$25,000. Incorporators: W. A. Buntin, B. P. Gilbert, H. M. Hayes, S. C. Robb and R. A. Wilson, all of Nashville.

**\*Pe Ell & Columbia River Railway, Pe Ell, Wash.**—Incorporated to build an electric railway from Pe Ell to a point on the Columbia River, at Cathlamet. Headquarters, Pe Ell. Capital stock, \$50,000. Incorporators: W. C. Yeomans, Charles Yeomans, C. A. Doty, Seattle, and F. B. Hubbard.

## FRANCHISES

**Santa Barbara, Cal.**—The City Council has granted to the Santa Barbara Consolidated Railway a franchise on State Street, between Victoria Street and Sola Street, and on Sola Street, between State Street and Chapala Street.

**Oakland, Cal.**—The Southern Pacific Company, San Francisco, has applied to the Board of Supervisors in the name of the Central Pacific Railway for a 50-year franchise to operate a double-track, standard-gage, electric railway from Melrose to Stanley Road, a distance of 4 miles. Similar applications will be made in both San Leandro and Hayward for the same privileges.

**\*Pensacola, Fla.**—An ordinance has been offered in the City Council to grant a street railway franchise to the Pensacola Development & Construction Company.

**Dublin, Ga.**—The City Council has granted to the Dublin Street Railway a franchise for the construction of a gaso-

line motor railway in Dublin. P. L. Wade, Dublin, is interested.

**Delphi, Ind.**—The Logansport, Frankfort & Indianapolis Traction Company, Logansport, has applied to the County Commissioners for a franchise for its proposed railway over Michigan Road in Washington, Burlington and Carrollton Townships. A. A. Newer, Logansport, is interested. [E. R. J., April 17, '09.]

**Martinsville, Ind.**—J. N. Crabb, president of the Capital Circuit Traction Company, Indianapolis, has applied to the City Council for an extension of its franchise until 1913. The company proposes to build an electric railway to encircle Indianapolis and connect several cities within a radius of 25 miles from Indianapolis. [E. R. J., Oct. 23, '09.]

**\*Meridian, Miss.**—Application has been made to the City Council by M. R. Grant for a franchise to build and operate a street railway and power plant in Meridian.

**Oswego, N. Y.**—The Common Council has granted to the Syracuse, Lake Shore & Northern Railroad a franchise to enter Oswego as the terminus for its projected Fulton extension.

**Marshfield, Ore.**—At a special election recently held in Marshfield a franchise was voted to J. M. Blake for the construction of an electric railway within the city limits. The line will be about 5 miles long. [E. R. J., Oct. 16, '09.]

**Delaware Water Gap, Pa.**—The Borough Council has granted a franchise to the Stroudsburg & Water Gap Street Railway, Stroudsburg, to extend its line through the Gap and connect with Portland.

**Seattle, Wash.**—The City Council has granted two franchises to the Seattle Electric Company for new lines on Sixth Avenue Northwest and on Fourteenth Avenue.

## TRACK AND ROADWAY

**Calgary (Alta.) Street Railway.**—This company will build an extension of about 12 miles during 1910. Thos H. McCauley, general manager.

**Power, Transit & Light Company, Bakersfield, Cal.**—This company advises that it expects to relay 7 miles of track during the coming year. It is the intention to replace the 59-lb. rails with 87-lb. rails. James E. Baker, superintendent.

**Humboldt & Eastern Railroad, Eureka, Cal.**—E. E. Skinner, secretary of the Humboldt & Eastern Railway committee, 318 Fifth Street, Eureka, advises that the preliminary surveys for the proposed railway between Eureka and Redding have been completed and the line located. It is not probable that work will be started until next year. [E. R. J., Sept. 23, '09.]

**\*Redwood City, Cal.**—It is stated that A. H. Lohman, San Francisco, has begun making the preliminary surveys for an electric railway to extend from Redwood City to Woodside, La Honda and the Big Basin.

**Oakland & Antioch Railway, San Francisco, Cal.**—S. L. Naphtaly, San Francisco, advises that this company is preparing to begin work the first of the year on its projected electric railway which is to extend from Oakland to Berkeley Walnut Creek, Concord and Bay Point, 34 miles. Surveys and final locations have been made. Power to operate the line will be purchased. The company expects to purchase four cars and one electric locomotive. Capital stock, authorized, \$3,500,000. Issued, \$500,000. Bonds, authorized, \$2,000,000. Headquarters, 347 Grant Avenue, San Francisco. H. A. Mitchell, president; F. E. Brooks, secretary. [E. R. J., Sept. 11, '09.]

**Washington, D. C.**—A bill has been introduced in the House which provides for the extension of the Brookland tracks of the Washington Railway & Electric Company through that suburb and to the District line, without crossing at grade the tracks of the Baltimore & Ohio Railroad.

**\*Fort Dodge, Ia.**—L. S. Cass, president of the Waterloo, Cedar Falls & Northern Railway, Waterloo, is said to be at the head of a plan to build an electric railway to connect Mason City, Waterloo and Fort Dodge.

**Iowa City, Ottumwa & Southwestern Electric Railway, Iowa City, Ia.**—This company announces that it will be prepared to begin work on its line between Iowa City and Ottumwa by May 1, 1910. It will be broad gage, 70 miles long, and will pass through Weltman and Keota. The line will cross several trunk lines running east and west. The company's plans include the erection of a power plant near Keota and the repair shops in that city. No contracts have been awarded as yet. Capital stock authorized, \$2,500,000; bonds authorized, \$2,000,000. Officers: Frank Tanner, Iowa City, vice-president and general manager; Otto Hill, Davenport, secretary and treasurer; D. T. Davis, Iowa City,

superintendent; Irwin Kettlewell, Iowa City, chief engineer. [E. R. J., Dec. 4, '09.]

**Kansas Union Traction Company, Altamont, Kan.**—This company advises that it has not yet placed any contracts for the construction of its proposed railway. It will extend from Parsons to Coffeyville, Columbus, Oswego, Altamont, Mound Valley and Cherryvale, 90 miles. Work is scheduled to begin the first of the year. Repairs shops and the power station will be located at Altamont. The company plans to furnish current for light, heat and power purposes. Capital stock authorized, \$1,000,000; issued, \$500,500. Officers: William J. Jones, Altamont, president; Phillip Strack, 23 Postal Telegraph Building, Indianapolis, Ind.; Barney McDaniel, Altamont, secretary; C. N. Petty, Altamont, treasurer; Archer, Rollins & Company, Kansas City, Mo., electrical engineers. [E. R. J., Aug. 21, '09.]

**Kansas City-Western Railway, Leavenworth, Kan.**—This company plans to gradually take up all the 60-lb. rails on its line between Kansas City and Leavenworth and relay the track with 70-lb. rails. About 1 mile of this work has already been done. Work has been started by the company on a new bridge on the Fort Leavenworth Reservation. It is to be 450 ft. long and will be of steel construction with concrete abutments and pedestals.

**Wichita Railroad & Light Company, Wichita, Kan.**—This company expects to construct 10 miles of new track during 1910. W. A. Martin, purchasing agent.

**Lake Charles Railway, Light & Water Works, Lake Charles, La.**—This company will build 6½ miles of new track from Edna to Kinder, La., in 1910. J. A. Landry, general manager.

**Maryland Electric Railways, Annapolis, Md.**—This company has nearly completed track and overhead line for a distance of about 8000 ft., this additional trackage being practically an extension of two of its main sidings, one siding being extended about 6500 ft. and the other about 1500 ft. An 80-lb. A. S. C. E. T-rail is used in connection with this work. The overhead type of construction is Westinghouse catenary using ¾-in. messenger and 000 grooved copper wire.

**Detroit, Lansing & Grand Rapids Railway, Detroit, Mich.**—This company has awarded a contract to F. C. Wales, 8 Beacon Street, Boston, Mass., for making the location surveys for its projected railway between Detroit, Lansing and Grand Rapids. Work was started on Dec. 6. [E. R. J., Dec. 11, '09.]

**\*Traverse City, Mich.**—L. K. Gibbs is said to have announced that he has financed his proposition to build a street railway in Traverse City, and that he will be ready to begin work as soon as a franchise is obtained. It is stated that the preliminary surveys have been made and the right-of-way has been secured.

**Eastern Montana Electric Railway, Billings, Mont.**—Daniel D. Gile advises that this company was incorporated for the purpose of building an 85-mile passenger and freight line to connect Billings, Laurel, Selesia, Joliet, Fromberg, Bridger, Belfrey, Bear Creek, Washoe and Red Lodge. The company is considering the extension of the line westerly from Red Lodge, through Carbon County to the valley of the Stillwater, following the river to its junction with the Yellowstone at Columbus, then easterly through Park City to Laurel. This extension would mean at least 80 miles of additional track. It is the intention to start construction during next spring. Capital stock authorized, \$500,000. Headquarters, Billings. Officers: A. C. Logan, Billings, president; Daniel D. Gile, 27 William Street, New York, N. Y., vice-president; G. H. Kesselhuth, Billings, secretary; George F. Bennighoff, Billings, treasurer; F. A. Kesselhuth, Billings, engineer in charge; Herbert F. Pierce, Boston, Mass., chief engineer. [E. R. J., Nov. 27, '09.]

**Lincoln (Neb.) Traction Company.**—This company contemplates building 3 miles of track during the coming year.

**Brooklyn (N. Y.) Rapid Transit Company.**—This company is constructing a double-track line on Nostrand Avenue running south from Flatbush Avenue to Avenue U, representing about 12,025 ft. of single track measurement. The company states that it is quite likely that a small portion of this work will be deferred until next year.

**Long Island Railroad, Long Island City, N. Y.**—This company will build 28 miles of new track during 1910.

**New York, N. Y.**—John J. Hopper and E. J. Farrell, contractors, have submitted plans to the Public Service Commission of the First District for a comprehensive subway, making a complete loop around Manhattan and the Bronx. The estimated cost is about \$130,000,000. The proposed line starts at the Battery and is to run up First Avenue, through the East Side, to Harlem, loop around the eastern

edge of the Bronx and return to the Battery by way of Jerome Avenue, Elmhurst and Edgcombe Avenues, St. Nicholas and Eighth Avenues, Hudson Street and West Broadway. There are to be five crosstown links connecting the East and West Side lines. It is proposed to build the tunnel in twenty-four sections, of about 1 mile each, and with four tracks.

**Pennsylvania & Ohio Railway, Ashtabula, Ohio.**—This company has placed a contract with the Cleveland Frog & Crossing Company for the necessary Y's and special work to be used in connection with contemplated improvements to its line.

**Hamilton, Waterloo & Guelph Railway, Hamilton, Ont.**—During 1910 this company will construct 60 miles of new track. New lines will be built between Hamilton and Berlin, and Hamilton and Guelph. John Patterson, manager.

**Oregon City, Beaver Creek & Mollala Railway, Oregon City, Ore.**—It is stated that F. M. Smith, who is promoting a plan to build an electric railway from Oregon City to Silverton, has secured stock subscriptions from different sources amounting to \$100,000. Work is to begin at once. [E. R. J., Oct. 2, '09.]

**West Side Electric Street Railway, Charleroi, Pa.**—This company announces that it will build a 10-mile interurban line between Charleroi and Ellsworth next year. D. G. Callihan, Belle Vernon, general superintendent.

**Schuylkill & Dauphin Traction Co., Harrisburg, Pa.**—During 1910 this company will build 2 miles of new track. W. E. Harrington, general manager.

**\*Pittsburgh & Allegheny Valley Street Railway, New Kensington, Pa.**—This company has been organized to build an electric railway from the northern terminus of the Pittsburgh Railways at Oakmont, through New Kensington, Arnold and Valley Camp, to Apollo, Leechburg, Ford City and Kittanning. George B. Campbell, Jr., New Kensington, has begun making the surveys for the route between Ford City and Leechburg. Most of the rights-of-way have been secured.

**Quebec Railway, Light & Power Company, Quebec, Que.**—Edward A. Evans, chief engineer of this company, has been instructed to revise the plans already made for the building of the Quebec & Saguenay Railway from St. Joachim to Murray Bay. The charter of this company is held by interests identified with the Quebec Railway, Light, Heat & Power Company, and it is expected that work will be commenced early next spring. The route of the proposed line for the greater part of its course is along the St. Lawrence River. The company will construct 2 additional miles of track to its line during 1910.

**Rhode Island Company, Providence, R. I.**—This company has just completed the extension of its Greystone line from its present terminus to Enfield, a distance of 5500 ft.; also the extension of its Douglas Avenue line from its present terminus, for a distance of 1800 ft.

**Johnson City, Tenn.**—J. B. Cox, Johnson City, Tenn., who is interested in a proposed electric interurban railway between that point and Bristol, Tenn., is said to have announced that the company has not yet been organized, but that the projected route is from Johnson City via Austin Springs, a summer resort, thence near Piney Flats, Bluff City and Thomas Bridge, and up the Beaver Creek Valley to Bristol, about 24 miles. [E. R. J., March 20, '09.]

**East Texas Traction Company, Dallas, Tex.**—C. L. Wakefield advises that surveys are now being made for this projected railway between Dallas, Mesquite, Forney and Terrell, 34 miles. A preliminary association, known as the East Texas Traction Company, has been formed to promote the building of the line. Incorporation papers have not yet been filed. It is probable that work will be started on March 1 next. Officers: Schuyler B. Marshall, Gaston Building, president; E. W. Morton, Jr., vice-president; C. L. Wakenfield, 262 Live Oak Street; W. H. Gaston, treasurer, all of Dallas. [E. R. J., Dec. 4, '09.]

**Northern Texas Traction Company, Fort Worth, Tex.**—This company has arranged for the double tracking of 7200 ft. of the Polytechnic College line in Fort Worth. The work will be carried out by the Stone & Webster Engineering Corporation, Boston, Mass.

**Marshall (Tex.) Traction Company.**—This company announces that it has completed 1 mile of its street railway in Marshall. The total length of the line will be 4 miles. Two cars will be operated. Power will be rented from the Arkansas-Texas Consolidated Electric Company. M. Turney, president and general manager. [E. R. J., July 4, '09.]

**\*Bristol, Wash.**—It is stated an eastern syndicate has agreed to build an electric railway from White Salmon or Bingen, on the Columbia River, north to Snowden, a dis-

tance of about 16 miles. White Salmon business men, in co-operation with W. W. Swan of the Swan Lumber Company, Bristol, have subscribed \$350 for the purpose of a preliminary survey to be made. H. S. Hall, White Salmon.

**Milwaukee Western Electric Railway, Milwaukee, Wis.—**The Railroad Commission has granted a certificate of public convenience and necessity to the Milwaukee Western Electric Railway, covering a route extending from Milwaukee to Beaver Dam, Wis., a distance of 56 miles with a division from Sussex, through Pewaukee to Waukesha.

**SHOPS AND BUILDINGS**

**Central California Traction Company, Sacramento, Cal.—**It is stated that this company, in conjunction with the Northern Electric Company, Chico, plans to erect a 10-story steel and concrete building at the northeast corner of Eighth and L Streets. The ground floor, it is said, will be used as a terminal, and the first floor for headquarters for both companies.

**Augusta-Aiken Railway & Electric Company, Augusta, Ga.—**It is stated that this company is considering the erection of machine and car shops in Augusta.

**Virginia Railway & Power Company, Richmond, Va.—**This company proposes to build a new terminal passenger station, with car house and repair shops, at the corner of Seventh and Perry Streets, in Manchester. The car house will cover a block on Seventh Street from Perry Street to Porter Street, 300 ft., with a depth of about 120 ft. It will be erected of either brick or concrete. On a lot owned by the company near the new reservoir twin car houses will be erected, each 120 ft. x 288 ft. They will be built of either concrete or brick. Other buildings to be erected are a paint shop 75 ft. x 90 ft., a storehouse 80 ft. x 90 ft., a blacksmith shop 40 ft. x 60 ft., besides some smaller buildings for oil and sandhouses, and also for providing lockers and rooms for the employees. The company will also erect at the corner of Twenty-ninth and Perry Streets a new station and waiting room, besides a car house and shops for small repairs.

**POWER HOUSES AND SUBSTATIONS**

**Pensacola (Fla.) Electric Company.—**This company has purchased and expects to install, within the next few weeks, a 500-kw turbine and a 300-kw motor-generator set.

**Bangor Railway & Electric Company, Bangor, Maine.—**It is stated that this company has acquired the entire property of Veazie mills water power and dam, the present power station. The property, up to the present time, was leased to the company for a term of 999 years by its owners, J. W. Palmer, C. D. Stanford, and F. W. Hill. The company is said to have paid \$150,000 for the property.

**Menominee & Marinette Light & Traction Company, Menominee, Mich.—**This company has in course of construction a hydro-electric power plant on the Menominee River, 20 miles north of Menominee. A storage of approximately 500 acres will be obtained. A canal 3400 ft. long and 118 ft. wide at the bottom connects the pond with the power station, which is 96 ft. x 124 ft. The present installation consists of two 1100-kva, 2300-volt a. c. Westinghouse generators; two 100-kw d. c. exciters; four 750-kw 2300-33,000-volt Westinghouse transformers with Westinghouse switchboard; two quadruplex 1900-hp and two 225-hp duplex Dayton Globe turbines, controlled by Lombard governors. The peak load capacity of the plant at lowest stage of water when completed will be in excess of 6000 hp. A three-phase transmission line, built to follow the highway on private right of way, connects the plant with Menominee and Marinette. The substation, also in course of construction, 28 ft. x 70 ft., is located in Menominee, is fireproof, and will contain, besides the step-down transformers and switchboards, 2500-volt motor-generator sets for street railway service and apparatus for operating luminous street arcs. Most of the construction work was done by the company.

**Twin City Rapid Transit Company, Minneapolis, Minn.—**Plans have been made by this company for the improvement of its power house at Sixth Avenue southeast and the river bank. Four new steel stacks, each 265 ft. high, are to be erected, to take the place of the two brick stacks now in use, which are 30 ft. shorter.

**Portland Railway, Light & Power Company, Portland, Ore.—**This company is stated to have purchased the property of the Portland Water Power & Electric Transmission Company, the price being estimated at \$200,000. The property consists of 1642 acres of land along the Clackamas River and a bridge across the river. It is stated that 15,000 hp can be developed by the purchase of this property.

**Virginia Railway & Power Company, Richmond, Va.—**This company is considering the purchase of a new steam turbo-generator.

**Manufactures & Supplies**

**ROLLING STOCK**

**Cincinnati (Ohio) Traction Company** contemplates ordering 75 single-truck open cars next spring.

**Washington Railway & Electric Company, Washington, D. C.,** will purchase 50 cars for city service shortly.

**Utica & Mohawk Valley Railway, Utica, N. Y.,** will order between 12 and 15 city cars in the near future for use in Utica.

**Whatcom County Railway & Light Company, Bellingham, Wash.,** is receiving bids on three 47-ft., double-truck, closed city cars.

**Los Angeles & Redondo Railway, Redondo Beach, Cal.,** proposes to re-equip 27 cars with Westinghouse 306 inter-pole 4-motor equipments.

**Porto Rico Railways, San Juan, P. R.,** has ordered 10 flat and five cane cars from the Wonham-Magor Car & Manufacturing Company, New York.

**Houston (Tex.) Electric Company** has placed an order with the Cincinnati Car Company for five double-truck cars to be mounted on Standard Motor Truck Company's type O-50 trucks.

**Columbia Electric Street Railway, Light & Power Company, Columbia, S. C.,** has closed a contract with the Pay-As-You-Enter Car Corporation, New York, to operate pay-as-you-enter cars over its lines.

**Seattle-Everett Interurban Railway, Seattle, Wash.,** has placed an order with the Niles Car & Manufacturing Company for six 51-ft. interurban motor cars to be mounted on Baldwin Locomotive Works class 78-25 trucks.

**Grand Junction & Grand River Valley Railway, Colorado Springs, Col.,** in addition to the three combination cars mentioned in the ELECTRIC RAILWAY JOURNAL of Oct. 30, 1909, will buy one electric locomotive within the next six months.

**Fort Dodge, Des Moines & Southern Railway, Boone, Ohio,** has just placed an order with the Haskell-Barker Car Company, Michigan City, Ind., for 150 freight cars, some of which will be 80,000-lb. capacity, gondolas, and the remainder 60,000-lb. capacity, box cars.

**British Columbia Electric Railway, Vancouver, B. C.,** mentioned in the ELECTRIC RAILWAY JOURNAL of Dec. 11, 1909, as having five cars under construction in the plant of the John Stephenson Company, will have these cars built 28 ft. long and of the semi-convertible type. They will be constructed for pay-as-you-enter service and will be mounted on Brill 27-G-1 trucks.

**North Jersey Rapid Transit Company, Paterson, N. J.,** mentioned in the ELECTRIC RAILWAY JOURNAL of Nov. 20, 1909, as having placed an order with the Jewett Car Company for six cars, has decided on the following details:

Seating capacity	44	Underframe	Wood and Steel
Weight	14,000 lb.	Car trimmings	Bronze
Wheel base	6 ft.	Curtain fix.	Curtain S. Co.
Length of body	30 ft. 4 3/4 in.	Curtain material	Pantasote
Length over vestibule	41 ft.	Gongs	12 in. Foot
Length over all	42 ft.	Hand brakes	Ratchet Handle
Width inside	7 ft. 11 in.	Heaters,	
Width over all	8 ft. 10 1/2 in.	Peter Smith Hot Water	
Height inside	8 ft. 6 in.	Roofs	Monitor
Height, sill to trolley base	9 ft. 3 in.	Sanders	Ham
Height, rail to sills	3 ft. 3 in.	Seats	Walkover
Body	Wood	Varnish	Hildreth

**Shore Line Electric Railway, New Haven, Conn.,** reported in the ELECTRIC RAILWAY JOURNAL of Nov. 20, 1909, as having ordered 12 cars from the Jewett Car Company, has drawn up the following specifications for these cars, which will be of the center vestibule type.

Seating capacity	46	Fenders	Loco. Type Pilot
Weight	20,000 lb.	Gongs	12 in. Foot
Wheel base	6 ft. 6 in.	Hand brakes	Vertical
Length over vestibule	43 ft.	Headlights	Climax
Length over all	44 ft. 6 in.	Motors	four G. E. 217-B
Width inside	7 ft. 7 1/2 in.	Registers	New Haven
Width over all	8 ft. 4 in.	Sanders	Nichols Lintern
Height, rail to roof	12 ft.	Seats	H. & K. 100 A. E.
Body	Wood	Trolley retrievers	
Underframe	Steel	Wilson No. 2	
Car trimmings	Bronze	Trucks, type and make	
Control system	Type M	Baldwin M. C. B.	
Curtain fix.	Curtain S. Co.	Varnish	Hildreth
Curtain material	Pantasote	Vestibule	Center

## TRADE NOTES

**H. S. Bradfield** has resigned as general sales agent of the New York Car Wheel Company, New York, N. Y.

**Holland Trolley Supply Company, Cleveland, Ohio**, has opened a sales office in that city at Room 415, Schofield Building.

**Thomas F. Carey Company, 141 Milk Street, Boston, Mass.**, desires to consider agencies for the Eastern States for gears, pinions, car and truck equipment and track supplies on an exclusive basis.

**Ohmer Fare Register Company, Dayton, Ohio**, reports among many new contracts received, one for equipping the entire system of the Syracuse (N. Y.) Rapid Transit Company with Ohmer registers and another for equipping the lines of the Lincoln (Neb.) Traction Company with Ohmer registers.

**Cleveland Tool & Supply Company, Cleveland, Ohio**, announces that Charles C. Wright has been connected with the company since Dec. 1, 1909. Mr. Wright, who has an interest in the concern, was a salesman in the Cleveland office of the Carnegie Steel Company, Pittsburgh, Pa., for several years past.

**Parker Clark Electric Company, New York, N. Y.**, announces the retirement of W. G. Clark and the election of Dr. George N. Miller to the office of president and director. The offices of the company have been moved from the Singer Building to the Lincoln Square Building, 1966 Broadway, New York.

**C. A. Wood Preserver Company, Austin, Tex.**, recently received an order from one of the large telegraph companies for furnishing about 3000 gal. of C. A. Wood preserver per month for use in treating the butts of poles. A number of electric railway companies are now using this preservative on their poles.

**Wonham, Magor & Sanger, New York, N. Y.**, announce that the fire which destroyed the Athenia, N. J., works of the Wonham-Magor Car & Manufacturing Company on Dec. 11, 1909, has interfered in no way with their facilities for making and shipping H-B wheel guards, as the plant for that work was unaffected.

**Edward B. Smith & Company, Philadelphia, Pa.**, announce that Herbert H. Dean and Thomas Newhall have been admitted to membership in the firm. Francis E. Bond has retired from active partnership and has become special partner. Osborn W. Bright and Charles F. Bloomer have retired from membership in the firm.

**Morgan Fare Register Company, Indianapolis, Ind.**, about March 1, 1910, will have in operation on various interurban railways in the Central States 100 or more of its new interurban fare registers. The new model registers and records the fare and stations from and to which passengers are traveling on any system of less than 500 miles.

**Western Electric Company, New York, N. Y.**, announces that the Louisville & Nashville Railroad is installing its telephone train dispatching equipment between New Orleans and Mobile. The Chicago & Northwestern Railroad is also installing Western Electric telephone apparatus for dispatching on the 198 miles of track between Chadron and Long Pine, Neb.

**Root Spring Scraper Company, Kalamazoo, Mich.**, has shipped 192 sets of its No. 2 and No. 5 scrapers to the Portland Railway & Light Company, Portland, Ore.; also 100 sets of scrapers to the Boston & Northern Street Railway, Boston, Mass. The company has also recently shipped on order from 6 to 40 sets of scrapers to about 100 other electric railways throughout the United States.

**Climax Manufacturing Company, Corry, Pa.**, has appointed the Railway Equipment Company, 72 and 74 First Street, Portland, Ore., selling agents for the new improved Climax geared locomotive in Oregon, Northern California and that section in Washington tributary to the Columbia River. The Railway Equipment Company is opening a number of Eastern accounts and desires to hear from manufacturers who wish to extend their trade on the Pacific Coast.

**Simmen Automatic Railway Signal Company, Toronto, Can.**, will have its head office at 1753 Queen Street West, Toronto, Ont., hereafter, having closed its San Francisco office. The company was notified by the Toronto & York Radial Railway on Nov. 25, 1909, that the installation of Simmen automatic block signals which have been in trial service on that road for eight months has proved entirely satisfactory and has been taken over by the railway company in accordance with the terms of the construction contract.

**Paul M. Chamberlain, Chicago, Ill.**, has opened an engineering office at 1522 Marquette Building, Chicago. Mr.

Chamberlain was graduated from the Michigan Agricultural College in 1888, and from Cornell University in 1890. For several years he was connected with the Brown Hoist Company, Cleveland, Ohio; Frick Company, Waynesboro, Pa.; Hercules Iron Works, Aurora, Ill. Then he accepted the assistant professorship of mechanical engineering at the Michigan Agricultural College. For the last two years and a half Mr. Chamberlain has been connected with the Under Feed Stoker Company of America as chief engineer, and has made a special study of boiler-room equipment, economy in fuel burning and smoke abatement. As an independent consultant he will devote his time to improving existing installations and designing new ones.

**British Thomson-Houston Company, Rugby, England**, has brought out a leakage indicator for use with trolley standards of double-decked cars. Where passengers ride on the roof of the cars and there is a possibility of their coming in contact with the trolley pole, it is necessary to carry the current from the trolley wheel on a separate conductor, which is usually inside the pole and insulated from it. However, if this installation should become defective, the pole and standard would become alive. The leakage indicator is so arranged that if this should be the case a bell will ring and simultaneously two red lamps fixed above the car platform will light. This provision of two definite, independent and automatic signals, one audible and the other visible, meets the recommendations of the Board of Trade. The indicator has been in successful use for the last five years on several British roads.

## ADVERTISING LITERATURE

**James Beggs & Company, New York, N. Y.**, have printed a new and greatly enlarged edition of their publication on feed-water filtration.

**Power Specialty Company, New York, N. Y.**, is distributing a catalog illustrating and describing the construction and application of Foster superheaters to all classes of boilers.

**Goheen Manufacturing Company, Canton, Ohio**, has prepared two folders stating the advantages of using "Carbonizing Coating" for protecting steel structures and "Galvanum," a protective paint for galvanized iron.

**Electric Storage Battery Company, Philadelphia, Pa.**, is distributing bulletins Nos. 116 and 117, the first dealing with "Exide" vehicle batteries and the second with the installation, care and operation of storage batteries for signal and car lighting service.

**Sprague Electric Company, New York, N. Y.**, has described and illustrated its multilets in a publication known as No. 434, dated November, 1909. In Bulletin No. 110, which supersedes Bulletin No. 107, the company has described and illustrated its Type S continuous-current direct-driven generators for lighting and power.

**Crocker-Wheeler Company, Ampere, N. J.**, has issued bulletins Nos. 116, 117 and 118. The functions of the motor-generator set and the methods of choosing the motor-generator best adapted for each condition are outlined in Bulletin No. 116. How motor drive has gained results for the laundries is outlined in Bulletin No. 117. The application of the small direct-current motors to laundry apparatus, printing presses and other machinery with similar requirements is brought out in Bulletin No. 118.

**General Electric Company, Schenectady, N. Y.**, has issued Bulletin No. 4702 showing the advantages to be gained by the use of the horizontal Curtis steam turbine in connection with the pumping equipment of fire boats, and Bulletin No. 4708, in which is described an instrument recently placed upon the market by the company for use in the testing of wattmeters. The company has also recently issued pamphlets 3878 and 3874. The first illustrates and describes the method of charging electric automobiles from alternating-current circuits by means of the General Electric rectifiers; the other shows the advantage of the use of tungsten lamps in connection with gasoline cars.

**Joseph T. Ryerson & Son, Chicago, Ill.**, have issued a reference book for 1910 which they have given the title "Everything in Iron and Steel." In recent years Ryerson & Son, in order to serve satisfactorily the diversified interests to which they cater, have been forced to add to their line numerous specialties which through lack of space they have been unable to illustrate in Ryerson's Monthly Journal & Stock List. For some time, therefore, they have felt the necessity of supplementing the monthly with a publication which would comprehensively illustrate their complete line, with the result that the reference book has been issued. Ryerson's Monthly Journal & Stock List will be continued as heretofore, and the "Reference Book" will be issued only from time to time as occasion demands.