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VALUES IN THE CITY OF ST. LOUIS

The total represented by the St. Louis Public Service Commission as the fair value of the property of the United Railways Company of St. Louis shows an appalling difference when compared with the value claimed by the company. The conclusion reached by the commission as a result of its valuation of the property is that the fair value at present is, in round figures, \$37,600,000, while the company shows a total capitalization, bonds and stock, of \$101,300,000. The reasons why the commission takes the low figures named are set forth in the abstract of its report which is published in another part of this issue. The purpose of the activities of the commission in this case appears to be to place before the Municipal Assembly, to which it reports, data regarding the affairs of the railway company. In other words, the commission is a local body acting entirely as the representative of the Assembly. It investigates and reports, and such action as may be taken as a result of its report is taken by the Municipal Assembly. The company is not seeking to recapitalize, to reorganize or to change its rates. The position of the ELECTRIC RAILWAY JOURNAL concerning great differences in the results of valuation of a property by representatives of the public and of a corporation concerned is that so far as possible outstanding securities should be protected. The argument in favor of this course is not that it rewards any who are morally or legally responsible for the creation of securities that did not represent actual investment, but that it protects those in the community who, for the most part, were innocent purchasers of the same securities for cash in later years. Wherever possible the regulation of values by commissions that have the power of such regulation should begin with the values added in the future and not with the values represented by securities issued in the past, unless, as in the remedy proposed in Buffalo, with a fair protection of existing securities, part of the earnings of the years to come may be used to retire some of the old capitalization.

THE USE OF TICKETS WITH P. A. Y. E. CARS

The description of the large terminal building for surface cars planned by the Public Service Railway which appears elsewhere in this issue brings up the question of the value of advance payments by means of a ticket booth system on a railway where pay-as-you-enter cars are used exclusively. In this case the decision to erect a terminal building is primarily due to the extreme conditions of congestion in the city of Newark, N. J., where, owing to the restricted area of the business district, it has actually become a physical impossibility to get enough cars through the city to handle the rush-hour crowds. Under such circumstances it is natural that the plans for the terminal should include an advance-payment scheme, so that a car may be loaded promptly upon arrival and sent out upon another trip with the least possible delay. This plan, while of course not new, is one which could be used more often than it is. It is applicable, of course, only to points where a large proportion of the load gets on at one or two stops, or, as is expected to be the fact in the case in point, where the entire load gets on at one place. The opportunity for time saving by advance-payment systems or the general use of tickets is shown by the figures and records of the average time required by different numbers of passengers to board cars of different types published in recent issues of this paper. These have shown that the time required to load thirty-five passengers on pay-as-you-enter cars of four representative cities was about one minute. To load the same number of passengers on a non-prepayment car appeared to average surprisingly close to thirty seconds. Manifestly, if prepayment cars are used, and no city system would to-day consent from choice to the use of the old system of fare collection, it would be idle to expect to maintain a regular one-minute headway on a line including a loading point at which thirty or forty passengers might board. Assuming, however, the universal use of tickets, this headway could easily be maintained, for the loading of the cars would then be quite comparable to that of a non-prepayment car with a loading time of only thirty seconds. In practice, where it is possible to encourage the use of tickets in place of the payment of cash fares their partial use at congested points would seem to provide at least a means for increasing schedule speed.

LOSSES IN MULTI-CLASS FARE SERVICE

Those American electric railway companies which believe that some extra profit is possible through the operation of cars de luxe with an extra fare will be interested in the present discussion on the proposed electrification of the Berlin Stadtbahn in so far as the question of class fares is concerned. The facts brought out in this discussion have demonstrated forcibly the economic absurdity of charging more than one rate of fare unless the equivalent for the higher fare is a faster service, say, like

the "limited" train of the American interurban railway. Even in Germany, where the feeling of class is still so sharply defined, the opinion is gaining ground that the slightly better grade of upholstery which now constitutes the difference between the second-class and the third-class cars in Europe does not warrant a 50 per cent increase in fare. "First-class" cars are not operated on the Stadtbahn or on the other urban rapid transit lines in Germany, so that the discussion there has been confined to the relative merits of "second-class" and "third-class" cars only. Hence, when the Prussian State Railways announced that the cost of electrifying the Stadtbahn and of eliminating the present annual deficit of \$200,000 would have to be met by an increase of fares throughout, one privy councillor, W. A. Schulze, a keen railway economist, proved that a good part of this deficit would be wiped out if only one class of cars was used instead of two. He also showed that the annual gross earnings per car of the third-class cars are 75 per cent more than those of the second-class cars and that the mileage obtained per car is 150 per cent more with the third-class than with the second-class cars. Mr. Schulze's statements are certainly borne out by the experience of the rapid transit systems in London, Berlin and Hamburg, where the higher fare cars have proved to be unprofitable, if not an actual hindrance to most effective operation. The tendency of the times is also indicated by the fact that a two-class system is not used at all on the later underground tube lines of London and that the management of the new Hamburg rapid transit system proposed originally to install single-class operation. This plan was rejected, but its wisdom is proved by the result, because while the standard two-car train of the Hamburg system has 25 per cent of its space reserved for second-class passengers, the actual proportion of such travel to the total riding is only 11 per cent on business days and not more than 15 per cent on holidays.

THE BOSTON ELEVATED ORGANIZATION

The growth of a large electric railway system, particularly of one embodying many classes of service, brings an interest to the problems of organization which is necessarily absent on a small road, although many of the principles of administration are similar in each case. For this reason more than ordinary interest attaches to the recent changes in the organization of the Boston Elevated Railway, which were described in a recent issue.

In its present status the Boston organization marks a decided increase in subdivided responsibility among its higher officers. The relation of the executive committee of the board of directors and the president to the administration of the company has undergone no change from the practice of recent years. But the increasing size and complexity of the system have required the separation of constructive administration from that of transportation and maintenance, and the placing of the first vice-president in charge of many features of the company's business, including immediate charge of the task of directing the important extensions of the company's elevated and subway system, with the organization of separate bureaus of transportation and maintenance, is the logical outcome of the

extraordinary development of rapid transit in Boston in the past few years. The situation is somewhat analogous to that which dictates the subdivision of responsibilities among the vice-presidents of a large steam railroad system under the heads of construction, transportation, etc., although it does not as yet require so complete a division of labor among the executive officers.

The placing of the second vice-president in direct charge of the bureau of transportation and the further establishment of a maintenance bureau under a chief, both reporting directly to the president of the company, are also natural steps under the Boston conditions. This insures a broad oversight of the work of each group of departments forming a bureau, and at the same time it does not preclude a striking degree of co-operation among subordinate officials. The methods of insuring this co-operation are of much interest and are well illustrated by the requirement of the company that in certain cases subordinate department heads shall report through an officer ultimately responsible to the chief of another bureau before reaching their own immediate executives. There is established in this way an intersection of the lines of responsibility whose principal purpose is the interchange of information at the point of contact. Thus, the roadmaster of rapid transit lines reports to the chief engineer of maintenance of way through the superintendent of rapid transit lines. The latter is chiefly concerned with operating problems, but it is considered by the company to be to its advantage that he should have full information concerning maintenance work in his department no less than direct knowledge of transportation matters in this branch of the service. Again, division trackmasters are responsible through their respective division superintendents to the chief engineer of maintenance of way, and this arrangement goes far to break down the walls between individuals in the service and give men established in a stated bureau a knowledge of what is going on outside their immediate responsibilities. A transportation officer to whom a maintenance official reports en route to the latter's superior does not exercise any substantial executive powers in such a case, but as the business connected with maintenance crosses his desk he obtains a running idea of the daily situation which is of great value, and, conversely, the man who reports to him gets the benefit of the transportation official's constant touch with the conditions prevailing in the transportation service.

Nothing in the organization hinders the performance of special duties by either of the vice-presidents in addition to their tasks as bureau heads. Thus, the second vice-president continues in charge of the public relations of the company along the lines previously practised, besides serving as chairman of the company's efficiency committee. In the event of special circumstances arising which require the benefit of the first vice-president's experience, there may easily be assigned to him such tasks as the president deems necessary. The changes made have been planned to strengthen the company's organization as a whole by an equitable distribution of its administrative burdens, and if further modifications should become necessary, there appears to be nothing in the existing subdivision of responsibility to prevent their being made.

THE HUDSON TUNNEL SYSTEM RE-FINANCING

It is to be hoped that, notwithstanding the natural disappointment at the inability of the Hudson & Manhattan Railroad to earn enough money to meet its requirements, the property will be restored financially without the adoption of any graver measures than are proposed in the plan for the readjustment of the debt. The idea which gave birth to the tunnel project was daring and unique, and the fact that it has been supported by bankers of stability and high standing shows that it met the tests which financiers are accustomed to impose upon new enterprises.

The Hudson system, of course, cannot be gaged by the ordinary standards that are applied to railways of the usual type. It is an electric line but without the same conditions of traffic or territory that are found in either an interurban or an urban property. It is like an electric line in that its revenue must be received largely from passenger traffic. It is, in short, a railway devised to meet what it was believed would come to be a public demand for a special form of service. It has not the potential possibilities of increase of traffic by its own efforts which are held by the railway of the usual urban or interurban type. Its traffic consists almost entirely of commuter travel between Manhattan Island and the stations of some of the great trunk lines extending to New Jersey points. If it had a part in the proposed scheme of subway development in Greater New York, it would open up new avenues of traffic. Under present conditions, however, it is restricted very closely to the same sources of travel upon which it relied at the commencement of operation. The joint arrangement by which through trains are operated between lower Manhattan Island and Newark, N. J., in connection with the Pennsylvania Railroad was necessarily an innovation which involved some experiment and risk because it meant, in connection with the new Manhattan terminal of the Pennsylvania Railroad, a disturbance of old-established avenues of traffic. The other new project of the company, the proposed extension from Thirty-third Street and Sixth Avenue, Manhattan, to the Grand Central Terminal, will undoubtedly divert some traffic from existing carriers, but to a large extent this will be of the same specialized character which now marks the great bulk of travel on the property.

The reports in relation to the Hudson terminal property made by Mr. Calderwood and Mr. Menden, of the Brooklyn Rapid Transit System, bear out the opinions which are held generally. That is to say that the property is "of first-class construction, fully equipped and in good physical condition." They believe, moreover, that the various developments in transit facilities and possibilities in the great traffic and terminal districts in and surrounding New York will result in an increase in gross earnings at a higher rate than the normal 6 per cent which is the average increase in Greater New York. This expectation is not based on a further increase in the rate of fare, and President McAdoo of the Hudson & Manhattan company says that this will not be asked. The only increase in rates which was made was borne by the traffic without detrimental effect, and the next remedy, apart from the readjustment now proposed, is an increase in the density of traffic with resultant improvement in net earning capacity.

PUBLIC AND PRIVATE EFFICIENCY

Municipal ownership and operation of public utilities is like everything else in the respect that it must stand or fall on its own merits. This belief that the wisdom or otherwise of municipal ownership should not be decided in accordance either with the ideas of rabid opponents or indiscriminate advocates naturally results in an effort to tell the truth about the successes as well as the failures of the policy. It results also in an effort to throw such light as we can get on both sides of the problem. But so strongly do opponents and advocates hold their opinions, or prejudices rather, on this subject that a judicial attitude is almost offensive to both.

It cannot be overlooked, nevertheless, that there is, to say the least, significant coincidence in the fact that the New York Central Railroad was opening its colossal new terminal at a time when New York was in the throes of an already ten-year-old discussion of its subways. As a specimen of municipal inefficiency the handling of the subway situation is certainly as good an example as is the building of the Panama Canal of a great public work well and speedily done by governmental means after the failure of the French interests.

While New York has been talking about the completion of its subway system, the Pennsylvania Railroad and the New York Central have completed tunnels and terminals involving problems and expenditures as great as, if not greater than, are called for in the subway enterprise.—The manner in which these corporations attacked the unknown difficulties of terminal electrification, found the money for their vast building operations and put through whole projects costing, together, not less than \$350,000,000 certainly affords a striking contrast to the handling of the subway situation and one that argues impressively for the superior efficiency of private enterprise. Had any transportation company been as slow to provide for growing traffic as the city of New York has been to do the subway building which the municipal ownership advocates would not allow any grasping corporation to perform, such a company would have deserved all the censure that it would have got from a dissatisfied public.

It cannot be answered that the subway undertaking involved prohibitive costs or considerable engineering difficulties, yet the subways are hardly begun while the railway improvements are completed and waiting for the subways that were promised to feed the railway terminals and distribute the passengers who use them. In spite of this, strong opposition to the subway contracts has been made, partly on the ground that they would prevent municipal operation for years to come. The chairman of the New York Public Service Commission calls the eleventh-hour attempt to wreck the dual subway system "the slimiest, dirtiest, most contemptible political move ever attempted in this city." In fact it is an exhibition of the unreasoning municipal ownership advocate and the political trickster pulling the same oar, which, though not a new spectacle, is hardly one well calculated to make adherents for the belief that governmental agencies can build and operate railways or other public utilities better than a corporation will do the work.

Pierce Street Carhouse of the Omaha & Council Bluffs Railway

A Description of a Double-Deck Carhouse of Reinforced Concrete Construction Embodying a Number of Novel Features
—The Article Also Describes Economies of Location and Design, as Well as the Trainmen's Quarters and Accessories .

The operation of a street railway in a city where grades as steep as 5 and 10 per cent are common is far from ideal, yet there are possibilities of economy on a system confronted by these difficulties which do not exist where street grades are comparatively level. By taking advantage of these natural physical conditions in the selection of a site for the Tenth and Pierce Streets carhouse in Omaha, Neb., the Omaha & Council Bluffs Street Railway Company was able to obtain a building of maximum storage capacity at a minimum cost. A two-story carhouse, which was the design used in this instance, may be built at a much lower cost per unit of storage capacity than a one-story building when

The frontage on the latter is 264 ft., and that on the two former is 147 ft. The second floor does not cover the entire ground floor area, but is 179 ft. in length by 147 ft. in width. This arrangement permitted the special work leading to the twelve storage tracks on the second floor to be installed on the roof over the first floor. It also allowed open storage space for about two cars on each track leading into the building. If at any time the company desires to inclose this open space, the cost of the additional building will be comparatively small, as the first story was built with this change in view.

A 5.83 per cent ascending grade on Tenth Street and a



Omaha Carhouse—Exterior View from Eleventh Street Side

the track approaches involve no additional expense. The cost of the foundation in the two-story building is only slightly in excess of that required for a one-story structure, and the additional expense necessary to support the load coming from cars in storage on the second floor is practically offset by the reduction in roof area. The capacity of the heating plant may be reduced, and probably the greatest saving comes from the reduction in the amount of real estate required for a given storage capacity. The latter consideration was particularly true in the selection of a site for the Tenth and Pierce Streets carhouse, as it is centrally located, being only two blocks from the Union Station and just outside the business district.

The selection of this site offered possibilities other than that in station design. It is situated at a point where the transportation department may send out extra cars on short notice to handle the passenger traffic from excursion trains stopping at the Union or Burlington station. The distance between this carhouse and the steam road stations is so short, in fact, that it is possible for a traffic inspector to determine the amount of passenger traffic to be handled upon the arrival of the steam road trains and then order the cars out of the carhouse.

As the name of the carhouse would indicate, it is situated between Tenth and Eleventh Streets on Pierce Street.

3.45 per cent grade on Pierce Street permit cars to enter the first floor at the northeast corner of the building and to gain access to the second floor from the southwest corner. A single track from the double-track line on Tenth Street leads into the first-floor entrance, where it branches through special work into twelve storage tracks. In a similar way the approach to the twelve storage tracks in the second story is by way of a single lead off the Eleventh Street line.

BUILDING FOUNDATIONS AND FRAMING

When the site for the carhouse was prepared the excavation was carried down to the level of the first floor. The difference in elevation between the first floor and the sidewalk level made it possible to utilize the space under the sidewalk areas for storerooms on the Pierce Street side, and a part of the space under the sidewalk on Tenth Street was made available for a boiler room and vault by excavating to a depth of about 12 ft. below the first-floor level. This difference in elevation also made it necessary to inclose three sides of the property with a concrete retaining wall, which also serves as the building foundation. In order to provide sufficient natural illumination for the first floor 4-ft. areaways were constructed to extend to the level of the first-story windowsills. As these areaways encroached upon the sidewalk, it was necessary to surmount the outer

retaining wall with a 4-ft. guard fence built of two runs of pipe and cast-iron posts.

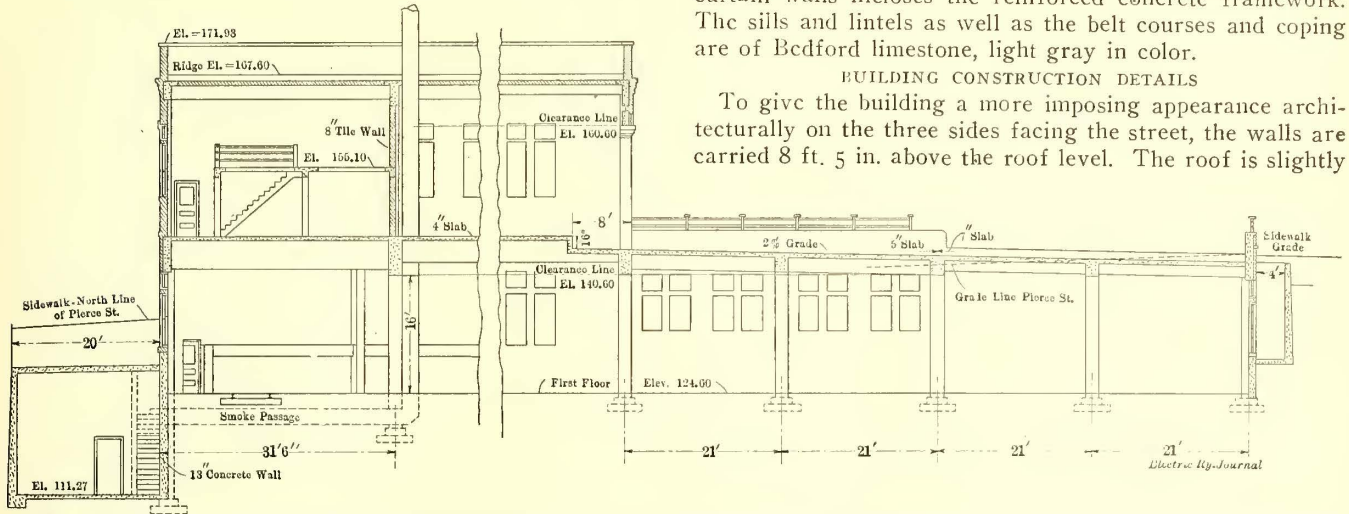
Heavy concrete foundations and pedestals support the reinforced-concrete building framework. The reinforced concrete columns supporting the second floor are 20 in.

spaced on 10-ft. centers and supported on concrete cross girders which rest on the building columns. A 1-in. coating of concrete, properly waterproofed, covers the hollow tile sheathing used in the roof construction.

Dark red-face brick laid in white mortar in the 13-in. curtain walls incloses the reinforced concrete framework. The sills and lintels as well as the belt courses and coping are of Bedford limestone, light gray in color.

BUILDING CONSTRUCTION DETAILS

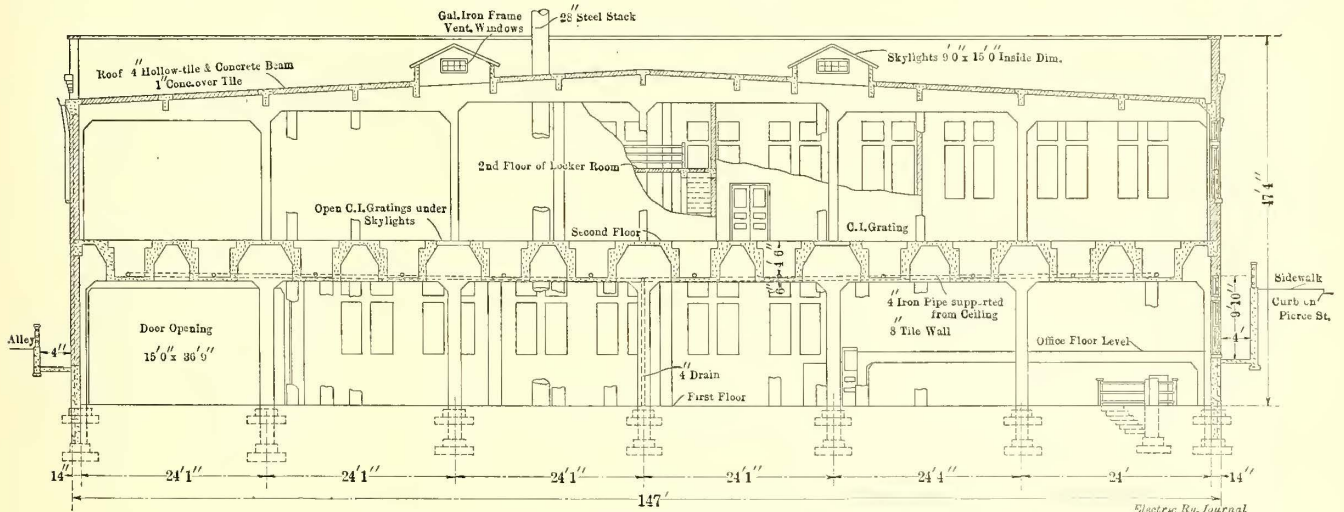
To give the building a more imposing appearance architecturally on the three sides facing the street, the walls are carried 8 ft. 5 in. above the roof level. The roof is slightly



Omaha Carhouse—Longitudinal Elevation of Ends of Building, Showing Second-Floor Approach from Eleventh Street

square, reinforced with Kahn bars. They are spaced at approximately 20-ft. intervals longitudinally and at intervals varying from 24 ft. to 25 ft. 5 in. transversely with the building. The columns on the second floor are 14 in. square and rest directly on the columns rising from the first floor. The floor beams and cross girders supporting the second floor are so arranged that the rails of each storage track come directly over the center of a floor beam. These floor beams or stringers under the track are made of concrete 12 in. thick and 30 in. deep, reinforced by the Kahn system. The cross girders are 4 ft. 5 3/8 in. deep and 20 in. thick. The spacing of the floor beams permitted the construction of a 4-in. reinforced concrete slab floor, and as the track stringers have a depth of 6 ft. from the first to the third row of columns at the Eleventh Street end of the

peaked at the center line of the building and slopes 1 in. in 18 in. to the Pierce Street and alley sides. The extension of the building walls above the roof level on Pierce Street necessitated special construction to provide proper drainage. This was done by making the reinforced concrete girders which support the roof next to the wall triangular in section so that 6-in. x 9-in. gutters could be molded in them below the roof level. These gutters are lined and flashed with copper, and the down spouts connect to the building drainage system by way of spouts along the inside of the Pierce Street wall. In addition to the practically continuous glass window areas on three sides of the building in the second story, six skylights of 9-ft. x 15-ft. inside dimensions were provided in the roof. These skylights are of the usual gabled design with the side walls formed of



Omaha Carhouse—Transverse Cross-Sectional Elevation

second story, a 40-ft. inspection pit was provided. These pits are of the suspended type, with a 6-in. reinforced-concrete slab floor, and they provide 4 ft. 6 in. clear head room from the top of the rail to the pit floor. To provide drainage for these suspended pits a 4-in. iron pipe is supported from the ceiling of the first floor, and drain connections are made to it from each of the pits.

The reinforced concrete framework supporting the 4-in. hollow tile roof was constructed with concrete purlins

reinforced concrete. The sashes in the roof are fixed and are glazed with wire glass, and two pivoted 18-in. x 40-in. galvanized iron-frame sashes, one at each end of the skylight opening, provide ventilation for the building.

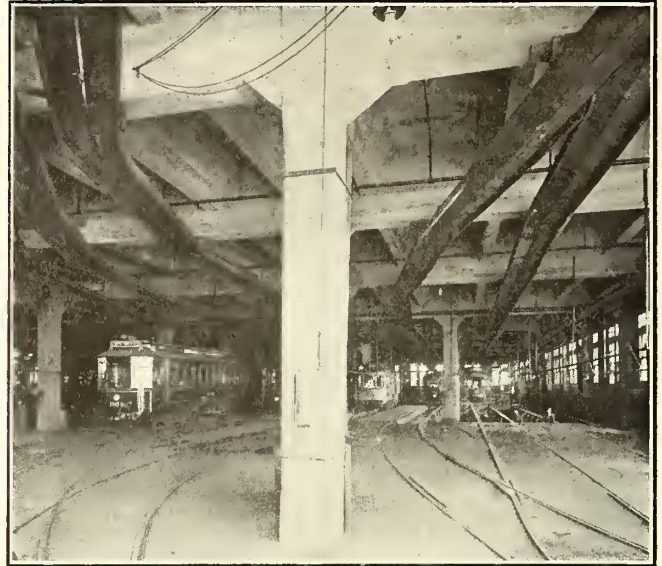
Inspection pits 50 ft. in length are provided under each of the storage tracks on the first floor about half way back in the building. To provide pits over which cars may be run in making running repairs, a single pit, 75 ft. in length and of sufficient width to take in three tracks, was con-

structed under the three north tracks on the first floor. The tracks are carried over this pit on pedestals, the design of which is standard for this company. The designed details of this special pit construction are shown in the illustrations. These details also show the method of providing a removable rail for the wheel pit. The removable

work is available for car storage purposes, it was necessary to resort to this kind of arrangement in order to utilize the whole of the property. The second floor over these tracks was not lost in a similar way, as the stub storage tracks at this level enter from the opposite end of the building. The first-floor building columns were spaced so as to give proper



Omaha Carhouse—A Corner of the Employees' Reading Room



Omaha Carhouse—Interior View from First-Floor Entrance

rail is 7 ft. 2 in. in length, pivoted at one end by means of a 2-in. steel pin which extends 18 in. into the pit pedestal. The upper portion of the pin is bent to a horizontal position so that it may be bolted to the removable rail section. By releasing the locking device at the opposite end the removable rail section may be swung out of the way, allowing the wheel to be dropped into the pit. By providing an angle

car clearance, and the tracks beyond the special work are arranged in pairs with an 11-ft. spacing between the tracks of each pair and a 13-ft. 1-in. spacing between tracks in adjoining pairs. The single 36-ft. 9-in. entrance on the first floor and the entrances on the second floor are inclosed by rolling steel doors which are operated manually.

In providing for the special work and tracks leading into



Omaha Carhouse—Exterior View from Tenth Street

stop 3 in. x 5 in. x $\frac{1}{2}$ in. on the side of the rail opposite the pivot and locking mechanism, a uniform track gage is maintained.

TRACK ARRANGEMENT

An unusual feature in the track layout is that practically all the special work on the lower floor level is laid down inside the building. Although but little of this special

the second story by way of the roof over the first story, the roof and second floor for a distance 8 ft. inside the building were dropped 16 in. below the second-floor level. This allowed the top rail outside the building to conform to the elevation of the rail inside and at the same time permitted a deposit of 6 in. of ballast under the ties. The roof slab under these tracks was increased in thickness from 4 in.

to 5 in. over the first two panels outside the building and to 7 in. in thickness over the two panels supporting the ladder track and turnouts. In addition to this increase in the thickness of the slab, the net metal area reinforcing it was increased in section to transmit the load with an ample factor of safety to the floor beams and concrete cross girders. The upper portion of the slab received a heavy coating of pitch and was sloped at 0.2 per cent to the Eleventh Street side of the building, where outlets to the sewer system were provided. This roof area is inclosed by allowing the building walls to project 24 in. above the top of the rail and surmounting the wall with a 4-ft. pipe fence.

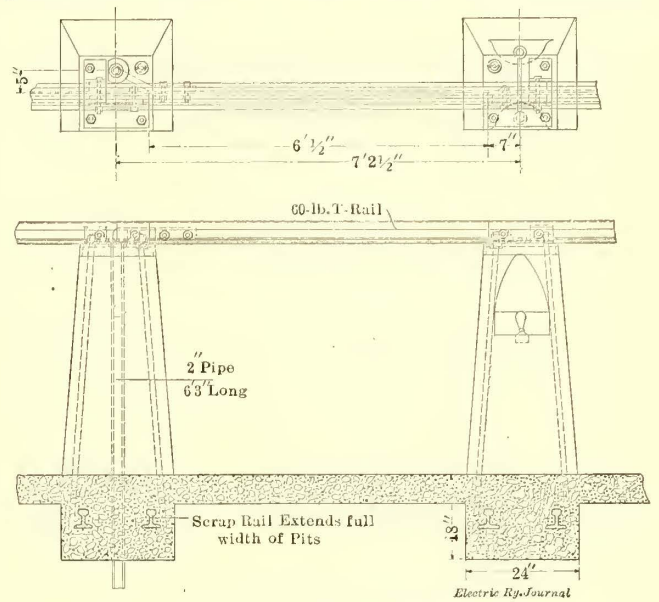
INTERIOR WIRING

Artificial illumination is supplied in the car storage bays by inclosed arc lamps supported on hook bolts embedded in the reinforced concrete building frame. All the lighting circuits are carried in steel conduit laid in the concrete during the process of construction. The trolley wire within the building is mounted in wooden trolley troughs, suspended from the cross girders. This trough is of extra width in order to prevent a flying trolley pole from damaging the concrete and overhead network of pipes employed in the wet sprinkler system. The trolley wire is dead-ended on either side of the entrance doors, and a connection passes through the wall above the openings. The bottom flange of each rolling door is provided with a V-shaped section of sheet steel which passes over the insulated dead ends of the trolley, thus providing a continuous runway for the trolley wheel when the car is entering the building.

SPRINKLING SYSTEM

To reduce the fire hazard, as well as the insurance rate on the contents of the building, a complete system of the wet type of sprinkler was installed at the time the building was constructed. As will be noted in the illustration, the height of the outlets is exactly the same as the center of the car windows. The sprinkler system is connected direct to the city water mains, but to provide a reserve supply

peratures a steam pipe coil incased in a cast-iron cylinder is installed at the bottom of the tank. A 2-in. pipe leads to the upper portion of the tank from this cylinder, which provides radiation near the water surface. In addition to

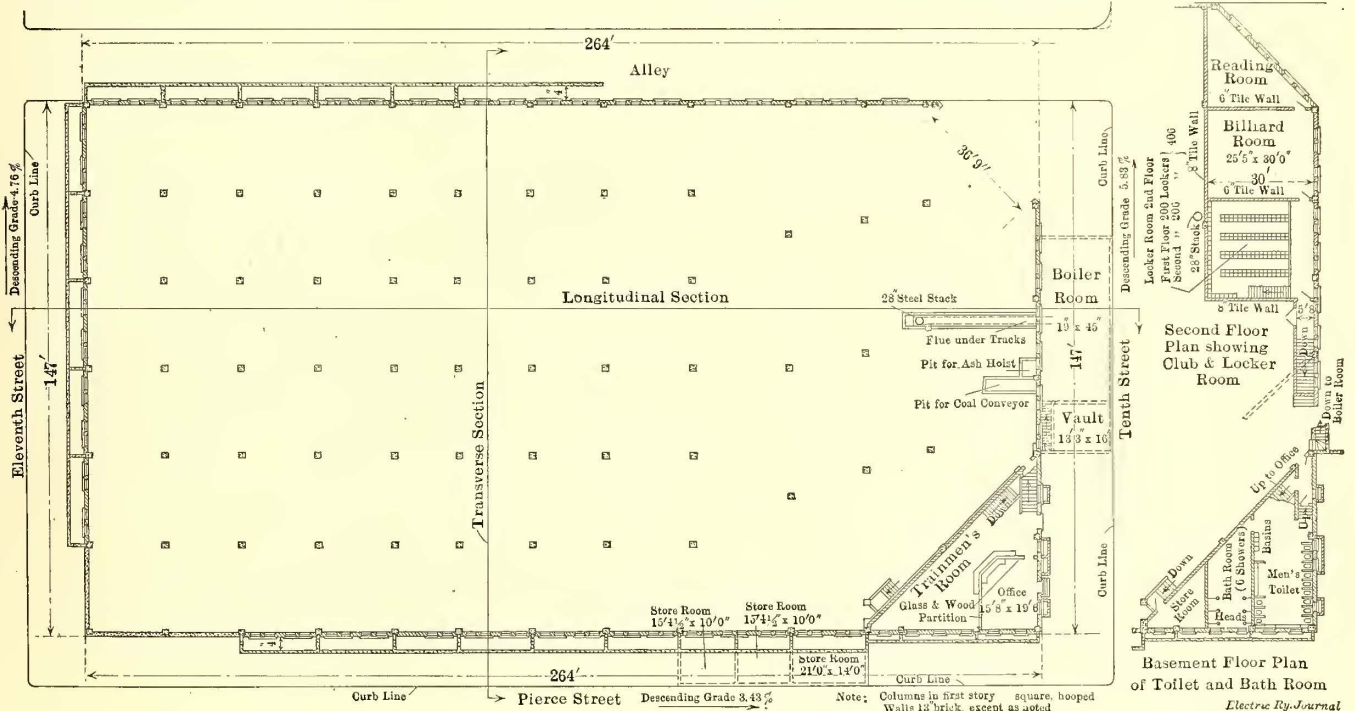


Omaha Carhouse—Details of Drop Pit

the sprinkler system, ordinary hand chemical fire extinguishers have been installed at convenient points in the carhouse.

HEATING PLANT

As noted in the beginning of the article, the steam-heating plant is located under the sidewalk on Tenth Street. The connection to the stack from the boiler room is by way of a 3-ft. square concrete duct underneath the first floor which leads to a point where the 28-in. steel stack could be



Omaha Carhouse—Plan of First Floor

for use in emergencies a 50,000-gal. steel tank was included in the fire protection equipment. This tank is supported on a steel tower which rests directly on the building columns, four of which are enlarged sufficiently to support the additional load. This reserve water supply tank is connected to the city water system and is kept filled at all times. To prevent the water in the tank from freezing at low tem-

peratures a steam pipe coil incased in a cast-iron cylinder is installed at the bottom of the tank. A 2-in. pipe leads to the upper portion of the tank from this cylinder, which provides radiation near the water surface. In addition to

This arrangement was considered practicable because it was contemplated that the second floor would be used only for storing cars not required in regular service.

The location of the boiler room 12 ft. below the first-floor level necessitated a system of conveyors for delivering coal to the boilers and removing ash. The coal conveyor is arranged so that coal may be cast on it from a car set on one of the leads to the carhouse storage track, which in turn drops it into a bin immediately in the rear of the boilers. A bucket conveyor was installed to handle the ash. This is charged through a hopper beside the boilers, and since it is equipped with an unloading device and spout at the upper end, the ash may be dropped into wagons or cars set on the carhouse ladder track.

TRAINMEN'S QUARTERS AND CARHOUSE OFFICES

In addition to the provision of storage for approximately eighty-five cars, spacious trainmen's quarters and offices were included in the building design. Three important city lines—namely, the Farnam, Harney and Dodge lines—are operated out of this carhouse. These lines require about seventy-five passenger cars and five mail cars for regular service and three sweepers for use during the winter months. The average total number of trainmen reporting for duty at this point at the present time is 199. The carhouse organization includes a day and a night foreman reporting to the superintendent of transportation, who have supervision over ten day men and eight night men, required to clean and place the cars and take care of the stoves during the winter months. The carhouse office and trainmen's quarters occupy the Tenth Street part of the building. This portion of the building on the first floor is that which could not be reached by storage tracks. The space is triangular in shape and is occupied by the carhouse foreman's office and trainmen's waiting room. Directly under this, in a space similar in area, are the trainmen's toilet and bath rooms. Both of these are finished with plain white sand-finish plastered walls and concrete floors.

The trainmen's club rooms occupy the Tenth Street front of the second floor. These include a triangular-shaped reading room directly over the track entrance from Tenth Street and an adjoining rectangular room, 25 ft. x 30 ft. in size, which is used as a billiard and pool room. A view of one of these rooms is shown in the illustrations. To provide ample locker space in the room adjoining the billiard room, 25 ft. x 30 ft. in size, an intermediate floor or gallery was constructed. The head room, being in excess of 18 ft., permitted this kind of arrangement, which practically doubled the available locker space. The complete locker installation includes 200 sheet-steel lockers on the first floor and 206 on the second floor.

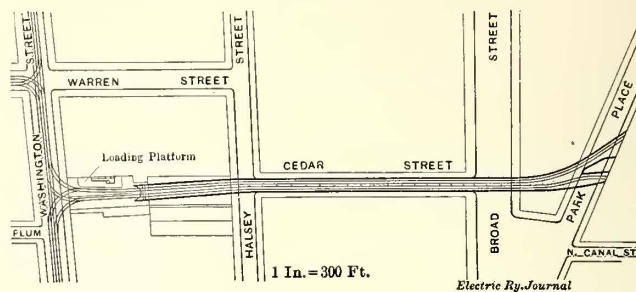
In addition to the forces mentioned which report to the transportation department, seven repair men and inspectors are employed at this carhouse. The day force consists of five men who take care of running repairs and two men are maintained on the night force to handle emergency work. The workbenches and hand tool lockers occupy a space immediately back of the running repair pit in the northwest corner of the first floor. Heat and artificial light have been provided in one of the storerooms under the sidewalk on Pierce Street, and this is being used as a locker room by the car repairmen. These men also have access to the trainmen's toilet.

The Pierce Street carhouse was designed by the engineering department of the Omaha & Council Bluffs Street Railway Company and was built by contract under its supervision.

The Italian railway administration is to call for tenders to convert to electric traction the line from Monza to Lecco. In addition, orders have been placed for fifty-eight electric locomotives, which will serve partly for this line and partly for the Giovi tunnel line. The section from Monza to Milan will be subsequently electrified.

PROPOSED STREET RAILWAY TERMINAL FOR NEWARK

The Public Service Railway of New Jersey is planning the erection of a terminal building for its surface lines in the city of Newark, at a cost of approximately \$4,000,000. It is expected that this scheme, together with the necessary rearrangement of routes in the business district, will finally solve the street railway transportation problem of Newark



Newark Terminal—Plan of Subway

and its suburbs, a problem to which a vast amount of attention has been devoted for several years past.

It is believed by the officials of the Public Service Railway that the terminal will effectually relieve the traffic congestion at Broad and Market Streets and will provide for additional service to all outlying points, notwithstanding the steadily increasing demands, for many years to come. By this plan the number of cars now operated within the congested zone can be doubled, the magnitude of the task which confronts the railway company being shown by the fact that during the last year the street cars in the Essex division carried 150,000,000 passengers, an average of more than 410,000 a day.

The terminal will front on Park Place, occupying a space of 180 ft. on that thoroughfare. Its ground plan will be commodious but somewhat irregular in shape as shown by the accompanying plan. A unique, and what is believed to be a very effective, arrangement has been worked out for the handling of cars and traffic in the terminal building. No cars will be operated on the surface and no tracks will enter or leave the property at the

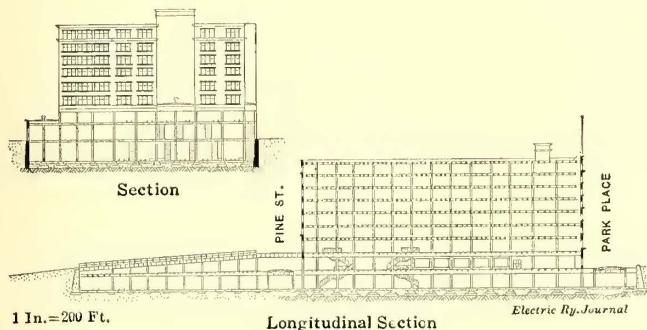


Newark Terminal—Architect's Drawing of Exterior

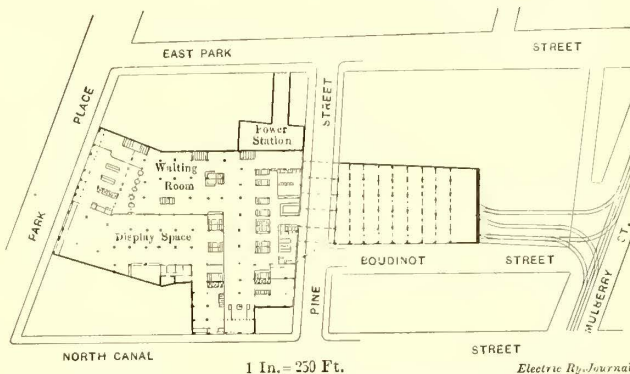
street level on Park Place. The Park Place frontage will be occupied by a handsome, substantial office building of steel, limestone and terra cotta. It is designed to be eight stories above the ground but will be carried only six stories high at first, with walls strong enough for the additional stories when needed. The building will be utilized entirely for terminal purposes and also as the home offices of the Public Service Railway.

To keep cars off the surface in the terminal it is planned to bring lines from the west through a subway into the building on a sub-surface level. Lines from the east, north and south will be brought by way of Mulberry Street onto the company's property at grade and will then ascend a trestle, crossing the intervening street overhead and into the terminal building proper on what may be called the second floor. The subway to the terminal from the west-

About 25,000 sq. ft. will be given over for the concourse. The main entrances and exits will be on the Park Place level at the northerly end of the building. Ticket booths and ticket choppers will be provided as at all terminal stations and illuminated signs will designate the stairways leading up or down to the various lines of cars. There will be plenty of seats, a modern retiring room for women, a



Newark Terminal—Sectional Elevations of Building



Newark Terminal—Plan of Ground Floor

ward is regarded as one of the most important features and the plan was adopted only after careful study had demonstrated that no other would afford real relief. The subway is designed for two tracks but widens out to provide for five tracks on the sub-surface or basement of the terminal.

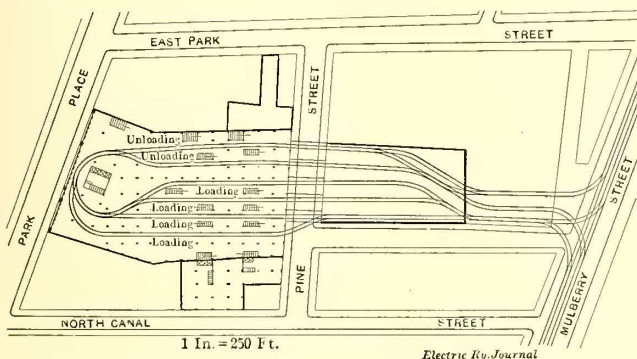
Of these five tracks, two will be for unloading and three for loading, the cars turning a loop after discharging their passengers and being brought into position for the start of their outward trips. Separate platforms will be provided for all tracks, each one long enough to accommodate several cars at one time, and independent stairways for incoming and outgoing traffic will prevent confusion and minimize crowding. On their outward or westward journeys the cars will return through the subway to the surface at Washington Street and proceed north or south over their respective routes.

For cars that will enter the terminal from Mulberry Street two tracks will be laid across the sidewalk on the west side of that thoroughfare, and these will ascend the proposed elevated approach and spread to five tracks crossing Pine Street and to six tracks on the second floor of the terminal building. Two of these will be unloading tracks and the other four will be loading tracks, the loops for this layout being on the Park Place end of the building. The

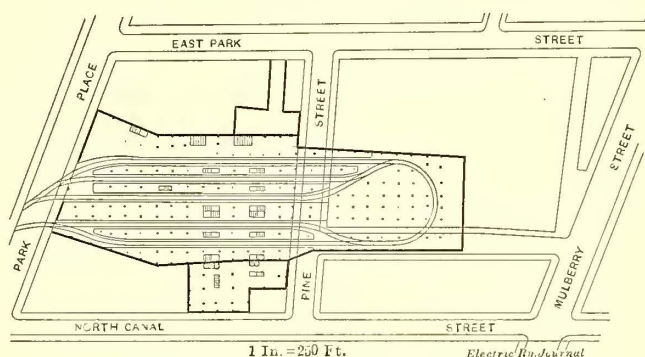
smoking room for men, a parcels and information booth, telephone and telegraph booths, soda fountain, news stand, bootblacks' stand, station master's and starter's offices and such other conveniences as the operation of a large terminal calls for. There may be a few retail shops.

Adjoining the concourse will be the showrooms and commercial offices of Public Service Gas Company and Public Service Electric Company. These will occupy about 18,000 sq. ft. of space and will take the place of the quarters now provided. An exit from the concourse and one from the showrooms will be provided in the extension to North Canal Street, and the strip extending to West Park Street will be used for the heating plant and such apparatus as will be necessary to operate the elevators, the vacuum cleaning outfit and other mechanical needs of the proposed office building.

The Public Service Corporation and its allied gas, electric and railway companies require about 100,000 sq. ft. of floor space for the executive, operating, engineering, commercial and accounting forces housed in the present home office. To meet existing needs and allow for expansion the proposed building was designed as an eight-story structure. As the sub-surface, most of the surface and all of the second floor will be devoted to terminal uses, this would have provided six floors for office purposes. As



Newark Terminal—Plan of Elevated Floor



Newark Terminal—Plan of Basement

unloading tracks will have separate platforms, each about 200 ft. long, and the loading platforms, also separated, will range from 190 ft. to 240 ft. in length. Like the sub-surface platforms, these overhead platforms will have independent stairways for incoming and outgoing traffic so as to avoid confusion. The stairways will lead from and to the concourse on the ground floor, the elevation being only about 12 ft.

each floor will have an area of 25,000 sq. ft., all six will not be necessary at once for the exclusive use of the corporation, hence the decision to build only six stories above ground at the outset. As the demands for more space come in the future a seventh and an eighth floor can be added when needed. The main entrance to the office floors will be through a spacious lobby located on Park Place, between the showroom and the entrance to the concourse.

Report on United Railways of St. Louis

Public Service Commission of the City of St. Louis, After Investigation Regarding Finances of the Company, Sends Report to the Municipal Assembly—Valuation of the Property

A report on the United Railways Company of St. Louis has been made by James E. Allison, chief engineer and member of the St. Louis Public Service Commission, and has been transmitted by the commission to the Municipal Assembly of the city of St. Louis. It deals with the financial operations and valuation of the company and is to be followed by another report in which questions of service will be considered.

CAPITALIZATION

In taking up the subject of capitalization the report says in part:

"The total capitalization of the company in stock and in bonds assumed or issued by it is: Capital stock (preferred and common), \$41,900,300; bonds (assumed and issued), \$59,480,000; total, \$101,380,300. A liberal valuation as made by the commission shows the present property to have a fair value of \$37,638,668. The result of a comparison of the capitalization and the commission's valuation shows the company to have a capitalization in excess of the fair value of the property as fixed by the commission of \$63,741,632.

"The commission's report shows a value of the whole property equivalent on a mileage basis to \$81,645 per mile of single track, which is very liberal, especially when considering the facts that 110 miles of track of the total of 461 miles is suburban construction and that the company buys approximately 45 per cent of its power and has therefore no investment in generating plants for that portion of the power used.

"The capitalization of the company is on the basis of \$219,914 per mile of single track."

VALUATION

In regard to valuation the report says in part:

"The term 'fair value' is used herein to designate the amount upon which the company should earn a reasonable return. The term is used because of its general adoption in court and commission decisions. The term 'just amount' or 'just capital' would more nearly express the true aim of the work.

"It is evident that 'fair value' cannot be measured by the face value of the bonds and capital stock issued by the company, for the issue of securities by public service corporations has frequently been known to bear but small relation to the real amount of capital actually invested in the business, and to assume such a measure of value without investigation would be a failure of duty on the part of a public service commission.

"Neither can the true 'fair value' be measured by the market value of the securities, for this market value is generally based largely upon the earning power of the plant, and the earning power in turn is based in great part upon the charges which the company is able to make to the consumer. The charge to the consumer may be excessive and the company may be earning exorbitant profit, or the reverse may be the case and the company may be losing money.

"The fact is that the justice or injustice of the charges to the consumer is the principal object of investigation, and if it is admitted at the start that a valuation based upon the unrestricted earning power of the plant is to be taken, then there is nothing to regulate, and there can be no such thing as unjust charges for public service.

"In a public hearing before the commission the company, through its attorney, set up the claim that the value of the property should be determined either by the face value or the market value of the stocks and bonds outstanding. The commission believes that this is not the proper method of

arriving at the 'fair value' to be earned on, and the commission is strongly supported in its opinion by the decisions of the courts and of other commissions.

"The commission in its valuation has relied mainly upon original cost as the theory most calculated to bring about a just result. So far as the cost of labor and material entering strictly into the track, overhead work, generating plants, etc., are concerned, there would be little difference in results whether present cost, average cost or original cost were used, but the commission believes that in trying to determine the amount of property upon which a public service company is entitled to a reasonable return from the public, the circumstances under which that property was created and placed in the public service should be taken into account. This view leads to the use of the original cost theory where practical, but it is not always possible nor desirable rigidly to apply a theory, and the commission has not attempted to do so in this case at all points.

"After the commission had arrived at a tentative valuation of the physical property, the company had the opportunity of going over the work in complete detail, and a great deal of time has been consumed in so doing.

TABLE I.—PUBLIC SERVICE COMMISSION ESTIMATED FAIR VALUE OF TOTAL PRESENT PROPERTY

1. Expense of organization.....	\$398,152.00
2. Interest on organization expense.....	24,720.00
3. Real estate	2,109,067.30
4. Cost of construction	30,237,174.88
5. Contingencies	1,371,200.40
6. Engineering	1,065,978.54
7. Interest during construction	1,123,964.11
8. Taxes during construction	237,860.70
9. Insurance during construction	70,549.82
10. Working capital	1,000,000.00
Total	\$37,638,667.75

"Table I shows the total valuation of the company's existing property both in the city and in the county.

"Table II is a comparative table showing the company's estimate of items as shown in Table I and also some additional items not allowed by the commission.

TABLE II.—ESTIMATED FAIR VALUE OF TOTAL PRESENT PROPERTY COMPARISON OF COMMISSION AND COMPANY ESTIMATES

	Commission Estimate	Company's Estimate	Company Estimate Above Commission Estimate	Per Cent
Expense of organization	\$398,152.00	No est. submitted	.....	..
Interest on organization expense	24,720.00	No est. submitted .....	.....	..
Real estate	2,109,067.30	\$3,603,198.48	\$1,494,131.18	70.9
Cost of construction..	30,237,174.88	32,063,160.68	1,825,985.80	6.0
Contingencies	1,371,200.40	3,206,316.07	1,835,115.67	133.8
Engineering	1,065,978.54	1,763,473.83	697,495.29	65.5
Interest during construction	1,123,964.11	6,371,932.99	5,247,968.88	467.0
Taxes during construction	237,860.70	1,340,992.92	1,103,132.22	464.0
Insurance during construction	70,549.82	502,411.30	431,861.48	612.0
Working capital	1,000,000.00	No est. submitted .....	.....	..
Expenditure on suburban garden .....	.....	40,615.03	Not allowed	..
World's fair terminals .....	.....	118,339.79	Not allowed	..
Track and overhead material removed from streets .....	.....	345,312.62	Not allowed	..
Total	\$37,638,667.75			

"Although it had full opportunity to do so, the company has presented no total figures as to its estimate of the fair value of its property other than to make the claim that such fair value should be either the face value or the market value of its stocks and bonds. This report therefore gives no total purporting to represent the total claim of the company for its idea of the 'fair value' to be earned on.

Table II is merely the comparison of such detailed claims as were made by the company."

The report then discusses various items appearing in the totals of the valuation, saying in part:

EXPENSE OF ORGANIZATION

"The books of the company show that it spent \$198,152 as expense of organization, or, rather, of reorganization. It might be objected that this item, being for reorganization of existing companies, does not enter into the investment placed in the service of the public, but the commission believes that the consolidation of the numerous street railway companies into one system was and is distinctly an advantage to the public, and therefore considers that this item should be admitted in the 'fair value.' The commission has estimated that \$200,000 should cover all legitimate organization expense of the several companies prior to the consolidation.

INTEREST ON ORGANIZATION EXPENSE

"With the \$200,000 allowed for the original organization of the predecessor companies, there is a probability that much of it may have been expended some time before the properties came into operation, and the commission has therefore made an allowance of \$24,720, or 6 per cent compound interest for two years, to cover the periods of construction.

REAL ESTATE

"In the appraisals of private right-of-way in the city lies the chief difference of opinion between the appraisers. Excluding these items, the difference between the appraisals of city real estate is only 20.9 per cent, which is not an unusual difference of opinion on the values of such property.

"In their report the appraisers of city real estate for the company say: 'In our appraisal of these rights-of-way we have not considered them with reference to their special value to the United Railways Company, but at what we consider a fair and reasonable value of the property for any interurban or steam railway, subway or power transmission line, or other corporation that might wish to enter the city of St. Louis. In our judgment, if similar rights-of-way were to be acquired to-day they could not possibly be secured at as low figures as we have made.'

"Above all other reasons for not allowing the high values claimed under the company's theory is the fact that these apparently continuous strips of property are not in reality continuous for the use of any public utility without the franchise right to cross the intersecting streets, and even should the city consent to such uses as contemplated in the company's theory, the value created in that case would be largely a 'franchise value,' and not a real estate value. Franchises given free by the public cannot be valued against the public in rate or regulation cases, and in the opinion of the commission the theory of the company's appraisers as applied to right-of-way is not admissible in this case, as it clearly includes a franchise value.

"The value of the lands in right-of-way in this case should be measured by that of the contiguous property, for they are in fact merely a number of parcels of real estate between intersecting streets, unless the franchise right to cross the street is allowed to enter into their value.

"It is apparent that in assigning present value to land the commission is departing from the theory of original cost, and possibly making a concession to 'market value' as distinguished from 'just amount.'

"Universal custom has sanctioned the allowance of the increase in value of real estate and so far there is no decision of the courts or commissions which does not recognize it.

COST OF CONSTRUCTION

"In the item of construction costs of physical property it appears that the company's estimate does not show any greater difference in results (6 per cent) from that of the commission than could be expected from two appraisals both carefully made, but of course from slightly different

points of view. The close agreement between the two estimates would have been even closer were it not for the item of grading, this item being the one on which there is a large percentage disagreement and a large difference in money.

"There is no question in the mind of the commission that expenditures made by the companies in full width grading of the streets should be included in 'fair value.' Such expenditures, unless made by the companies, would have had to be made by the city, and the public is to-day enjoying the benefit of the work paid for by the companies."

CONTINGENCIES AND ENGINEERING

The percentage estimates of the commission are shown in Table III. The total amount estimated by the commission for contingencies was \$1,371,200 as compared with the estimate of \$3,206,316 by the company. The total amount estimated by the commission for engineering was \$1,065,979 as compared with \$1,763,474 by the company.

TABLE III.—ESTIMATES OF COMMISSION FOR ENGINEERING AND CONTINGENCIES—PER CENT

	Engineer- ing	Conting- encies
1. Buildings other than power plants.....	5	*
2. Power plant buildings.....	5	*
3. Power plant mechanical equipment.....	5	5
4. Power plant piping.....	5	5
5. Power plant switchboards, cable, conduits and power wiring	5	5
6. Substation electrical equipment.....	5	5
7. Substation switchboards, cable and conduits.....	5	5
8. Storage batteries	*	*
9. Air stations	5	5
10. Machine shop equipment.....	5	5
11. Cars	2	3
12. Track, special work and paving.....	3	5
13. Grading	*	*
14. Bridges	5	7½
15. Distribution system	5	5
16. Miscellaneous mechanical equipment.....	5	5
17. Miscellaneous piping, sewerage, etc.....	5	5
18. Miscellaneous wiring, etc.	5	10
19. Miscellaneous machine shop equipment.....	5	5
20. Miscellaneous expenditures	*	*
21. Small tools, patterns, etc.....	1	5
22. Furniture and fixtures.....	1	5
23. Automobiles, wagons and horses.....	1	—

* Varying allowances.

The report continues: "In the valuation of most public utilities the records of engineering expense are in such condition that this item is generally estimated at a conventional percentage of total construction cost. This method, however, is open to criticism, from the fact that in different classes of utilities the grade and amount of engineering skill required differs materially, and even in the same class of utilities the proportions of the different kinds of equipment vary with each plant and the engineering expense varies correspondingly.

"The company claimed an allowance of 5 per cent on total cost of construction as estimated by it.

"The commission considers that an allowance of \$1,065,979 as estimated by its engineers is ample to cover any possible engineering costs for one installation of the plant of the United Railways Company.

"In making its application of costs and prices to the inventory the commission's engineers have made large allowance for contingencies as they worked out the details of the valuation of different items and classes of items, but as a matter of precaution against possible injustice to the company, further allowances are added to the detailed allowances already made.

"The company in presenting its claim for contingencies simply made a blanket claim that 10 per cent on the cost of construction should be allowed. In making the extension for this claim the commission's engineers have taken 10 per cent of the company's total claim for cost of construction.

INTEREST DURING CONSTRUCTION

"In making its claims for interest during construction the company simply states that in its opinion it would take five years to build a plant such as it owns, and that therefore an allowance of interest at 6 per cent for the 'mean time,' or two and one-half years, should be made on the entire cost

of construction to cover the item of interest during construction. The result of the computation based on these claims is 15 per cent of its claim for costs of construction, being the somewhat remarkable sum of \$6,371,932.

"The property of the United Railways Company represents the continuous development and operation of the street railway industry of the city from its inception, and the property being in continuous operation, each particular part of the equipment as it was constructed to provide for growth or renewal could go into operation within a comparatively short time after it was installed. The period of non-return, therefore, should be approximately the time necessary to make the installation and the interest during construction calculated accordingly.

"Table IV shows the commission's allowance for interest during construction on different classes of equipment.

TAXES AND INSURANCE DURING CONSTRUCTION

"In presenting its claim for taxes and insurance during construction, the company has made the same error as in

TABLE IV.—COMMISSION ESTIMATE OF TOTAL INTEREST DURING CONSTRUCTION AT 6 PER CENT PER ANNUM

	Mean Time	Amount
1. Real estate	"2 years	\$260,680.72
2. Buildings other than power plants	" * *	79,123.26
3. Power plant buildings	" * *	58,763.81
4. Power plant mechanical equipment	6 months	60,441.14
5. Power plant piping	6 months	10,026.07
6. Power plant switchboards, cable, conduits and power wiring	6 months	5,097.80
7. Substation electrical equipment	6 months	14,930.96
8. Substation switchboards, cable and conduits	6 months	4,611.11
9. Storage batteries	6 months	6,422.67
10. Air stations	3 months	1,716.52
11. Machine shop equipment	3 months	3,216.39
12. Cars	3 months	103,065.58
13. Track, special work and paving	6 months	363,232.65
14. Grading	" * *	25,555.26
15. Bridges	3 months	7,257.92
16. Distribution system	6 months	82,923.13
17. Miscellaneous mechanical equipment	2 months	860.96
18. Miscellaneous piping, sewerage, etc.	1 month	928.30
19. Miscellaneous wiring, etc.	6 months	1,103.60
20. Miscellaneous machine shop equipment	1 month	554.31
INTEREST ON ENGINEERING AND INSURANCE.		
21. Buildings other than power plants	9 months	4,748.91
22. Power plant buildings	9 months	2,239.80
23. Power plant mechanical equipment	6 months	3,022.05
24. Power plant piping	6 months	501.30
25. Power plant switchboards, cable conduits and power wiring	6 months	254.89
26. Substation electrical equipment	6 months	746.54
27. Substation switchboards, cable and conduits	6 months	230.55
28. Storage batteries	6 months	128.86
29. Air stations	3 months	85.82
30. Machine shop equipment	3 months	160.82
31. Cars	3 months	2,061.31
32. Track, special work and paving	6 months	10,896.98
33. Grading	9 months	1,954.29
34. Bridges	3 months	362.90
35. Distribution system	6 months	4,146.15
36. Miscellaneous mechanical equipment	2 months	43.05
37. Miscellaneous piping, sewerage, etc.	1 month	46.42
38. Miscellaneous wiring, etc.	6 months	55.19
39. Miscellaneous machine shop equipment	1 month	27.72
40. Insurance		1,738.40
Total		\$1,123,964.11

* As real estate is generally paid for in cash and notes at the time of purchase, full time instead of mean time is used.

** Varying periods of time.

interest during construction, i. e., it assumes that these items should be calculated on the basis of two and one-half years. The commission has used the same method as it did in calculating interest during construction, and for the same reasons.

WORKING CAPITAL

"In making its allowance for working capital the commission considered the store accounts of the company for different periods and made a liberal addition, and then added what it considered a liberal amount necessary for the company to have in hand to carry on the operation of its property. The estimated items were: stores, \$450,000; cash, \$550,000; total, \$1,000,000. It is of course conceded that at times the company must have in bank larger sums than \$550,000 to meet its interest on bonds and similar obligations, but such accumulations are in the nature of undivided profits ready for distribution and are not considered as capital engaged in the service of the public.

ABANDONED PROPERTY

"The company made a claim for certain items of expenditure. The commission considers that all of these items should properly have been charged off to depreciation or amortized during past operations, and that they are clearly not allowable as part of the present capital of the company in the service of the public.

FRANCHISE VALUE

"The most important, and in itself a sufficient, reason for not allowing franchise value in a rate or service regulation case is the simple fact that the franchises were given free by the public. They cannot then with justice be valued against the public in establishing rates, fares or quality of service.

SUPERSEDED PROPERTY

"In its valuation of the property of the United Railways Company the commission has made no allowance for superseded property, but while it has found that the circumstances of this case do not justify such an allowance, it does not take

TABLE V.—COST OF ORIGINAL EQUIPMENT
Cable Equipment

53.5 miles cable track at \$65,000 per mile	\$3,477,500
Cable machinery, etc., at \$27,500 per mile	1,471,250
255 grip cars at \$900 each	229,500
483 open and box cars at \$1,325 each	639,975
Four work cars at \$1,250 each	5,000
Real estate	
Buildings	
Paving	
Total	\$5,823,225
Horse Car Equipment	
161.3 miles track at \$12,000 per mile	\$1,935,600
898 horse cars at \$800 each	718,400
4,075 horses and mules at \$100 each	407,500
Buildings, etc.	560,000
Real estate	
Paving	
Total	\$3,621,500
Steam Road Equipment	
Track, buildings and right-of-way	\$296,500
Six locomotives at \$5,000 each	30,000
Ninety-five passenger cars at \$2,500 each	237,500
Thirteen freight and baggage cars at \$1,000 each	13,000
Total	\$577,000
Grand total	\$10,021,725

the ground that an allowance for superseded property should never be made.

"In trying to determine the amount of superseded property in the history of the street railways of St. Louis now comprising the system of the United Railways Company, the commission is confronted by a very great scarcity of reliable data, as the books and records of nearly all of the old companies have been destroyed or are not available.

TABLE VI.—VALUE SAVED FROM COST OF ORIGINAL EQUIPMENT
Cable Equipment

53.5 miles cable track at \$20,000 per mile	\$1,070,000
255 grip cars at \$700	\$178,500
483 open and box cars at \$1,125	543,375
Four work cars at \$1,050	4,200
75 per cent of	\$726,075 = 544,557
Total	\$1,614,557
Horse Car Equipment	
4,075 horses and mules at \$100	\$407,500
Buildings	280,000
Total	\$687,500
Steam Road Equipment	
Tracks, buildings and right-of-way	\$150,000
Grand total	\$2,452,057

The commission has therefore been forced to use such data as it could find, whether official or not. While the data upon which conclusions were based may not have been all that could have been desired, the commission believes the results to be approximately correct and calculated to bring a substantially just result.

"Table V shows the process of arriving at the final figures of the loss caused by changes in equipment due to transition from one system of traction to another.

"Table VI is intended to show the value of property

saved from the original equipment by reason of its being salable at approximately full value, or because it could be and was used under the new system.

"In the changes from cable to electric traction, cable track was adapted to the use of electric equipment, but the saving was not the full cost of a cable track, but only the cost of an electric track suitable to take its place. This saving is here estimated at \$20,000 per mile.

"It is known to the commission that in the transformation from the cable to the electric system a great number of cable cars were adapted to suit the new system—in fact, some of the cars, or rather their adapted bodies, are still giving good service and value has been allowed for them in the total valuation of the United Railways property. In trying to arrive at net loss from superseded property, the sums as set out in Table VI are supposed to be the value saved from the cars by reason of their continued use or adaptation to the electric system. The values used are the

TABLE VII.—COST OF PROPERTY DISCARDED FROM ORIGINAL EQUIPMENT

Cable Equipment	
53.5 miles cable track, loss \$45,000 per mile.....	\$2,407,500
Cable machinery, loss \$27,500 per mile.....	1,471,250
Cars	329,918
Total.....	\$4,208,668
Horse Car Equipment	
161.3 miles track.....	\$1,935,600
898 cars	718,400
Buildings	280,000
Total.....	\$2,934,000
Steam Road Equipment	
Track, buildings and right-of-way.....	\$146,500
6 locomotives	30,000
96 passenger cars	237,500
13 freight and baggage cars.....	13,000
Total.....	\$427,000
Grand total.....	\$7,569,668

same as those used by the commission for the adapted parts in making up the values of the present equipment, and it is assumed that 75 per cent of the old car equipment was so adapted.

"It is assumed that the horses, being a marketable commodity, could be realized on at approximately full value and that part of the value of the old equipment saved to the company.

"In dealing with the buildings of the horse-car system it was assumed that half the original cost would be saved by use in the new system or by sale.

"In dealing with adapting old equipment to the new conditions in the case of a small superseded steam railroad it is assumed that \$150,000 in right-of-way buildings and track material was used. It is known to the commission that even

TABLE VIII.—VALUE OFFSET BY WEAR EXTRACTED BEFORE SUPERSESSION AND SAVINGS IN MAINTENANCE AND REPLACEMENT

Cable machinery, 25 per cent.....	\$367,813
Cable cars, 25 per cent.....	82,480
Horse car equipment, 50 per cent.....	1,467,000
Steam road equipment, 40 per cent.....	170,800
Total.....	\$2,088,093

as late as 1903 a quantity of the old narrow-gage T-rail was still in use on parts of this road, and it is reasonable to suppose that considerable quantities of it were adapted to the electric system.

"The road is in the county and was not until recently brought up to a modern standard, i. e., after full wear had been extracted from old material.

"Table VII shows the loss in original equipment after the saving has been deducted from the original cost, i. e., Table VII represents the cost of property discarded, including an allowance of \$45,000 per mile as lost value in reducing the cable track from original cost of \$65,000 per mile to the value of electric track at a cost of \$20,000 per mile, without paving.

"Table VIII represents as nearly as can be calculated the wear extracted before supersession, or the equivalent sav-

ings in depreciation charges and maintenance and replacement expenditures caused by the replacement of old equipment by new equipment in the property under consideration. As this saving is caused by the supersession it should be taken as an offset to gross losses in determining the net loss, and it is here so treated.

TABLE IX.—NET LOSS CAUSED BY CHANGE OF EQUIPMENT

Cost of original equipment.....	\$10,021,725
Value saved from original equipment.....	\$2,452,057
Value offset by wear extracted and saving in maintenance and replacement.....	2,088,093
	4,540,150
Value actually lost by supersession.....	\$5,481,575

"Table IX shows the deduction to be made from the cost of the original equipment to arrive at the nearest measure of the net loss occasioned by the supersession of property under consideration. Having obtained this loss of \$5,481,575, our next step is to determine whether or not the company has been able to recoup itself for the loss and could reasonably be called upon to consider it amortized, or whether, not having had the opportunity to do this, the loss must be capitalized or its amortization taken into account in future returns.

"The net earnings of the United Railways Company during the years from 1900 to 1911 inclusive were \$30,490,919; the net earnings of the property, including the years when it was under lease to the Transit company, were \$38,495,516. In either case the earnings are large when based upon the real investment actually in the service of the public, and it is plainly apparent that the company has had ample opportunity to recoup itself even in those years for a much larger loss from superseded property than is evident from the tables. The amount paid in dividends on preferred stock alone is more than sufficient to have offset the losses from superseded property.

"The commission does not consider that under the circumstances the company or the property has sustained a loss by reason of revolutionary changes of equipment which it has not recouped from its earnings. The commission, therefore, makes no allowance for superseded property in the valuation of the company's investment in the service of the public.

COST OF ESTABLISHING BUSINESS

"In considering an allowance in this case for cost of establishing business, the commission has in mind the fact that street railway companies seldom if ever make expenditures strictly to solicit business, and that losses by deficit of return when chargeable to cost of establishing business must be confined to the years immediately following the inception of the enterprise.

"It is very possible that some of the original companies now absorbed by the United Railways Company may have passed through a period of initial loss to establish business, but how much of this loss may be attributed to building roads at the time unnecessary to the public service and built only to pre-empt territory from competing roads cannot be now decided. Nor is it possible now from existing records to determine definitely the amount, if any, of such early deficit in returns.

"The commission, however, has abundant evidence that there has been ample opportunity to recoup from subsequent earnings any losses which could reasonably have been charged to cost of establishing business, and it has therefore made no allowance for such an item.

BOND DISCOUNT

"If throughout the history of the street railways of St. Louis the letter and the spirit of the laws of the State had been observed, the property as it now exists would have a bonded indebtedness not to exceed approximately one-half the fair value now placed upon it by the commission. The balance would be represented by stock whose face value in money had actually gone into the service of the public in the purchase of labor and material and in legitimate ex-

penses of creating the property, and it can well be assumed that under such conservative financing the credit of the company and the safety of the investment would have made any discount on bonds unnecessary.

"In the case of the United Railways Company, the commission does not consider an allowance for bond discount to be admissible.

DIVISION INTO CITY AND COUNTY PROPERTY

"The county system of the United Railways Company should be classed more as a suburban system than as an interurban system, and acts, in the opinion of the commission, largely as a facility for the city's population in its excursions into the county, in addition to serving the business of the city as a feeder from the suburban population. If, therefore, it appears that this county system is not self-supporting and profitable but must rely upon its being a part of the property as a whole in order to show a reasonable return on the investment, the commission believes that it is only fair to include its value with that of the city system in estimating the just amount to be dealt with in any ordinances or regulations imposed by the city.

"There appears to be no separate record kept by the company of operating expenses chargeable respectively to the county and city business, and in fact such a division in accounts would be very difficult to apply except by estimate.

TABLE X.—COMMISSION ESTIMATE OF RATE OF ANNUAL DEPRECIATION OF PHYSICAL PROPERTY.

	Depreciation, per cent, per year
Buildings other than power plants.....	2
Power plant buildings.....	2
Power plant mechanical equipment.....	6 $\frac{2}{3}$
Power plant piping.....	6 $\frac{2}{3}$
Power plant switchboards, cable, conduits and power wiring.....	6 $\frac{2}{3}$
Substation electrical equipment.....	6 $\frac{2}{3}$
Substation switchboards, cable and conduits.....	6 $\frac{2}{3}$
Storage batteries.....	5
Air stations.....	6 $\frac{2}{3}$
Machine shop equipment.....	6 $\frac{2}{3}$
Cars.....	5
City straight track.....	6 $\frac{2}{3}$
City special work.....	11.1
County straight track.....	5
County special work.....	5
Bridges.....	6 $\frac{2}{3}$
Distribution system, conduits.....	2
Distribution system, cable, wiring, wood poles, etc.....	5
Distribution system, iron poles.....	4
Miscellaneous mechanical equipment.....	6 $\frac{2}{3}$
Miscellaneous piping, sewerage, etc.....	6 $\frac{2}{3}$
Miscellaneous wiring.....	5
Miscellaneous material and supplies.....	6 $\frac{2}{3}$
Miscellaneous machine shop equipment.....	6 $\frac{2}{3}$
Small tools, patterns, etc.....	12 $\frac{1}{2}$
Furniture and fixtures.....	5
Automobiles, horses and wagons.....	10

The commission has therefore been forced to make an estimated division of operating expenses based on car miles and car hours operated.

"These figures show an operating expense for the county lines of 97 per cent of the earnings, from which it is evident that these lines are operated at a loss when the investment is taken into consideration. The property is well managed and the cause of loss is the low rate of fare charged.

"As the operation of these county lines is of great value and convenience to the citizens of St. Louis, and as they are for all practical purposes except taxation an integral part of the St. Louis transportation system, the commission believes that the investment in them should be taken into account in any regulation of the United Railways Company and that the earnings and expenses of both city and county properties should be treated as one.

DEPRECIATING TO OBTAIN JUST AMOUNT

"If market value were established as the basis upon which to determine public regulation, there could be no stability of values, and hence, as an inevitable consequence, heavy risk charges to be paid by the consumer.

"Fortunately, the most respectable authorities agree in considering market value as an unfit basis for public regulation, yet we find that many of them in dealing with depreciation in rate cases evidently have in mind the question, 'How much is this property worth in the market?' rather than 'What is the just amount upon which return should be calculated?'

"The commission believes that in seeking just amount rather than market value in rate cases, there are conditions under which a public utility property should not be depreciated to arrive at the just amount upon which returns should be based, and it believes that in case of the United Railways Company these conditions apply.

RATE OF RETURN

"It is the opinion of the commission that if the securities of the United Railways were issued on the basis of the amount found by its investigation to be the true capital invested in the service of the public, a return of 6 per cent on the capital would be ample to induce investors to enter the business and take all existing risks. As for past risks not due to financing methods, the commission believes that they have been fully compensated for by past profits.

"If the securities of the company were issued only on the true capital and were divided into one-half bonds and one-half stock, as is usual and permissible under the laws of the State, there is little doubt that these bonds, secured by the entire system of the United Railways property and amounting to less than \$19,000,000, would sell on a 5 per cent basis or better. This assumption is borne out by the market price of underlying bonds now outstanding. With bonds drawing interest of only 5 per cent on one-half the capital, the other half in stock would earn dividends of 7 per cent under an allowance of 6 per cent returns upon the whole capital.

GENERAL CONDITION OF THE PROPERTY

"The physical condition of the property of the company is on an average at least normal in efficiency and is improving through the performance of what may be called deferred maintenance. The deferred maintenance on tracks and paving, from a rigid inspection and estimate made by the commission, appeared to be approximately \$587,732, or about 5 per cent of the cost of its construction. Since this inspection a considerable amount of track has been relaid or is now being relaid. The cars of the system, while not throughout a modern equipment, are as a whole at least in the normal state of efficiency to be expected from piecemeal installation. Some of the rolling stock which is nearing replacement has been allowed to become unsightly to the public by lack of attention to paint and seat repair, which would at small expense have made the cars satisfactory public vehicles to the day of their replacement.

"The power plant equipment, while not modern, is serviceable and likely to remain so for many years to come. The capacity of the power plants is small for such a system, owing to the purchase of approximately 45 per cent of the power from the Union Electric Light & Power Company.

EARNINGS AND DEPRECIATION CHARGES

"Disregarding the burdens caused by over-capitalization, the United Railways of St. Louis, as shown by the earnings and operating expenses, is an exceptionally good property. The management is efficient, the income assured and the net earnings large.

"The company's charge for depreciation in 1911, as it enters into the operating expense, was \$1,191,415. This is only 3.9 per cent of the depreciable property and does not appear large enough to be a safe depreciation charge in such a property. In the present case, the commission is of the opinion that the safer course, regardless of methods of calculating, would be to adopt the larger figure as shown in its estimate of the annual depreciation, which amounts to 5.3 per cent of the depreciable property. The rates for the various classes of physical property used by the commission are shown in Table X.

CONCLUSION

"Deducting the reasonable return on the investment from the net earnings, we find that the company is earning \$1,069,480 in excess of a reasonable return.

"If the company is to be limited to a reasonable return, there are three methods by which this excess may be corrected: First, by its absorption in taxes to the city or by

profit sharing with the city; second, by a reduction of fares; third, by regulations requiring better service, or it may be done by a combination of any two or all three methods.

"In the opinion of the commission, the first steps in legislation in this case should be along the line of requiring a better service to the public, and with this in view, it has made exhaustive investigations into the present condition of the service, and has prepared data for guidance in efforts to improve the service."

The report is signed by the three members of the commission, Joseph L. Hornsby, chairman; James A. Waterworth and James E. Allison.

DERAILMENTS ON CHICAGO ELEVATED

Two derailments of cars have occurred recently on the Chicago Elevated Railways, and although no one has been seriously injured the company and the Harbor and Subway Commission have made investigation into the causes. The results are summarized in a report recently submitted to the Commissioner of Public Works by William Artingstiel, G. B. Robinson and S. Gold, and the causes of the derailment are analyzed.

The derailment principally considered in the report was that of a car on the Chicago & Oak Park Elevated on Jan. 8, and statements were obtained from the trainmen, by Robert W. Hunt & Company, who examined the equipment, and by others. The most interesting document, however, is a report by A. K. Shurtleff, office engineer Chicago, Rock Island & Pacific Railway, who discussed the general subject of operation of trains on curves where it is not possible to have any super-elevation of the outer rail. This was the case on the curve at which the car was derailed, because the curve crosses a section of straight track.

Mr. Shurtleff points out that, in addition to the centrifugal force, which would favor derailment, a car on such a curve tends to leave the track because of the grinding of the wheel flanges against the outer rail owing to the unequal length of the inside and outside rails of the curves. As the wheels are fixed rigidly to the axles there is a tendency for the inside wheel to travel at as great a distance on the track as the outside wheel. This tendency throws the front axle of the truck at an angle with the radius of the curve, the inside front wheel being ahead of the radial position of the outside front wheel and the flange of the outside wheel is placed at an angle with the rail and presses hard against it. The shorter the radius the greater the angle between the flange and rail and the greater the tendency to climb over the rail. The rear axle of the truck assumes as nearly as possible a position radial with the curve, provided the gage of track is correct. With this condition existing the flange of the forward outer wheel of the truck is always pressing hard against the outside rail and seeking any opening that may exist in it to escape and proceed in a straight line unless there are restraining influences other than the running rails of the track.

Mr. Shurtleff continues that the forward truck of the first car and the rear truck of the last car are more apt to derail than other trucks of the train where the conditions of the wheels are equal. This is owing to the "pull" through the drawbars of the train having a slight tendency to force the cars toward the inner rail, each car "leading" the other except that the forward car must depend entirely on its front truck for guidance and the rear truck of the last car is in the position of the small boy at the end of the string in the old-fashioned game of "crack the whip."

The report then considers the practical measures for guarding against these conditions as follows: First, the use of guard rails placed in such a position as to assist in guiding the wheels around the curve and draw the flange away from bearing hard against the outer rail. The guard rail that performs this duty is the one placed adjacent to the inside rail. Its function is to engage the back of the inside

wheel at the time the flange of the outside wheel is against the running rail. To perform this function it is absolutely necessary that this guard rail be rigidly fixed so that its position with reference to the outside running rail is always maintained. The report says that the great tendency of trackmen is to maintain a given throatway between the guard rail and its adjacent running rail and that they overlook the fact that the real function of these inside guard rails is to protect the wheel running on the opposite rail. A slightly tight gage of track in such cases renders the guard rail useless. Where inside guard rails are used adjacent to both track rails it is necessary to place them so that the distance between the throatway sides of the rail heads is never greater than the minimum standard allowance back to back of wheels; otherwise there will be strong tendency to derailment. The elevated railway track on the curve under consideration has the two inside guard rails throughout, so that their full value, when properly used, has evidently been recognized.

The position of these guard rails with reference to the running rails which they are supposed to protect is also considered in the report, particularly through the crossing on which the derailment occurred. Mr. Shurtleff found upon examination that the track gage at certain points was narrow and at one place too wide properly to perform its service, and that at one place the inside guard rail was too close to the outside track rail to prevent a strong tendency of the wheel flange to strike a frog point and derail. With the guard rails apparently too far apart properly to clear the distance back to back of wheels and with the unbalanced centrifugal force throwing additional weight on the outside rail, the report found that the tendency would be for the inside wheel to mount over the guard rail, thus allowing the outer wheel to catch the middle frog point.

In conclusion the commission recommended:

First—A maximum speed not to exceed 8 m.p.h. at all curves on crossings where it is not feasible to provide super-elevation, as established by standard engineering practice.

Second—That the maximum speed on any curve where there is super-elevation of the outside rail shall be determined by the amount of super-elevation and the degree of curve.

Third—That operation of motors in multiple be forbidden until the car has cleared the curve.

Fourth—That suitable targets be placed at the proper points on tangent track to indicate when the last car has cleared the curve.

Fifth—That special guard rails be provided at all curves.

Sixth—That struts and ties be used to hold all running and guard rails in proper relation to each other.

Seventh—That while rounding curves conductors and trainmen be compelled to remain on the platform of their car.

RAIL INSPECTION FOR THE INDIANA UNION TRACTION

The Indiana Union Traction Company, so far as is known, is the first electric railway to arrange for a special inspection of its rails at the rail mill. This plan has been followed by steam railroads for some time on account of the trouble with broken rails in steam railroad service. Briefly, the plan for pursuing this work consists in the placing of inspectors during both day and night in the steel works, in the blowing mill, in the rolling mill and finally at the testing machine. These inspectors make full reports of all matters coming under their observation on the operation followed in the treatment of every piece of steel rolled into the rails. They call the attention of the mill men to the deviations from recognized good practice and provide a definite history of all matters pertaining to a rolling mill order. This work is being undertaken for the Indiana Union Traction Company by R. W. Hunt & Company.

PROPOSED CO-OPERATIVE STORE AND OTHER IMPROVEMENTS IN PHILADELPHIA

In Bulletin No. 11 just published by the Philadelphia Rapid Transit Company the plans of the company in regard to the possible establishment of a co-operative store or stores for the benefit of the trainmen are announced. Before carrying out the plan, the co-operative committee, which is made up of representatives from the management and the employees, will make an estimate of the possible savings to the men from such a store. To do this the committee expects to request a statement, to be made out as accurately as possible, of their housekeeping expenses from at least 1000 of the men who have been sufficiently long in the service to have become settled in their manner of living. These expenses are to be for the month of January, 1913, and the information will be filled out on printed forms as follows:

1. Rent	\$
2. Foodstuffs, i. e., meats, groceries, milk, eggs, butter, fruit, ice, produce	
3. Heating and lighting	
4. Clothing	
5. Insurance, i. e., life, health, fire and endowment	
6. Household effects, i. e., carpets, rugs, curtains, furniture, kitchenware	
7. Miscellaneous, i. e., entertainment, dues, charities, taxes, interest, etc.	
Total	\$

This information, when secured, should enable the co-operative committee to make a fairly accurate estimate of the savings to the motormen and conductors which could be made by co-operative buying in the event of a satisfactory method of distribution being secured.

NEW BOOK OF RULES

The co-operative committee on Jan. 21 unanimously approved the new edition of rules for motormen and conductors. These rules will go into effect Feb. 15. One of the rules prohibits smoking, spitting or the carrying of partly consumed cigars or cigarettes into closed cars at any time and confirms the announcements on the placards which appeared in all of the company's cars on the morning of Jan. 21. The text of this placard was published on page 172 of the *ELECTRIC RAILWAY JOURNAL* for Jan. 25. This crusade was undertaken in the interest of public health at the suggestion of Dr. Joseph S. Neff, director department of public health and charities. The city government, the newspapers and the general public have evidenced great interest in the successful outcome of this endeavor.

The conductors are instructed to be courteous but firm in the carrying out of this rule and, when necessary, to hand to an offending passenger who does not promptly respond to the request to comply with the rule a card bearing the text of the placard, as published in the issue of Jan. 25. It is thought that the handing of this card to offenders will in most cases render further action unnecessary.

VENTILATION AND SANITATION

The company is also making a strong effort in the direction of ventilation and sanitation of its cars. According to the bulletin, the problem of ventilation of the near-side cars used in Philadelphia has been carefully worked out, with the result that this type of car is recognized as being most scientifically heated and ventilated. The ventilating features have been subjected to a test by Dr. Neff, who reported that the ventilators are capable of removing 35,053 cu. ft. of air per hour. This is equivalent to 381 cu. ft. per passenger per hour on the basis of a total load of ninety-two passengers. The bulletin calls the attention of the employees to the fact, however, that opinions of passengers as to what constitutes proper ventilation are often so diametrically opposed as to make it impossible for the conductor to meet the demands of all who desire that their wishes in the matter of ventilation shall have prompt attention. The company also disinfects its cars daily and is

giving special instructions to its employees as to the methods of proper braking, so as to reduce noise.

TIMETABLE DEPARTMENT

The schedules of the men are also being overhauled by the timetable department for the purpose of making nine hours the minimum for scheduled runs, except for trippers and Sunday timetables. It is intended that all runs shall be from nine to eleven hours in length, all to be completed within a maximum of fourteen consecutive hours. Deviation from this rule will, in future, be permitted by the timetable department only in cases where it is found that better runs, more to the liking of the men, can be produced.

RAILROAD-TERMINAL ELECTRIFICATION INVESTIGATION IN CHICAGO

In the report for the year 1912 of the committee on smoke abatement and electrification of the Chicago Association of Commerce, Jesse Holdom, chairman, says that substantial progress has been made by the committee, through the work of the chief engineer and his staff, during the year. However, it is impossible at this time even to foreshadow the recommendations which the committee may make finally. Much of the investigation so far has related to the smoke-abatement phase of the subject and has consisted of tests of air pollution, examinations of locomotive engines and smoke-producing plants in the city and an investigation into the quantities of coal arriving in Chicago and the amount consumed in the various industries. Scientific tests have been made in an endeavor to ascertain the amount of smoke and gases produced by a ton of coal burned in locomotive service.

The Diesel oil engine has been investigated both in this country and abroad. Judge Holdom also reports that George Gibbs, of the firm of Gibbs & Hill, of New York, consulting engineers for the committee, has given his opinion that the Diesel engine is not practically workable for switching or yard service, and that its ultimate value in express railroad service is uncertain. Mr. Gibbs said that he had been collecting data for some time on operating costs of electric traction in heavy railroad service, particularly in connection with the electrification of the Pennsylvania terminals in New York. Mr. Gibbs has investigated the railroad electrification in Europe and thinks that the conditions abroad are so different from those in Chicago that, beyond the working out of some of the technical difficulties, foreign practice is not applicable to Chicago. There is no uniformity of standards abroad, and nothing has been done in the electrification of terminals.

The chairman notes that in a letter sent to Mr. Burt, chief engineer of the committee, in September last, Thomas A. Edison asserts that there is "no difficulty in making storage battery locomotives to do terminal work." Judge Holdom says that this is encouraging for the policy of electrification and that Mr. Edison may possibly demonstrate in time the correctness of his conclusions.

Mr. Gibbs is quoted as follows: "The data which are now assuming shape in this office make it possible for the first time for us to begin to see daylight in outlining the entire problem, and we shall soon reach a point where we can proceed on the scheme for electrification, its cost and operating results. There has been a vast amount of work done, and upon very systematic lines, and I believe this work of preparation has been necessary and justified."

Judge Holdom emphasized the fact that conditions in the East are no criterion of railroad electrification in Chicago. He says: "Chicago is on a scale of ten to a unit in the East, its freight yards and terminals presenting problems differing radically from those found in the Eastern cities." The chairman says the problem depends for its solution on whether electrification is mechanically feasible, safe and efficient, and whether it is financially practicable. At this time none of these questions can be answered, al-

though great progress has been made toward their final solution.

The matter of the character of motive power remains to be solved. Judge Holdom's exact language on this point is of interest. He says: "Aside from the Diesel internal-combustion engine, there are numerous other engines in the experimental stage whose powers are not yet known and whose capacity for practical operation has not yet been determined. Whether overhead construction, or third-rail, or electrical engines, or storage batteries, or gas-electrical motor engines (now in the experimental stage in the shops of the General Electric Company, Schenectady, N. Y.), will prove to be most useful and practical depends on time and the ultimate results reached by those who are constructing and exploiting them."

It is interesting to note that from the organization of the committee on June 30, 1911, to Dec. 31, 1912, there had been expended on the investigation \$221,599.97, all of which has been paid by the railroads represented by the General Managers' Association. The average number of employees on the chief engineer's staff during eleven months of 1912 was sixty-six.

AWARD OF CONTRACT FOR ELECTRIFICATION OF MELBOURNE SUBURBAN SYSTEM

The important announcement was made this week that the contract for the electric equipment for the electrification of the suburban railways about Melbourne, Australia, had been awarded to the General Electric Company. The work will be carried out on a 1500-volt d.c. system, according to the recommendation of Merz & McLellan, consulting engineers, Westminster, London. An abstract of Mr. Merz's latest report, in which he recommended the high-tension direct-current system, was published in the *ELECTRIC RAILWAY JOURNAL* for Dec. 7, 1912. An abstract for an earlier report, in which Mr. Merz recommended electrification in general, was published in the issue for Oct. 3, 1908.

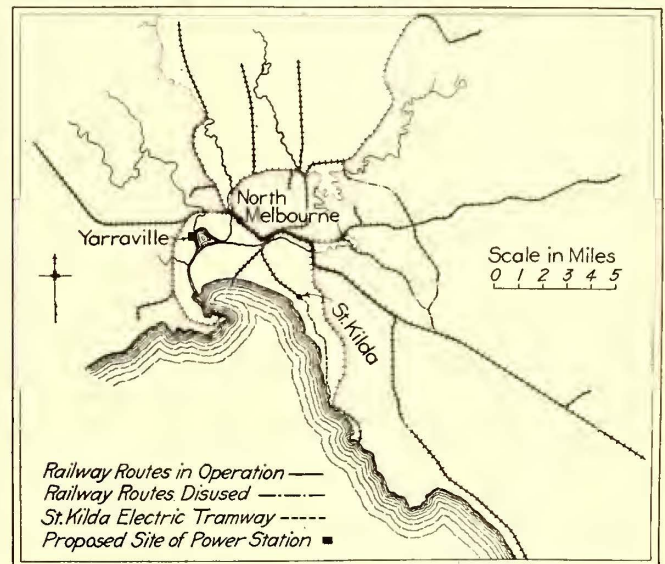
Melbourne is the capital of the State of Victoria in Australia. It has a population including suburbs of about 500,000 persons and is the most important municipality in Australia. The local tramway system is operated mostly by cable and is owned by a corporation whose franchise soon expires. It is expected that this system will be taken over, either by the municipal government or the state government, and then probably electrified. The present contract does not relate to the tramway system in Melbourne but to the suburban steam lines that form part of the steam railroad system, which is owned and operated by the Victorian government.

The report recommending 1500-volt electrification, published in the issue of this paper for Dec. 7, was based upon tenders on different systems of electric traction submitted by all of the large manufacturers of electrical apparatus, and the contract which has been received by the General Electric Company comprises 400 motor car equipments, consisting of four motors each, 800 control equipments, 400 of which are for trailer cars, and 400 air compressor equipments. This is the largest single order ever placed for electric railway apparatus.

The mileage of the suburban lines included in the scheme is made up of 150 route miles, or 289 track miles, of running roads and 34 miles of sidings. Power will be supplied from a central station at Yarraville, a suburb of Melbourne, in the form of three-phase alternating current at twenty-five cycles per second, and will be transmitted at 20,000 volts to twelve substations at various points on the system, where it will be converted into the operating direct current of 1500 volts. The high-tension transmission is by underground cables from the power house to the important substations in the central area, and by overhead wires, erected on the same structures which carry the railway

track conductors, to the outlying substations. Overhead conductors will be used throughout the system for supplying current to the trains, which will be equipped with roller pantograph collectors. The complete equipment of the railways involves the expenditure of \$12,000,000 in round numbers, and Mr. Merz figures that the saving from electric operation will amount to about \$600,000 in 1915 over the former steam-operated lines.

Normal trains, weighing about 180 tons, will consist of two motor coaches and two trailer coaches. The tracks are 5-ft., 3-in. gage. The suburban traffic amounted to 70,000,000 passengers in 1908; the figure the past year exceeds 90,000,000 and in 1917, when it is expected that the conversion to electric operation will be entirely completed, it is estimated that the suburban lines will carry 150,000,000 passengers per annum. The present plans are accordingly based on provision for this probable increase in the passenger traffic, but all parts of the electrification scheme



Melbourne Suburban System of Victorian Railways

are arranged so as to be capable of extension from time to time as the traffic subsequently grows. Heavy traffic during the rush hours of morning and evening will be cared for by increasing the length of trains, although for this initial service it is the intention to have the maximum train consist of six coaches.

The motors, numbering 1600 in all, which will be installed in the 400 motor coaches will be of new design throughout. They will be known as Type GE-237, will be provided with commutating poles, and will be rated 140 hp each at 725 volts. They will be operated two in series on 1500 volts. These motors will be self-ventilating by centrifugal fans, cast integral with the pinion-end armature-core head. The motors will be arranged for top-field control so as to have a running speed of 52 m.p.h. over level track on express runs.

The control equipments, of which 800 will be required, will be of the Sprague General Electric Type M form with relay automatic control.

The losses from moisture in coal, according to the *Bulletin* of the Institute of Operating Engineers, are too often neglected. In a cargo of 800 tons, 1 per cent of increase in the moisture content may mean a loss of \$40 or \$50, to which must be added losses due to evaporating and superheating this moisture in the furnace. The "mine moisture" of bituminous coal shipped to the New York markets averages approximately 2 per cent. Moisture in excess of this amount is usually caused by rain and leakage in boats during transportation, so that the allowable moisture in a sample should be limited to about 3 per cent.

RECOMMENDATIONS FOR SAN FRANCISCO CARS

As a supplement to Part I of his report on the design of the new United Railroads' motor car, B. J. Arnold has submitted to the San Francisco Board of Supervisors, under date of Jan. 20, 1913, an analysis of the loading arrangements of the present rolling stock. In this Mr. Arnold presents detailed recommendations by which the present car bodies may be retained in service for some years to come and still be made more useful to the company and also more useful and comfortable to passengers, especially with reference to rapid loading and unloading. An abstract of Mr. Arnold's summary follows:

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

1. The three improvements essential to the electric car equipment are (a) an increase in platform loading capacity; (b) better unloading facilities; (c) improved seating arrangement. To secure the principal result there are only two alternatives—either lengthen the platform or else remodel the platform fixtures and remove the end bulkhead; possibly both will be advisable in some cases. Mr. Arnold believes that these changes will result in increasing the speed of passenger movement at least 25 per cent.

2. Observations indicate that the time for loading and unloading is entirely too great. Entrance passages should be enlarged, particularly on the short-platform cars, and at least the full width of the entrance step (i. e., from the outer grab handle to the stanchion) should be preserved in the platform passageway as far as the last step or entrance door into the car body. In general, this result may be accomplished by changing the shape of the guide railing, and on the shorter platform cars by moving the controller away from the entrance.

3. Inasmuch as the use of the prepayment fare box is established, end bulkheads in cars with narrow bulkheads should be removed to provide the additional entrance way made necessary by this method of fare collection. In this manner a "California" type car may readily be developed by locating the bulkheads within the car body, forming a closed central section with open end compartments.

4. If a fare box is to be used, the elimination of the end bulkhead is essential, but in this case moving the controller to the side, although desirable, will not be absolutely necessary. On the other hand, if the fare box is not used, it will be unnecessary to take out the end bulkhead, since moving the controller will provide considerable platform space. In any case, the clear entrance way to the car body should generally exceed 24 in.

5. Lengthening of platforms is preferable if the cars are in sufficiently good condition to warrant the expenditure, but the change would not be worth while unless each platform could be lengthened at least 12 in. If none of these improvements is carried out, the short platform cars should be retired to outlying or cross-town service, where traffic is lighter.

6. The closed section of the "California" type cars should have cross seats, but in the end compartments the maximum amount of storage space should be provided to accommodate short-haul riders. This necessitates the use of a longitudinal seat on that side of the car where passengers enter. In the all-inclosed class at least 50 per cent of the seating capacity should be in cross seats, instead of the present all-longitudinal plan.

7. During stormy weather, protection by windows or curtains must be provided in the "California" type cars for passengers using the open sections, otherwise more than half of the seating capacity of the car is rendered unavailable when maximum capacity is demanded by rush-hour loading.

8. In cars from which the end bulkheads are not removed, the stanchion in the middle of the door opening should be set out 6 in. or 8 in. from the end sill to increase the entrance and exit passageways.

9. The "Cleveland" fare box frame will provide the maximum storage space on short platform cars using this method of fare collection. If the fare box is not used, the present type of guide railing altered in shape may be retained, but any rail of this type should be cut off at least 24 in. from the step or provided with the "Oakland" radius (movable) rod in order to make the entire step available for emergency loading.

10. Any form of guide railing or fare box stanchion should be movable, so as to be located behind the motorman on the forward end to protect him from interference by standing passengers during lurches of the car, at the same time clearing the forward platform of obstructions.

11. Rapid unloading at the forward end should be facilitated as follows: (a) Removal of the stanchions now dividing the door opening (unless bulkheads are removed) to give a less obstructed exit way; (b) moving the exit gate next to the bulkhead in order that passengers alighting may not have to force their way through a crowded platform; this will also have the effect of decreasing the necessary length of safety stations on the street; (c) providing a gate at least 30 in. wide, say of a sliding type, which does not interfere with passengers standing on the platform.

12. All cars should be provided with automatic folding steps at the forward exits and lift steps at the rear entrances. With all steps raised except that under the conductor's control, accidents will be greatly reduced.

13. On the flush-platform "California" type cars the principal improvements should include the remodeled guide railing, storm curtains in the open sections and a seating arrangement approximating the Geary street car plan,* except that in such a narrow car two rows of cross seats should not be used in the closed section; also the projecting steps on these cars, or any other type, should be replaced by automatic folding steps to prevent accidents.

14. On the 1300 class the platforms should be lengthened and the car converted into the prepayment type if it is to be operated on any important lines.

15. Power brakes should be used on all double-track equipment, especially that operating within the congested districts. The expense of new brake installation on cars that have been in service ten years or more would not be warranted, but such equipment should be immediately retired to outlying districts.

16. Cable cars of the Powell Street lines should have additional capacity, and these short cars should be immediately converted into the "California" type by the addition of another open section. Double-end operation should be provided for. In the design of new cable equipment the adoption of the prepayment center-entrance type should receive serious consideration, with the object of reducing accidents and obstructions of streets.

17. For hill-top lines encountering long grades much in excess of 10 or 12 per cent, a special type of car should be developed, of light construction and equipped with power track brakes such as the magnetic type; this car to be from 35 ft. to 40 ft. in length and to seat about thirty-six people.

LOADING TIME

In the general discussion, the question of loading time is considered. With the abrupt vertical grades and necessary platform overhang in San Francisco, the United Railroads Company has established a platform length of 7 ft. 4 in. If this length is taken advantage of to the fullest extent, as has been done in the Municipal Railway car, it would be sufficient.

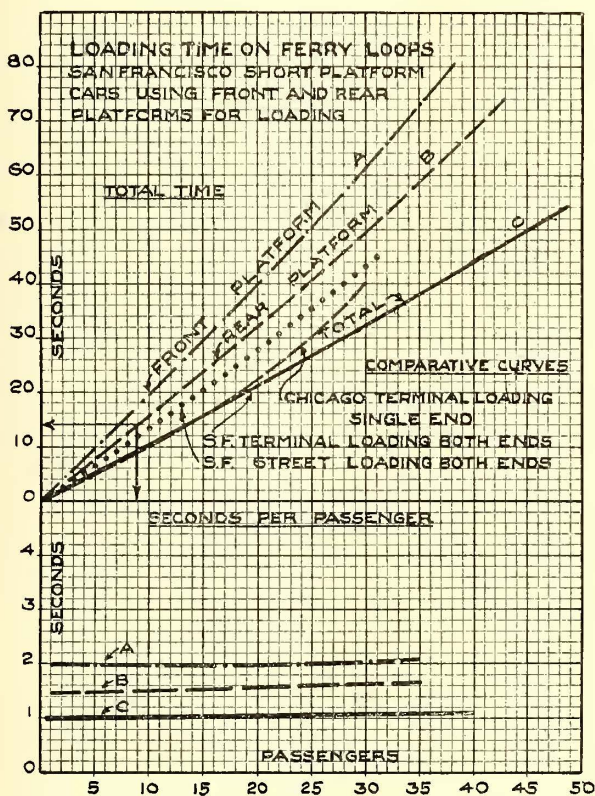
For loading conditions in San Francisco, sufficient storage space should be provided on the platform to accommodate an average group of ten and a maximum of twenty-five passengers waiting to pay their fare. For average groups of ten passengers, the loading time for the best of the San Francisco cars is 27.5 per cent slower than the

*For description of this car see ELECTRIC RAILWAY JOURNAL for Feb. 24, 1912.

latest equipment operated in Oakland, and for the short platform type 65 per cent slower, or twice as slow as the standard cars of Chicago, which are built with 8-ft. 4½-in. platforms.

In Report No. 6 it was recommended that at terminals and heavy loading points the front exit, as well as the rear entrance gate, should be used for loading, with extra conductors stationed at these points to receive additional fares. This plan has been put into operation by the United Railroads with very satisfactory results, and the total time of terminal loading has now been reduced to a point practically equivalent to that of the Chicago standard car loading along the street by the usual rear entrance.

Observations show that although the front gate requires 25 per cent more time to load than the rear, the total loading is reduced to about one second per passenger. In other words, by this expedient the present short platform car has increased in loading speed by one-third. However, for the average street loading conditions the speed is necessarily slower, as shown by the dotted line in the accompanying



Comparison of Passenger Handling Speeds on Cars in Chicago and San Francisco

curves, for the reason that passengers alighting at the rear end use part of the platform step, so that for equal conditions the San Francisco car loading at both ends is about one-third slower than the Chicago standard loading at the rear end only.

Thus far the results of the new Geary street car, which car can carry twenty to twenty-five passengers on the rear platform, indicate that the principles herein expressed are correct, and that by the provision of ample storage space the loading speed of these cars under normal conditions will probably approximate that of the long-platform cars used in Chicago.

REPORT ON BRAKE EQUIPMENT

The subject of brake equipment concludes the report after a detailed survey of each type of car now used by the United Railroads. In San Francisco air-brake equipment is used on all electric cars with the exception of thirty-nine double-truck and sixty-three single-truck cars of the original "California" type. This does not include the cable

cars, all of which are equipped with hand wheel and track brakes. Of the equipment now controlled by hand brakes, the double-truck cars weigh from 32,000 lb. to 34,000 lb. equipped but without passenger load, and the single-truck types weigh about 14,000 lb. equipped; double-truck cars operated by air brakes, from 38,000 lb. to 80,000 lb., equipped. In analyzing the accident account of street railways operating hand and air brake cars in some of the large cities of the country, it appears that there is a more or less clearly defined line which constitutes a practicable limit for the operation of these two types of brake equipment. The factors of type and weight of car, scheduled speed, character of territory traversed, kind of street traffic encountered, prevalence of bad rail conditions, etc., make it impossible, however, to establish a definite limit for universal application.

The standard Chicago car with air-brake equipment is able to stop within a distance of 145 ft. under maximum brake application when running at the maximum motor speed of about 24 m.p.h. Comparative braking tests in New York City, made upon a car weighing 38,000 lb. and running at a speed of about 17 m.p.h., showed an average braking distance of 114.2 ft. for air brakes, and 141.6 ft. for hand brakes. The minimum distance observed was 105 ft. for air and 128 ft. for hand brakes. This means that the air brakes stop the car within 2.8 lengths and hand brakes within 3.5 lengths. Recent discussion of this subject resulted in an order issued by the New York Public Service Commission of the First District to equip all double-truck surface passenger cars weighing over 37,000 lb. with power brakes and geared hand brakes, which order was further modified with the intention that in the future all new equipment should be furnished with both power and hand brakes. This order undoubtedly contemplated the exclusive installation of double-truck cars within the city.

In San Francisco those cars which are not equipped with power brakes have two types of lever hand brakes: (1) wheel brake, (2) track brake. The track brake undoubtedly gives additional security over the ordinary hand wheel brake. Moreover, the hand brake cars are of the older styles and will unquestionably be retired in the near future. Consequently it is not a justifiable expense to equip all of these older cars with air brakes. If any line may be drawn, the single-truck cars should be allowed to run with their present brake equipment and also any double-truck cars now in service that have had more than ten years' wear. All of these cars, however should be kept off the principal thoroughfares and should be used on the outlying lines. The San Francisco company's reported practice of using power brakes on all cars over 33,000 lb. in weight, equipped, is satisfactory. If, however, it is determined to operate any new cars of lighter weight, Mr. Arnold would still recommend that power brakes be used on all double-truck equipment.

For so-called hill lines, where the necessities of routing require operation over grades much in excess of 10 per cent to 12 per cent, it would be hazardous to attempt to operate a fast schedule without the assistance of some form of power brake, especially for a large car of forty seats or more which will probably weigh in excess of 40,000 lb. Although it is true that in San Francisco climatic conditions are such that a clean rail is usually available on which air brakes would be safe, yet the occasional occurrence of slippery rail and the danger of overrunning stops through too rapid coasting down grade invite serious accidents. It is recommended that careful study be made of the magnetic track brake for meeting such conditions. It has been successfully applied in Los Angeles, Portland and Seattle with heavy cars on grades as high as 14 per cent. It is possible, with this equipment, on a level track to stop a heavy car running at 21 m.p.h. practically within its own length, i. e., within less than 50 ft. This is far beyond the limits of the usual air-brake equipment.

MEETING OF COMMITTEE ON EQUIPMENT

The midyear meeting of the committee on equipment of the Engineering Association was held on Saturday, Feb. 1, at the New York headquarters of the association. The committee members present were F. R. Phillips, chairman, Pittsburgh, Pa.; J. M. Bosenbury, Peoria, Ill.; E. W. Holst, Boston, Mass.; L. M. Clark, Indianapolis, Ind.; R. N. Hemming, Anderson, Ind.; W. R. McRae, Toronto, Ont., and J. P. Barnes, Syracuse, N. Y.

The first discussion was subject 1, wires and cables for car equipment. It was the consensus of opinion that the report should not attempt to give a detailed specification as to quality and kind of cables, etc., but should preferably be a study of manufacturing and insurance aspects and the influence on maintenance due to various trolley connections, car cables and motor leads. The sub-committee on this subject consists of W. R. McRae, Toronto, and D. E. Blair, Montreal, Que.

Subject 2, storage battery car operating data, was assigned to E. W. Holst, Boston, and J. M. Bosenbury, Peoria, Ill. The work of this sub-committee will be supplementary to the 1912 report on self-propelled cars. It will be devoted chiefly to verifying operating data, summarizing the progress of the past year and bringing the bibliography of this subject down to date.

The committee then considered topic 4, revision of brake-shoe standards, upon which a report was submitted by L. M. Clark, Indianapolis, Ind., and W. R. McRae, Toronto, Ont. The suggestion for revision, including removal of discrepancies, had been made by A. T. Clark, superintendent rolling stock and shops United Railways & Electric Company, Baltimore, Md., owing to some clearance difficulties which he had experienced in trying to adapt the association brake shoe standards to his conditions. It was the sense of the committee that further study should be made of brake shoe design to see whether such difficulties could not be obviated without materially changing the present standards.

Subject 6 assigned to the committee relates to the investigation of the differences in the standards of the American Electric Railway Association and the Central Electric Railway Association. Mr. Hemming said that, with the exception of brake shoe length and one or two other matters, the Central Electric Railway Association had voted on Nov. 21, 1912, to accept the standards of the American Electric Railway Association in place of its own. Messrs. Hemming and Clark will report in detail upon this subject at a later date.

Subject 3, refinement of specifications for solid steel wheels, was next considered in connection with subject 5, standard car wheel measuring tapes, gages and templates. Messrs. Holst and Barnes constitute the sub-committee on both of these subjects. As to subject 3, Mr. Holst asked for more time on this matter before making a report in order that he might draw his conclusions from a longer trial.

Mr. Barnes stated that at a meeting of the American Society for Testing Materials held in Pittsburgh Dec. 16, 1912, the representatives of the society had objected to those clauses in the Engineering Association's wheel specification which relate to mating for uniform carbon content and weight tolerance. Mr. Phillips pointed out the necessity of having one or more representatives of the Engineering Association at the meetings of the Testing Society in order to insure a full hearing for the standards desired by the electric railway interests. There was a general discussion by the committee on the mating of wheels and the connection between weight and dimensional tolerances. Mr. Barnes said he would prepare a report covering in detail the matter of tapes, gages and templates for wheels after receiving some promised data on that subject from the M. C. B. Association.

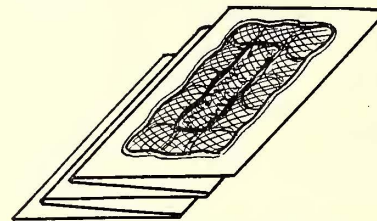
The last matter taken up was subject 7, specifications for air-brake hose, in line with the suggestion of W. G. Gove, superintendent of equipment Brooklyn Rapid Transit Company, who had found that the M. C. B. specifications for hose did not meet the excessive vibration and swaying of electric railway trains. This subject has been assigned to Mr. Bosenbury and F. G. Grimshaw, Pittsburgh, Pa. It is proposed to prepare a specification covering the quality of rubber entering into such hose.

Upon request of the committee on standards, Mr. Phillips will review the specification of heat-treated carbon steel axles.

The meeting was then adjourned.

NEW METHOD OF FOLDING TICKETS

The Cleveland Railway has recently adopted a novel method of folding tickets which are sold in strips. The method employed is covered by a patent issued to Louis P. Lipps, Cleveland. The object of the invention is to make it easy to detach a single ticket. Usually, of course, such tickets are of the same width and are folded at right angles



Package of Cleveland Tickets

to the edge of the slip, with the result that the user often tears off two or more tickets when he means simply to detach one. In the new method every other ticket is made slightly wider than the preceding ticket so that the edge of the outer ticket projects beyond the edge of the next inner ticket. Another object is to help schedules by reducing delays by passengers while they are separating their tickets. This is particularly important in prepayment cars. The accompanying engraving shows a strip of five tickets such as are sold by the Cleveland Railway. This company has ordered 100,000,000 of these tickets.

TRAMWAY STATISTICS IN GREAT BRITAIN

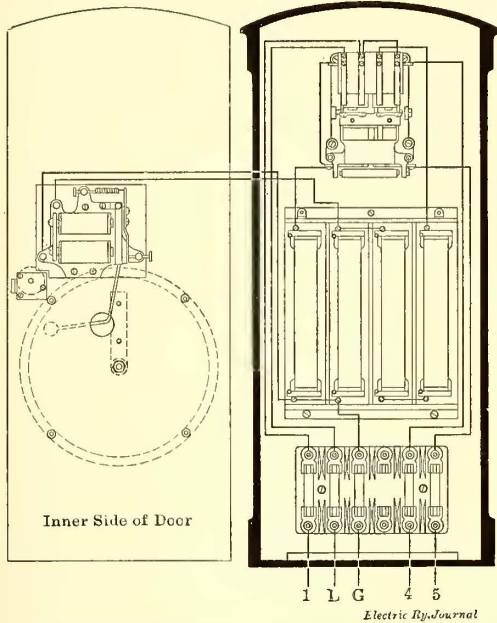
The statistics of the tramways and light railways in Great Britain and Ireland for the past year, published by Parliament, have just appeared. The statistics cover the calendar year of 1911 for the companies and the year ended March 31, 1912, for the municipal railways. Of the 290 undertakings, 172 belong to local authorities and 118 belong

STATISTICS OF ELECTRIC RAILWAYS IN GREAT BRITAIN AND IRELAND			
	1911-12	1910-11	
Total number of passengers carried.....	3,127,318,732	2,907,177,120	
Number of miles run by cars.....	323,354,389	310,494,243	
Capital expenditure per mile of single track open:			
Lines and works.....	£ 13,623	£ 13,534	
All items	£ 18,005	£ 17,873	
Percentage of net receipts to total capital outlay	7.50	6.97	
Percentage of net receipts to net capital outlay (eliminating amounts expended on construction or purchase of old lines and works now superseded)	8.15	7.60	
Percentage of working expenditures to gross receipts	60.60	61.70	
Passengers carried per mile of route open..	1,183,620	1,119,389	
Passengers carried per car mile.....	9.67	9.36	
Average receipts per passenger.....	1.079d.	1.089d.	

to companies. The municipal enterprises, however, are much the larger and represent in net receipts £4,233,874 out of a total of £5,801,648. The municipal lines have a total length, measured as single track, of about 3020 miles, as compared with 1263 miles belonging to companies and private individuals. Some of the statistics are given in the accompanying table. These figures include 5 miles of trackless trolley system.

A SIMPLE TROLLEY CONTACT CROSSING SIGNAL

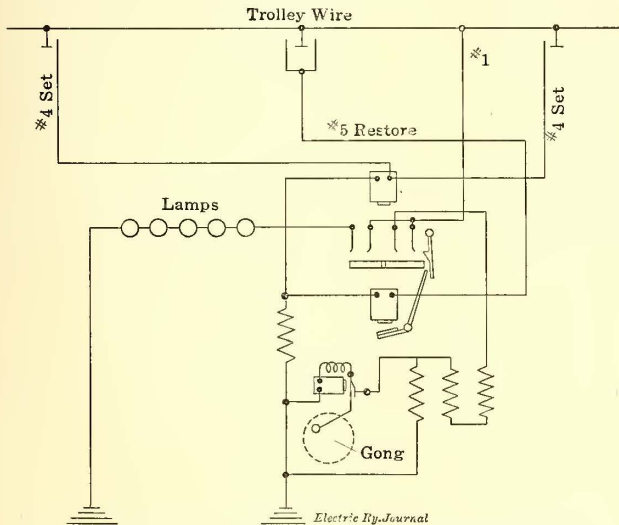
A new crossing signal of the trolley contact type has recently been placed upon the market by the United States Electric Signal Company, West Newton, Mass. As a result of fifteen years of experience and observation, its manufacturers have endeavored to reduce its design to the



Trolley Contact Crossing Signal—Interior of Signal Casing

simplest arrangement compatible with satisfactory operation.

The housing is a cast-iron case with a 3-16-in. sheet-iron door securely hinged and provided with a Yale lock. The gong is 10 in. in diameter and is mounted on the outside of the box door, but the ringing mechanism is inside the case, the striker projecting through a small hole in the door and striking upon the inside of the gong. The main relay is of the wall type and mounted by four screws to the back of the case. Resistance is in tube form, mounted in a slate



Trolley Contact Crossing Signal—Wiring Diagram

case and can be adjusted for any usual railway voltage. One-half ampere is used for operating.

One crossing equipment for single track usually consists of the signal and three trolley switches or contactors. The method of installation is to place the signal upon a pole as near the intersection of the track and the highway as possible, to place a double-acting trolley switch on the wire

immediately over the crossing and one single-acting trolley switch over the track each side of the highway and at a suitable distance away, depending upon the maximum speed at the location.

The switches at each side of the highway are for cutting the alarm into operation and operate according to the direction of the movement, while the double-acting switch immediately over the crossing restores for either direction.

In the operation of the signal a car approaching the crossing passes under one of the setting switches, momentarily closing a contact which energizes the setting magnet of the relay causing its armature to be attracted and mechanically latched in position. This operation closes a permanent feed from trolley across contact points on the relay to the bell and through resistance to ground. Upon reaching the crossing the car passes under the restoring switch and momentarily makes a contact which energizes the restoring relay and unlocks the mechanical latch above mentioned, allowing the armature of the setting magnet to fall by gravity. This opens the circuit to the trolley feed, thus restoring the signal to the inoperative condition. For double-track protecting the operations are the same except that four switches are required.

Terminals are provided to which a bank of lamps can be connected to illuminate a danger sign at the crossing or any other lamp arrangement such as the use of red lights on the highway each side of the crossing. If desired, a semaphore blade attached to the signal case can be designed to remain in the danger position normally and to indicate "clear" when the signal is in operation, thus showing the condition of the signal to the crew of an approaching car before the crossing is reached.

SANITARY CAR STRAP WITH ADVERTISING FEATURE

The accompanying halftones illustrate a car strap which has been patented by John F. Newton, Jr., Public Service Advertiser Company, Boston, Mass., in response to a need of improved sanitary car fittings for standing passengers, combined with striking publicity features. The novel feature of the strap is a handle or depending loop made of steel with a dipped velvet rubber finish, on the outside of which is a facing of a non-inflammable, transparent material known as "cellon," forming a surface above an advertising strip of paper which carries any desired pictorial or printed display.

The cellon gives to the surface of the handle a polish resembling an enamel finish and it is moisture-proof. When no advertisement is inserted the strap handle can be finished to match the interior of the car. The edges of the handle are rounded and molded to provide the maximum of comfort, which is obtained by the use of even two or three fingers. A trial installation has been in service on several elevated cars of the Boston Elevated Railway for eleven months. One of the accompanying views illustrates the equipment as installed in one of these cars. The handle of the strap is 4½ in. deep and 2½ in. in diameter, the width being 1¾ in. In the Boston trial installation the monogram of the Boston Elevated Railway Company has been placed in the adver-

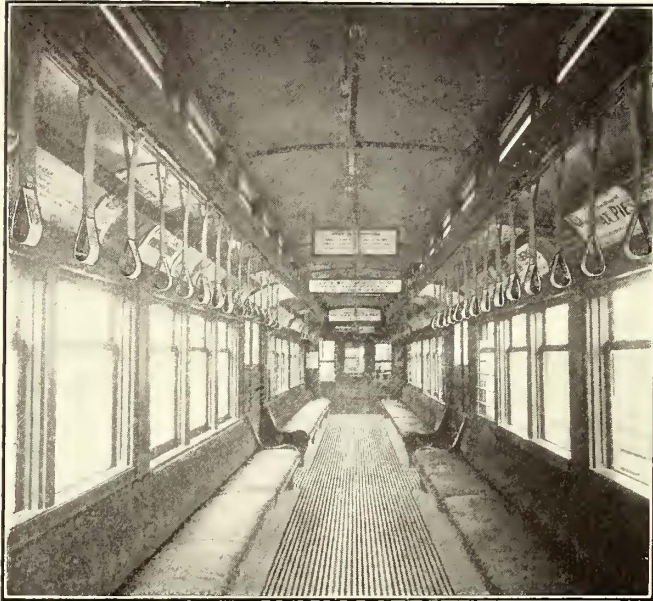


Strap with Advertising Feature

One of the accompanying views illustrates the equipment as installed in one of these cars. The handle of the strap is 4½ in. deep and 2½ in. in diameter, the width being 1¾ in. In the Boston trial installation the monogram of the Boston Elevated Railway Company has been placed in the adver-

tising space of the handle as shown in the illustration.

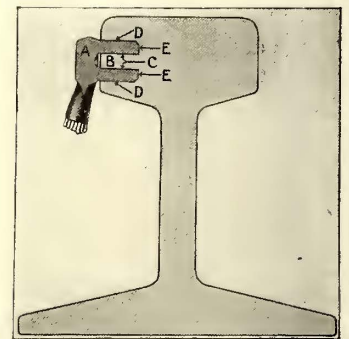
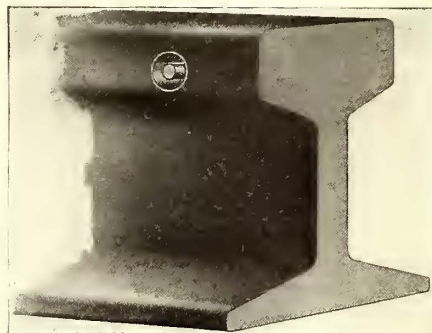
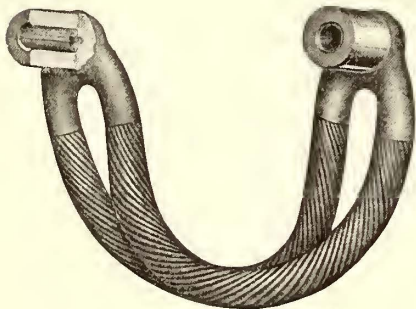
The handle is fastened to the strap by two nickel-plated rivets with nickel-plated washers, and can be detached easily by the use of an implement which pulls down the handle from the leather. The elevated car strap is 19 in. long and $1\frac{3}{8}$ in. wide, its thickness being $\frac{3}{16}$ in. The straps in the "velvet finish" equipment are of the best



Interior of Car, Showing Appearance of Advertising Straps

bridle leather, tanned from four to six months and provided with rounded edges. The surface car strap of the Advertiser company is 12 in. long and of the same material. With the handle it will withstand a pull of over 2000 lb. The handle is practically unbendable and weighs but 2 oz.

The straps are carried on a $1\frac{1}{4}$ -in. polished cherry rod terminating at each end in circular plates with bronze



New Rail Bond—Views Showing the Bond, the Annular Hole in Ball of Rail and the Bond in Place

facing carrying the railway's engraved monogram, eight such plates being used per elevated car, as the rods are not carried past the doors. The latter arrangement leaves a clearer passage at the entrances and exits and enables the traffic to be loaded and unloaded with shorter stops. The straps cannot be moved longitudinally on the rods, as they are held in place by a bronze bracket behind each strap on the rod itself. This prevents any marring of the handle finish and the massing of straps in front of any advertising card in the racks.

The Public Service Advertiser Company's present plan is to install and maintain the straps free of charge to the railway company, the revenue being derived from the advertisers on a rental basis per strap. The handles are maintained in perfect sanitary condition by being wiped with sulpho-naphthol at least weekly.

A NEW RAIL BOND

An entirely new method of securing contact is used in a bond just placed on the market by the Ohio Brass Company, of Mansfield, Ohio. This is known as the "type J" all-wire rail bond. Reference to the illustrations will show the novel features of construction, all of which are patented. In the application a pin is formed in the center of an annular hole drilled in the rail by a hollow cutter. This pin fits into a hole drilled in the bond terminal and, as the pin is an integral part of the rail, it makes a current-carrying contact on the inside of the terminal in addition to that secured on the outside as in the ordinary bond.

The bond is installed on the ball of the rail by driving the terminal home with a hammer. This operation compresses the copper and causes it to grip both the outer surface of the hole and the central pin. Mechanically, the bond is thus permanently attached.

Electrically, the contact surfaces marked *C*, *D* and *E* on the illustration are more than sufficient for the capacity of the bond. The contact surface *C* on the pin *B* is absolutely protected against moisture and other corrosive elements, as it is far removed from the outer surface of the rail.

A special hollow milling cutter is provided for forming the annular hole in the rail. It is made of high-speed steel, and facilities are provided for quickly and accurately regrinding it in the field. A motor-driven machine has been developed for use in the installation of this bond. It drills two annular holes simultaneously, one on each side of the joint, feeding the cutters automatically. When the holes are finished the cutters are backed out rapidly without stopping or reversing the motor.

The machine can be quickly clamped to the rail or released, and it is mounted on wheels for moving along the track. Two men can easily lift it from the track to allow cars to pass. The motor is especially designed for this service and operates on a 550-volt d.c. circuit with a maximum current consumption of approximately 2 amp. The controlling switch is located on top of the machine within easy reach of the operator. Two men can mill the

holes while a third cleans the holes, installs the bonds, removes crossing planks, etc.

An electric railway which recently installed many thousands of these bonds reports that under ordinary conditions three men can install from 125 to 150 bonds in a ten-hour day. At present the bond is made only in No. 0000 capacity and is designed for use on 60-lb. and heavier rails.

There is an open market for manufacturers of all countries for all material for the Brazilian government railways, and rails are purchased in Europe and America without preference, depending entirely on price. On the other hand, when possible, roads owned by English companies naturally give preference to their own manufacturers for locomotives and other rolling stock as well as machine tools.

ELECTRIC RAILWAY LEGAL DECISIONS

CHARTERS, ORDINANCES, FRANCHISES

Connecticut.—Earnings Tax on Capital—What Is Capital?

An ordinance granting a horse railway company the right to operate by electricity provided as a condition that the company should pay a 2 per cent gross earnings tax when its net earnings should exceed 6 per cent on the capital actually invested in stocks or bonds, or both. Held, that such condition referred to the amount contributed by stock and bond holders to the corporation's liabilities and not to the capital actually invested for construction and equipment. Therefore a complaint in a suit to recover such taxes, alleging that the income exceeded 6 per cent of the capital actually invested by the company for the construction and equipment of its railway lines, etc., was insufficient to show an accrual of the liability to pay. (*City of Waterbury v. Connecticut Ry. & Lighting Co. et al.*, 84 Atlantic Rep., 723.)

Indiana.—Right to Cross Steam Road—Tracks.

A street railway is not an additional burden to the easement which the general public has in a street. Hence it may cross the tracks of a steam railway laid on such street subject to no conditions other than those to which the general public is subject. The priority of the steam road in constructing its tracks gives it no advantage, it being assumed that it constructed its tracks with the understanding that a street railway might be located upon the highway. (*Baltimore & O. S. W. R. Co. v. Cincinnati, L. & A. Electric St. R. Co.*, 99 Northeastern Rep., 1018.)

Massachusetts.—Taxation—Bridge and Approaches—Street Railroad Property.

Where a street railway company which was authorized by St. 1899, Chap. 293, to construct a bridge across a river between two cities and to construct its railway on the bridge, etc., constructed the bridge, acquired a strip of land extending from the bridge to a highway and maintained on the bridge and land appliances for the operation of a street railway, the bridge and land were real estate within general tax law (St. 1909, Chap. 490), Sec. 3, and were subject to local taxation in the absence of any law to the contrary. (*Connecticut Valley St. Ry. Co. v. City of Northampton*, 99 Northeastern Rep., 516.)

Michigan.—Street Railroads—Maintenance of Streets—Police Power.

A municipality in granting franchises to a street railroad company to construct and maintain its roads in and upon the streets and highways cannot surrender or circumscribe its right to exercise its general police powers, and such grants must be accepted upon the implied condition that they are subject to such power. A municipality is the judge of the necessity for repairing the pavement or repaving its streets, and it may require such grantee to conform to any reasonable changes which may be determined to be necessary for the protection of the public. (*City of Detroit v. Detroit United Ry.*, 138 Northwestern Rep., 216.)

Michigan.—Rights Acquired in Streets After Expiration of Franchises.

A municipal corporation is not estopped from insisting on the expiration of franchises to a street railway company by the inaction of its officials while the company was expending large sums of money in betterments and replacements instead of ordinary repairs, especially where the municipality had no right to prevent the company from making improvements or to require them to be made.

Upon the expiration of a franchise granted by a municipality to a street railroad company, the property in the public streets used in the maintenance and operation of the railway belongs to the company and may be removed by it, and it is entitled to notice to remove it within a reasonable time, and the municipality has no arbitrary power to proceed at once by force to effect such removal.

A street railway company by continuing to occupy the streets after the expiration of a franchise granted by the municipality does not create a nuisance in the streets. (*City of Detroit v. Detroit U. Ry.*, 137 Northwestern Rep., 645.)

Nebraska.—Right-of-Way—Rescission of Grant by Land Owner.

Where a suburban land owner, in consideration of the

location, construction and dedication of an interurban railway and boulevard across his premises, enters into a written contract to convey to the street railway company a part of his land for right-of-way purposes but afterward seeks to rescind his contract on the ground of fraud or mistake, he must act promptly and make known his intention to rescind upon his discovery of the facts. (*Ensign v. Citizens' Inter. Ry. Co. et al.*, 138 Northwestern Rep., 718.)

New Jersey.—Street Railroads—Construction and Maintenance—Liability for Injuries.

By the general principles of the common law a railway company, having the right to construct tracks in the public street, must lay its tracks in a proper manner and keep them in a proper state of repair, but the liability of such a company for failing to keep the surface of the street in repair does not result from the mere fact that the corporation has been vested with a franchise or license to use the public street. The liability to maintain the pavement, as such, if it exists, must rest upon some statute or ordinance imposing such a duty or must arise out of the obligations of a contract, and in the absence of statute, ordinance or contract creating such duty, a railway company is not liable to one of the traveling public who is injured by stumbling over one of its tracks which is exposed by reason of the highway becoming depressed at the place of the accident, when such depression in the street has not been occasioned by the negligence of the company. (*Johnson v. Public Service Ry. Co.*, 85 Atlantic Rep., 165.)

New York.—Passenger Rates to District Within City Limits Acquired by Annexation.

The consolidation of Brooklyn, including the former town of Jamaica, which in 1889 was outside of Brooklyn but was afterward incorporated therein as a part of Greater New York City, did not take from a railroad company the right to collect 10 cents above the regular fare on its line between Brooklyn and Jamaica, under Laws 1889, Chap. 38, which gives any steam railroads the right to collect an excess charge of 10 cents over the regular fare from any passenger who pays his fare in the car, "except where such passage is wholly within the limits of any incorporated city." Greater New York Charter (Laws 1901, Chap. 466), Sec. 1538, provides that franchises theretofore granted by any of the united and consolidated municipalities shall be restricted to their respective limits before consolidation, so that by analogy the obligations of a railroad company should not be extended by the consolidation. (*Hogan v. Long Island R. Co.*, 138 New York, Supplement 47.)

New York.—Acquisition of Franchise—Consent of Municipality—Modification of Franchise.

A street railroad company, operating a railroad between the villages of W. and M. under a franchise authorizing it to charge a 10-cent fare between those villages, executed a mortgage which provided that part of the proceeds of the bond issue secured thereby should be devoted to the development of extensions, and that property and franchises thereafter acquired should be covered by such mortgage. Thereafter the village of M. and an adjoining town granted a franchise for an extension of the road beyond M., on condition that only a single fare of 5 cents should be charged between the terminus of the proposed extension and W. The mortgage was afterward foreclosed and the property, including the extension, sold in separate parcels; the extension and the line between M. and W. being included in different parcels. Held, that the franchise for the extension modified and superseded the old franchise, so far as the village authorities were interested in and could contract for the reduced rate, whether or not it had any application to the fare for a continuous passage between W. and any point short of or beyond M. (*Public Service Commission et al. v. Westchester St. R. Co.*, 99 Northeastern Rep., 536.)

Pennsylvania.—Rates of Fare—Agreement for Extension of Street Railway.

Where an ordinance is passed granting a street railway company terms for an extension, and providing that the rate of fare shall not exceed 5 cents per single fare, or six tickets for 25 cents, such being the rate of fare before the passage of the ordinance, neither the railway company nor another company to which it has leased its lines can abolish the sale of six tickets for 25 cents from points on the two

lines for which the extension was allowed by the city. (City of Reading v. United Traction Co. et al., 84 Atlantic Rep., 666.)

Pennsylvania.—Carriage of Goods Required if Right of Eminent Domain Exercised.

Under act June 1, 1907 (P. L. 368), conferring on street railways the power of eminent domain and providing that any company availing itself of such right shall be a common carrier of express matter, etc., whenever a street railway serves notice on a landowner of its purpose to condemn his land and files its petition and bond in court, it becomes bound as a common carrier of light freight. (Keys v. Uniontown Radial St. Ry. Co., 84 Atlantic Rep., 1109.)

Washington.—Fares to School Children—Acquiescence by Parties in Construction.

Where a franchise granted an electric company providing that school children should ride for half fare had been construed by the parties to apply only to children attending the common schools and not to students of the State University and of business colleges, the status of the parties was fixed, and the company could neither recede from its position nor the city add thereto, the contract being executed, except in so far as it is measured by time. (State ex rel. City of Seattle v. Seattle Electric Co., 128 Pacific Rep., 220.)

LIABILITY FOR NEGLIGENCE

Colorado.—Prima Facie Evidence of Negligence.

Excessive speed of a street car that struck an automobile, the failure to sound a gong or bell and the passing of cars at a street intersection, all contrary to ordinance, are each sufficient to warrant a jury in finding that a street car company was negligent. The duty to stop, look and listen is not rigidly applied in the case of street railways. (Phillips et al. v. Denver City Tramway Co., 128 Pacific Rep., 460.)

Georgia.—Car Started by Unauthorized Person During Absence of Motorman.

A street railway company may be held liable for an injury due to the failure of its motorman to exercise extraordinary care in protecting a passenger from injury. In the exercise of this care the carrier is required to anticipate that children of tender years will not act with the prudence of maturity and are generally inclined to be inquisitive, meddlesome and venturesome. Hence a jury may be authorized to find that a motorman who left his car, which was operated by electricity, in such condition that the car could be easily started or set in motion by a child passing by was guilty of culpable negligence as to passengers who were permitted to remain in the car while awaiting the arrival of a connecting car of the same street car company on which they were to proceed to their destination. (Valdosta St. Ry. Co. v. Fenn, 75 Southeastern Rep., 984.)

Kentucky.—Assumption by Employee of Risk While Riding on Running Board.

An electric railroad employee in riding on an open motor car in the performance of his duties assumed the risk of being injured through such jerks as were ordinarily incident to prudent operation of the car, and it was unnecessary to warn him against such dangers where he was seventeen years old and possessed of fair intelligence. Hence in an action by him against the company for injury received in falling from the car while walking along a running board on one side of the car, caused by a jerking of the car, it was error to give an instruction submitting an issue as to the dangerous condition of the car and negligence in failure to warn him, since such conditions did not cause his injury, he having no work to perform in operating the car. (Central Kentucky Traction Co. v. Smedley, 150 Southwestern Rep., 658.)

Maine.—A Derailment Shows Sufficiency of Evidence of Negligence.

When, in a suit against an electric railway company, it is shown that an electric car was derailed and the plaintiff, a passenger, was injured in consequence of the derailment, that is sufficient evidence prima facie of the defendant's negligence. The burden of explanation then falls upon the defendant. (Berry v. Atlantic Shore Ry., 84 Atlantic Rep., 740.)

Massachusetts.—Crossing Accident with Unregistered Automobile.

An automobile not registered in the name of its owner is unlawfully upon the highway, and a street railroad company owes to a person in it no other duty than that of abstaining from injuring him by wantonness or recklessness. (Love v. Worcester Consol. St. Ry. Co., 99 Northeastern Rep., 960.)

Massachusetts.—Injury to Child Twelve Years Old.

The failure of a boy twelve years old to look and listen for a street car before taking a position beside the track, where he was struck by a car, did not render him negligent, as a matter of law, so as to bar recovery. (Angelary v. Springfield St. Ry. Co., 99 Northeastern Rep., 970.)

Massachusetts.—Liability for Defective Culvert Maintained by Municipality.

A street railway company was liable for injury to a passenger from the giving way of a culvert in consequence of a heavy rain following a severe snowstorm, though the culvert had existed long prior to the construction of the tracks and had been subsequently maintained principally by the municipality. (Sawin v. Connecticut Valley St. Ry. Co., 99 Northeastern Rep., 952.)

Michigan.—Dangers Caused by Snow Piled on Street.

Where a company operating an electric railway in a public highway has thrown the snow from its tracks on the other portion of the highway, rendering it impassable and making it necessary for travelers to drive on the tracks, it is the duty of its employees in operating its cars to have regard to such conditions and take reasonable precautions to avoid accidents rendered more probable thereby. (Hibbler v. Detroit United Ry., 137 Northwestern Rep., 719.)

Michigan.—Street Railroads—Operation—Duty Toward Pedestrians.

The motorman of a street railroad car when running at proper speed is not required to check the car whenever a pedestrian approaches the track, but may assume, if the distance is sufficient for a crossing to be made safely, that he will so cross, and that if it is insufficient he will maintain a position of safety and not place himself in a position of danger by attempting to cross. But when the motorman becomes advised, or in the exercise of due care should become advised, of the pedestrian's peril, he must use all means within his control to avert injury. (Gradyzewski v. Detroit U. Ry., 138 Northwestern Rep., 225.)

Missouri.—Injuries to Servant—Safety of Switch.

When a switch is so constructed that street cars were operated over it thousands of times in safety and a car would have passed over it safely if the motorman in charge had kept it under control as it approached the switch and stopped at the post indicating a safety stop, the switch, as a matter of law, was reasonably safe. (Glenn v. Metropolitan St. Ry. Co., 150 Southwestern Rep., 1092.)

Texas.—Injuries to Person Employed by or Assisting Servant.

Where the agent of a traction company at its substation promised plaintiff that he would pay him if he helped clean the electrical machinery, and plaintiff looked to the agent for his pay, neither contemplating that he should become an employee of the company, the company was not liable to him for injuries from the machinery. (Blalack v. Texas Traction Co., 149 Southwestern Rep., 1086.)

Virginia.—Burden of Proof in Case of Derailment.

Where an injury to a passenger happens as the result of a derailment, the burden of proof is upon the carrier to establish that there was no negligence whatever and that the injury was caused by inevitable casualty or by some cause which human care and foresight could not prevent, so that it was without fault. (Washington-Virginia Ry. Co. v. Bouknight, 75 Southeastern Rep., 1032.)

Washington.—Relative Duties to Passengers and Pedestrians.

A street railroad company must exercise reasonable care to protect pedestrians. But it owes the highest degree of care to its passengers and is not required to stop its car in an emergency for the protection of a pedestrian so suddenly as to cause greater hazard to its passengers than that to which the pedestrian is exposed. (Slipper v. Seattle Electric Co., 128 Pacific Rep., 233.)

News of Electric Railways

Report of Experts on the Result of Operation at Reduced Fare in Toledo

Nau, Rusk & Swaeringen, expert accountants of Cleveland, Ohio, have filed with Mayor Whitlock of Toledo, Ohio, their report covering the operation of the railway lines of the Toledo Railways & Light Company for a period of nine months from the date upon which the reduced fare schedule went into effect, comparisons being made with the results in former years for a similar period. Since Jan. 8, 1912, the Toledo Railways & Light Company has charged a 3-cent fare between 5.30 a. m. and 7.30 a. m. and between 4.30 p. m. and 6.30 p. m. During the remainder of the day six tickets have been sold for 25 cents and the cash fare has been 5 cents.

According to the report, in 1911 the actual result was 5,623,246 car miles traveled compared to 5,693,757 in 1912. The number of revenue passengers in 1911 was 27,537,158 compared to 32,036,470 in 1912. The receipts from passengers in 1911 was \$1,309,926 as compared to \$1,281,882 in 1912. The passenger receipts per car mile in 1911 were 23.29 cents compared to 22.51 cents in 1912. The revenue passengers carried per car mile in 1911 were 4.90, while in 1912 5.62 passengers were carried per car mile. The average fare paid by passengers in 1911 was 4.76, while in 1912 the average fare was 4 cents.

The table of earnings in the report for 1911 shows that the receipts from passengers were \$1,309,926, the gross earnings \$1,422,473 and the net earnings after the maintenance and operating charges are deducted, \$487,294. In 1912 the report shows that \$1,281,882 was received from passengers, the gross earnings were \$1,399,507 and the net earnings were \$305,044, which shows a reduction in the net earnings for the nine months in 1912 over the same period in 1911 of more than \$182,000.

The report covers 120 typewritten pages, all but ten pages of which are devoted to figures covering the details of the company's business for the nine months as compared with the same period in past years. The following statements are taken from the report:

"We made a calculation, based upon a comparison of the first nine months in 1911 with the first nine months in 1902, which shows that the average increase, compounded annually, for the period from 1902 to 1911 was 2.63 per cent in car miles run and 5.85 per cent in revenue passengers carried. This compound curve of growth, for the nine months' period, appears to be typical of one based upon an entire year's period.

"Doubtless there is a stimulus of traffic due to the lower rate of fare and it cannot therefore be assumed that the same number of passengers would have been carried under the old rate as actually have been carried under the reduced rate. From a study of the figures it will appear that the average rate of fare per pay passenger has been reduced from 4.76 cents to an even 4 cents.

"It will also be seen that the number of passengers carried was nearly 3,000,000 more than expected, based upon the average annual increase for the last ten years, and that this increased number of passengers was carried by operating nearly 78,000 fewer car miles than was to be expected from the average increase of the past.

"Comparing the actual results under the lower rate of fare with the expected results under the old rate of fare, the table will show a reduction in passenger receipts for the nine months of less than \$105,000 (an average of a little more than \$11,000 a month) and, leaving out of consideration the expected and normal rate of growth, the passenger receipts for the nine months of 1912 were only \$28,000 less than the receipts for the nine months period of 1911.

"As bearing upon the low fare experiment, it is shown that, even with the high operating and maintenance cost for the first nine months in 1912, there was left \$305,044, or 5.35 cents per car mile, available for payment of taxes and interest upon the investment.

"In Cleveland the railway company's capital charges, including taxes, interest on bonds and floating debt and divi-

dends upon its capital stock, amount to less than 6½ cents per car mile, and this includes taxes and interest on the power plant, which, under the conditions in Toledo, of purchasing power from the light department, should not be included as a charge against the net earnings of the railway department.

"Nowhere in this report has there been taken into account any charges either for taxes or for interest upon the company's bonded or floating debt or for interest upon the invested capital.

"The taxes paid by the company are shown upon its books as a charge against the combined net earnings of its four departments (viz., railway, light, heat and gas), and we did not attempt to separate or allocate the taxes chargeable to the railway department as distinguished from the other departments of the company.

"The company's capitalization, both of capital stock and of bonds and floating indebtedness, is shown upon its books against the enterprise as a whole and, even if the capital represented by the railway department could be separated from the aggregate capitalization, any attempt to separate the interest charges against the railway department of the company's business, in the absence of an actual appraisal of the property used by the railway department, would be of no value for the purpose of this investigation.

"It is for this reason that our report cuts off at the figure of 'net earnings' and does not take into account any charges either for taxes or interest and, in any consideration of the figures herein, taxes and interest will have to be estimated in order to determine the sufficiency of the net earnings shown herein to pay all taxes and interest upon the investment in the railway property."

Conference in Cincinnati on Indeterminate Grant Proposition

At a conference in the office of Mayor Hunt of Cincinnati, Ohio, on Jan. 30 W. Kesley Schoepf, president of the Cincinnati Traction Company, agreed to submit to the stockholders of the company a proposition to relinquish the fifty-year franchise in exchange for an indeterminate grant with all of the vested rights of the company guaranteed and protected. Under the agreement, any new contract that might be made will become operative only after it has been approved by a vote of the electors.

The company, under this proposition, is to take over and operate the proposed municipally owned terminal loop, continue to pay the city 6 per cent on its gross receipts and in addition divide with the city any surplus after dividends at a fair rate have been paid the stockholders. It is proposed that the operation of the property shall be supervised by a commission and that this commission shall determine when it is possible to reduce the rate of fare and also what improvements shall be made. Instead of asking the company to pay half its final surplus into the city treasury this commission may order a reduction in fare to correspond with the amount of surplus or may request the company to make extensions into territory which does not promise immediate returns. Mayor Hunt argues that good service is more important to the city than an income from the operation of the street railway. The officials of the company have furnished the city officers with a statement covering receipts and expenditures in accordance with a request made by Mayor Hunt at a former conference.

Through the influence of Mayor Hunt an effort is being made to induce the Legislature to enact laws that will enable Cincinnati to issue bonds for the construction of a terminal loop. Until the Legislature acts on this proposition, little can be done in the way of negotiations, as the city desires the company to consider the operation of a loop terminal in connection with other matters.

City Solicitor Bettman of Cincinnati is preparing a bill for the consideration of the Legislature which will operate to revoke the franchises of all public service companies in the State and invest them with indeterminate grants instead.

Councilman Peck, chairman of the utilities committee,

has reported to the City Council that it would be very detrimental to the city to enact the Bigelow bill into a law. The stockholders of the Cincinnati Traction Company have property rights which must be respected. It would be a travesty on the home rule idea for the Legislature to enact a law that would take the authority to deal with public service companies out of the hands of the cities. Representative Bigelow stated in Columbus, following this report, that he is willing to have the bill amended to protect the investment in street railway property, but that the franchise should be revoked.

President Draper of the Cincinnati Chamber of Commerce has appointed a committee on interurban terminals consisting of George F. Dieterle, J. J. Heekin, J. Stacy Hill, Stewart Chillito, A. K. Nippert, W. A. Schell, Monte Goble, E. P. Marshall and A. P. Strietmann.

Question of Line on Euclid Avenue, Cleveland

J. J. Stanley, president of the Cleveland (Ohio) Railway, has replied to the suggestion of Street Railway Commissioner Witt that express service for East Cleveland be established on Superior Avenue and that two extra tracks be laid for that purpose, with a fare of 5 cents. Mr. Stanley declares that no express service will be furnished the suburb until it surrenders its franchise on Euclid Avenue which calls for the same fare as in the city. It is hardly probable that the village will do this, as the value of the express service under present circumstances would be rather uncertain.

Mr. Stanley stated recently that, as soon as it can be done legally, the company will lay track on Euclid Avenue between East Twenty-second Street and East Fifty-fifth Street. Business has recently invaded a portion of this section of the exclusive street and it is probable that the opposition to the line would not be so strong as it was some time ago when a similar proposal was made.

Regarding the earnings at the low rate of fare Mr. Stanley in his annual report says:

"The rate of fare throughout the year was 3 cents within the city limits. In 1911 the rate was 3 cents in the last seven months of the year and 3 cents plus 1 cent for transfers in the first five months. The average fare in 1911, including suburban fares, was 3.247 cents—in 1912, 3.18 cents."

A condensed earnings statement for 1912 follows:

Gross income.....		\$6,679,772
Expenses of maintenance and operation.....	\$4,935,574	
Taxes	366,591	
Interest	1,416,542	
		6,718,707
Deficit.....		\$38,935

Bill Reported to Require Electrification at Boston Within Four Years

A bill reported to the Legislature by the Massachusetts legislative committee on railroads provides as follows:

"Section 1. Each railroad company operating a railroad by steam within or about Boston shall change said motive power to electricity on all its lines within a radius of 10 miles of its Boston terminal. After the time limit specified in Section 3 for completion of the work no steam locomotives shall be used on any such lines, within said limit, except as hereinafter otherwise provided for.

"Section 2. Each railroad company operating within Boston shall on or before Oct. 1, 1913, submit to the Railroad Commission for approval comprehensive and substantially complete working plans and specifications of such construction as shall be necessary for carrying out Section 1. The Railroad Commission shall approve said plans as presented or with such alterations as it shall require.

"Section 3. Electrification, as called for by the Railroad Commission, shall be commenced within three months after said approval and shall be prosecuted to the satisfaction of the Railroad Commission and completed within three years after said approval.

"Section 4. If at any time the Railroad Commission shall consider that any of the railroads are not prosecuting the work in a satisfactory manner, the commission may apply to the court for a mandamus to require such action as it deems necessary to that end or take such other action in law or equity as will secure compliance.

"Section 5. Any of the above-mentioned railroad companies which shall fail to comply with any requirement of this act shall pay into the treasury of the Commonwealth \$10 per day for each and every locomotive operated within the district specified during the period of such failure to comply, unless the railroad commission shall certify that such failure is necessary."

Boston & Eastern Railroad Charter Granted

The Boston & Eastern Railroad has been granted a charter by the Secretary of State, following advices transmitted by the Massachusetts Railroad Commission, to the effect that the company has complied with all the provisions of Chapter 516, Acts of 1906, relating to the formation and establishment of electric railroads. The granting of the charter ends proceedings extending over the past six years for permission to build a high-speed electric railroad 17 miles long between Post Office Square, Boston, and Beverly, Mass., including a tunnel under Boston Harbor and a private right-of-way from terminal to terminal. As finally determined the railroad is to be located in the cities of Beverly, Salem, Lynn, Chelsea and Boston and in the towns of Danvers, Peabody, Saugus and Revere. The line is to be double-tracked throughout, of standard gage, and will include a branch 3.5 miles long between the main line at Peabody or Salem and the town of Danvers.

The following final estimate of the cost of construction has been filed, excluding the cost of equipment, interest during construction and discount:

BOSTON & EASTERN ESTIMATE, 1913	
Grading:	
Earth excavation east of High Rock, Lynn, 620,000 cu. yd., at 60 cents.....	\$372,000
Earth excavation west of High Rock, Lynn, 573,000 cu. yd., at \$1.25.....	716,250
Rock excavation, 246,000 cu. yd., at \$1.90....	467,400
Rock tunnels, 85,372 cu. yd., at \$5.....	426,860
Changing pipes and sewers, excluding Boston..	130,000
Rip-rap, 16,700 sq. yd., at \$1.....	16,700
Retaining walls, portals, etc.:	
Plain concrete, 18,551 cu. yd., at \$9.....	166,959
Reinforced concrete, 53,600 cu. yd., at \$12..	643,200
Waterproofing, ventilating and finishing Lynn subway	83,000
	\$3,022,369
Bridges (about 100):	
Plain concrete, 36,158 cu. yd., at \$9.....	\$325,422
Reinforced concrete, 37,542 cu. yd., at \$20....	750,840
Steel, 7,146 tons, at \$85.....	607,410
Wood trestle, 4,804 linear ft., at \$30.....	144,120
Cast-iron pipe, 52 tons, at \$42.....	2,080
Grading and paving streets.....	88,610
	1,918,482
Ties, 126,000, at \$1.....	126,000
Rail (90-lb.), 7,038 tons, at \$32.....	\$325,216
Wood guard, 267,700 ft., at 6 cents.....	16,062
	241,278
Track fastenings:	
Joints, 593 tons, at \$32.....	\$18,976
Spikes, 151 tons, at \$55.....	8,305
Bonds, 40.76 miles, at \$500.....	20,380
	47,661
Special work:	
Ballast, stone, 112,595 cu. yd., at \$1.50.....	168,892
Track laying, 215,000 ft., at 20 cents.....	43,000
Fencing, 135,460 ft., at 30 cents.....	40,638
Passenger stations (about 20 outside of tunnel).....	153,500
Contingencies, 5 per cent.....	289,091
	\$6,070,911
Harbor tunnel and terminal, including engineering but not real estate or interest.....	
Legal expense	375,000
Engineering	250,000
General expense	210,000
Real estate, including that for tunnel and terminal.....	2,175,000
	\$3,010,000
Total.....	\$12,974,696

Kansas City Franchise Negotiations Postponed

As neither the representatives of Kansas City nor the officers of the Metropolitan Street Railway were prepared to resume the franchise negotiations on Jan. 27, 1913, the date agreed upon some time ago by the interests involved, consideration of the matter has been postponed. Ford Harvey, one of the receivers of the company, said recently:

"We do not wish to resume negotiations just now because the report of our physical valuation is not yet printed. The work has been finished for some time, but the report comprises several hundred pages and we wish to have it in a presentable form. I do not think we shall be ready until about Feb. 15."

According to the *Kansas City Times*, the city is in about the same condition as the company in regard to the valu-

ation reports. While the valuation for the city under the direction of L. R. Ash, city engineer, has been finished for some time, the real estate appraisers are not yet ready with their part of the report, and Edward P. Moxey, the expert accountant employed by the city to inquire into the finances of the company, is still at work.

Changes in the Personnel and Scheme of Organization of the Hudson & Manhattan Railroad

The Hudson & Manhattan Railroad, New York, N. Y., has announced the following changes in its personnel and scheme of organization, effective on Feb. 4, 1913, following the resignation of O. T. Boyd as assistant general manager and E. T. Munger as general superintendent:

T. P. Artaud has been appointed assistant general manager and will report to the vice-president and general manager. Darrow Sage has been appointed superintendent of power in charge of power house, substations and cables to their point of entrance into the tunnel and will report to the assistant general manager. P. V. See, superintendent of car equipment, will hereafter report to the assistant general manager. T. B. Whitney has been appointed engineer of way and structures and will report to the vice-president and general manager. C. S. Klumpp has been appointed superintendent of way and structures in charge of all maintenance, including signals and cables, also of the Hoboken shop and the building No. 137 Christopher Street, exclusive of substation, and will report to the engineer of way and structures. L. Muller has been appointed assistant superintendent of way and structures and will report to the superintendent. J. F. O'Rourke, superintendent of transportation, will report direct to the vice-president and general manager.

In the absence of the vice-president and general manager all departments are to report to the assistant general manager. The position of general superintendent has been abolished. The changes which are announced have been made with a view to more centralized management.

Detroit United Railway Willing to Sell to City

On Jan. 28, 1913, Corporation Counsel Lawson, of Detroit, Mich., announced at a meeting to discuss the construction of a cross-town line that he had prepared a proposal to the Detroit United Railway which will give it a day-to-day right to operate over all the streets on which its franchises have expired. He said that this agreement would pave the way for the purchase of the road when the city secures the right to own and operate it. The ordinance was introduced in the Common Council on the evening of Jan. 28.

The agreement carries with it the right of the city to purchase the property, including real estate necessary to its operation. If the city and company can not agree upon the purchase price, the matter is to be referred to the Wayne County Circuit Court. Under the proposed grant interurban passenger and mercantile express cars of interurban lines owned by the Detroit United Railway would be permitted to enter and leave the city from a convenient downtown terminal, the compensation to be fixed by the Wayne County Circuit Court if the city and the company could not agree upon terms. Pending the acquisition of the property by the city, the fare on interurban cars would be 5 cents, but transfers would have to be issued to and accepted from local lines. The fare on the city lines would be 5 cents or six for 25 cents, with special tickets good between 6.15 a. m. and 7.30 p. m., at the rate of eight for 25 cents. Transfers would have to be issued good over any line other than the one on which the fare was paid.

Mr. Lawson in explaining the ordinance said:

"The ordinance which I presented is simply my idea of the ultimatum that should be presented to the Detroit United Railway now that the company has been declared a trespasser in Fort Street. The city's message to the company now should be: accept this or get out of Fort Street."

At a conference in the office of the Mayor on Jan. 20, 1913, F. W. Brooks, general manager of the company, is reported to have stated the attitude of the company as follows:

"The Detroit United Railway has long recognized the

need for more city lines. We know to-day that the city needs not less than 70 miles of new track to handle traffic properly. The company has been willing to build these extensions on a basis that is fair between man and man. We know the need of a west side line. It is not fair to ask the company to ask people to invest their money on a basis that will not promise an adequate return on the investment or even protection from loss of the money invested.

"While we have not been permitted to build extensions we have greatly increased our facilities. We have added new cars, new power houses and new carhouses in spite of the failure of the Council to pass a single ordinance to help us.

"You speak of municipal ownership. We are perfectly willing for the city of Detroit to take over the property. You can take the property any time you are ready to pay for it. We will sell at any time the city is ready to buy, but I would not recommend to my company building extensions on the basis of the existing 3-cent franchise."

Injunction Secured to Prevent Execution of New York Rapid Transit Operating Contracts

The situation in New York in regard to the signing of the contracts for the operation of the dual subway system was complicated on Feb. 4 by an injunction granted by Justice Hendricks against the execution and delivery of the contracts. This injunction was secured by a taxpayer for whom Clarence Shearn, who represents W. R. Hearst, acted as counsel. Argument on the motion of the Public Service Commission of the First District and the railroads to vacate the restraining order was heard before Justice Davis on Feb. 6, and at the conclusion of the argument the court suggested that as the case was certain to be carried higher the lawyers on both sides should try to arrange with the Appellate Division to hear the case immediately. Counsel representing the interests involved acted on the court's advice and Presiding Justice Ingraham of the Appellate Division set the hearing on appeal for Friday afternoon, Feb. 7, at 2 p. m.

Previous to the application being filed with the court for an injunction, Governor Sulzer nominated Justice Edward E. McCall of the Supreme Court of New York to succeed William R. Willcox as chairman of the Commission for the First District and the Senate immediately confirmed the nomination. Mr. McCall said at first that he would take office on Friday, Feb. 7, but is reported subsequently to have decided that he would not qualify for the office as long as the injunction to prevent the execution and delivery of the operating contracts remained unvacated. He is reported to have said that he understood that Mr. Willcox had several matters of commission work not connected with the contracts to clear up and that there was no advantage in his going over this work again.

The feature of the proposed contract to which perhaps the greatest objection has been raised is the plan to authorize the Interborough Rapid Transit Company to arrange with J. P. Morgan & Company as syndicate managers for floating an issue of \$170,000,000 of bonds to be sold to Morgan & Company at 93½. In this connection Morgan & Company sent a letter to Mr. Willcox recently relative to the matter of the bonds. They say that so far as they can recall the issue of \$170,000,000 of bonds which it is proposed to make is the largest single corporate transaction ever undertaken. The money must be authorized from year to year in amounts specified, the immediate commitment being final and definite, irrespective of conditions, financially or otherwise, which might obtain during the life of the contract. Unless the likelihood of a reasonable and substantial profit was held out no group of capitalists could have been found to undertake a contract of this size and importance. Accordingly Morgan & Company notified the Interborough Rapid Transit Company that they and their immediate associates would buy the issue at 93½, this being a basis to net them 5¾ per cent per annum, and that they would plan to form a syndicate to take the bonds at 96, reserving to themselves and immediate associates a compensation of 2½ per cent in return for their original undertaking to purchase the bonds, for their work in forming and managing the syndicate and for the general service rendered in a transaction of such magnitude and complexity.

New Minnesota Line Placed in Operation.—The Mesaba Electric Railway has been completed and placed in operation between Hibbing and Gilbert, Minn.

Municipal Ownership Ordinance Introduced in Hamilton.—An ordinance has been introduced in the Council of Hamilton, Ont., providing that the city purchase the property of the Hamilton Street Railway and operate the lines with municipal power.

Preparing Emergency Fund to Meet St. Louis Mill-Tax Case.—According to the St. Louis *Times* the United Railways, in order to be prepared for any emergency such as the deciding against it of the mill-per-passenger suit, has bought \$1,200,000 of government 2 per cent bonds. The mill-tax suit, which is pending in the courts, was instituted by the city to collect the tax provided in an ordinance which stipulates that the company shall pay the city 1 mill for each passenger carried.

Decision in Ohio Tax Case.—In the case of the State against the Cleveland & Pittsburgh Railway, Common Pleas Judge Lawrence of Cleveland rendered a decision on Feb. 1 to the effect that the Willis tax must be paid on underlying corporations. The defense contended that the operating companies pay an excise tax upon their gross receipts and that the underlying companies should not be taxed again on the part that is paid to them. This payment was made under the old code. The law was amended in 1911 and since then some of the companies have been paying the taxes.

Extension of Signal System on Indianapolis & Cincinnati Traction Company's System.—The Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., has completed and put in operation the Simmen signal system on the remaining 22-mile section of its Greensburg division. This makes a total of 40 miles protected in this manner. The work just completed included, in addition to the cab signals, open switch protection and safeguards for east and west bound train movements. Work will be started at once on the Connersville division which will add 55 miles more of Simmen signal protection to this road.

Municipal Line at Edmonton Unprofitable.—The municipal street railway at Edmonton, Alta., was operated at a loss of \$26,495 during 1912, and W. T. Woodroffe, superintendent, has made a number of suggestions in regard to changes in operation to increase the revenue during the coming year. Tentative proposals have been made by him to charge a uniform rate of 5 cents, with transfer privileges, do away with the present yellow labor tickets, do away with the dollar blue book of tickets, do away with the transfer privileges, do away with the red and blue tickets and establish the price of children's tickets at ten for 25 cents.

Decision in Cincinnati Extension Case.—The Ohio Court of Appeals has handed down a decision which temporarily disposes of plans of the Cincinnati (Ohio) Traction Company for an extension of its lines to the Bond Hill residential section of that city. In the case of D. L. Carpenter and other residents of Reading Road against the city of Cincinnati seeking to restrain the municipality from calling the old Paddock Road an extension of the Reading Road and from permitting Reading Road residents to out-vote them (the plaintiffs) in granting the right-of-way for the railway extension to Bond Hill, the Supreme Court upheld the petition of Mr. Carpenter and his co-plaintiffs.

Plan for Blanket Franchise in Shreveport.—The Retail Merchants' Association and the State Fair Association have indorsed a proposition for the City Council of Shreveport, La., to submit to the people, at a special election, an ordinance providing for several grants to the Shreveport Traction Company in exchange for a system of universal transfers and other considerations. The main grant to be made the company, if the proposition carries, is a franchise extension so that all the company's franchises will expire at the same time, about forty years hence. A similar proposition was defeated by the people about two years ago, but since then the company has added several lines, and transfers are more in demand.

Car Trust Certificates Advocated in Philadelphia.—Legal authority by consent of the city for the Philadelphia (Pa.) Rapid Transit Company to create a car trust, whereby additional equipment can be secured without increased bonded

indebtedness, has been recommended by E. T. Stotesbury in a letter to Councils. The total issue is not to exceed \$4,200,000. Consent is also asked to be given to the company to provide for additional equipment by further issues of car trust certificates and to guarantee the payment of the certificates. The issues are not to exceed 80 per cent of the equipment. In a letter to the Mayor T. E. Mitten said that the near-side car had been so successful that it would be wise to obtain enough of the cars to equip all the principal lines. Mr. Stotesbury said that the company desired to furnish the equipment, but that it could not do so out of the proceeds of the \$10,000,000 loan recently authorized without cutting into other expenditures equally important in the development of the system.

Changes in New York Commission.—On Feb. 3, 1913, Governor Sulzer of New York nominated Justice Edward E. McCall of the Supreme Court of New York to succeed William R. Willcox as chairman of the Public Service Commission of the First District of New York and Devoe P. Hodson, former city judge of Buffalo, to succeed John B. Olmsted as a member of the Commission of the Second District. Two vacancies in the Commission for the Second District remain to be filled. The term of office of Chairman Frank W. Stevens expired on Jan. 31 and the term of office of Curtis N. Douglas came to an end automatically on Jan. 20 owing to the fact that Governor Dix appointed Mr. Douglas to succeed Winfield A. Huppuch during the recess and the Senate failed to confirm him during the first twenty days of the session. The term of office of Commissioner Olmsted expired last year, but Governor Dix permitted him to continue in office after the Senate had failed to confirm the nomination of Herbert P. Bissell as successor to Mr. Olmsted. The Senate has confirmed both nominations.

Decision in New York City Bond Limit Case.—The Appellate Division of the Supreme Court in the First District of New York has exempted about \$70,000,000 of self-sustaining dock bonds from the city's computable debt, so that the debt limit is enlarged by that amount and the city, instead of being able to borrow but \$85,000,000, may now borrow about \$155,000,000. The decision was given under the constitutional amendment of Jan. 1, 1910. This amendment provided for the exemption from the computation of municipal indebtedness of all dock or transit bonds issued by the city for improvements from which a revenue was derived sufficient to pay interest on the bonds and to meet amortization charges. The courts were left the sole judge as to whether any bond issue for which exemption was claimed by the city met the requirements of the constitutional law. The Appellate Division, with but a single dissenting vote, has declared that the city's dock system is a profitable investment, and that bonds issued for its improvement are no longer to be chargeable against the debt limit. The decision will allow the city to carry out its obligations in connection with the financing of the new rapid transit lines.

Additional Rapid Transit Construction Contracts Opened.—During the week ended Feb. 1, 1913, the Public Service Commission for the First District of New York opened bids for the construction of Section No. 2 of the Astoria, Woodside and Corona rapid transit railroad in Queens Borough. Section No. 2 embraces the greater part of the proposed elevated railroad from the Queens end of the Queensboro Bridge to Astoria. The line runs through Second or Debevoise Avenue for the whole distance, and Section No. 2 lies between Beebe Avenue on the south and Ditmars Avenue on the north. The line will be about 2 miles long and contain about 7½ miles of single track. It will take about eighteen months to build, and when completed will be owned by the city of New York and operated jointly by the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company under the dual system contracts. The commission received bids from twelve contractors, ranging in amounts from \$860,000 to more than \$1,200,000. The lowest bidders were Cooper & Evans, New York City. The commission has not yet awarded the contract. Bids for the construction of Section No. 3 of the same route, comprising the greater part of the line from the Queensboro Bridge to Corona, were opened on Feb. 7.

How Legislation in Massachusetts Has Stifled Development.—At the recent midyear meeting of the American

Electric Railway Association in New York Bentley W. Warren, general counsel of the Bay State Street Railway, explained how the Massachusetts anti-stock watering laws have hampered the investment of capital and have interfered with the development of transportation facilities in that State. That Mr. Warren described accurately the baneful effects of the Massachusetts legislation in regard to the issuance of new securities is attested in the statements made by Mayor John T. Fitzgerald of Boston in an interview which was published in the editorial section of the New York Sunday *World* of Feb. 2, 1913. Referring to the investment of Massachusetts capital elsewhere than in that State Mayor Fitzgerald said in part: "Take Stone & Webster. In the last fifteen years they have taken more than \$179,000,000 of Boston money and invested it in the West. They have floated all their securities in Boston, and not a cent of all that Boston money has gone to improve the city, to build up her commerce, add to her industry or give employment, except to their office force, to a single one of her workers. There are a dozen other firms that have done the same thing, but not on such a scale. From 1901 to 1911 there were 42,000 miles of railroad main track extension built in the United States. The great State of Massachusetts increased her railroad mileage at the rate of just 653 yards a year, building the grand total of 3,71 miles in the ten years."

LEGISLATION AFFECTING ELECTRIC RAILWAYS

ILLINOIS

A bill has been introduced in the Senate which provides for the regulation of public utilities by two commissions, one having supervision over Chicago and the other over the rest of the State. It is proposed that each commission shall be composed of five members, those for Chicago to be appointed by the Mayor and those for the rest of the State by the Governor. The commissions are to have jurisdiction in their respective districts over all public utilities, steam, surface and other railroads (elevated or underground), express, sleeping car, freight line companies, gas, electric, telephone and telegraph companies. Each commissioner will receive an annual salary of \$10,000 and each commission will have a counsel at a salary of \$10,000 and a secretary at a salary of \$6,000. The bill, if acted upon favorably, will abolish the Railroad and Warehouse Commission.

INDIANA

The railroad trespass law providing that a fine be imposed on anyone convicted of trespassing on railroad tracks or crossings has been defeated by a vote of forty to four. A bill exempting cities and towns from the provision which requires crossing signs has been passed. A bill has been introduced in the Senate to prevent overloading of interurban, street and steam cars. The House bill providing that a motorman on an interurban car shall not perform any duties other than those which have to do with operation has been defeated. A House bill provides for the elimination from the railroad commission act of the provision which permits railroads to refuse to haul freight if revenue from freight is not in excess of 33 1-3 per cent of gross revenue. This bill, which has passed to third reading, will very likely be enacted. It will bring the freight service of the interurban roads under the jurisdiction of the Railroad Commission. A bill has been passed by the Senate which provides for the separation of railroad grade crossings under direction of the Indiana Railroad Commission.

PENNSYLVANIA

At a lengthy conference between members of the legislative committee of the democratic state committee and the joint committee of democratic members of the Senate and House in Harrisburg a few days ago, it was decided to present a third public utilities commission bill to the General Assembly, as representing the views of the democratic party better than the Tener-Bell bill and the republican state convention bill. The democratic measure was drafted by Roland S. Morris, Philadelphia, and differs in many respects from the other two measures that are now in committee of the House. It is much shorter and preserves the home rule of the municipalities of the State. It is claimed for it that it vests the commission with more discretionary powers, making unnecessary the enumeration of details of

procedure. The principal feature of the bill lies in the centralization of the commission's responsibility, making the body responsible only to the Governor. It further leaves to the discretion of the commission the employment of counsel and other employees, and permits the commission to pay such salaries as may be deemed advisable, but fixes a maximum of \$150,000 per annum for the payment of all expenses of the department. The other bills fix the number of employees. The democratic bill gives the commission absolute control and supervision over the securities, the issuing of stocks, bonds and notes.

The Tener-Bell administration measure is termed the "Public Service Company Law." The bill provides for a commission of five members instead of three, as the present State Railroad Commission is constituted, which shall be known as the "Public Service Commission of the Commonwealth of Pennsylvania." The commissioners are to be appointed by the Governor, with the approval of the Senate, one commissioner to be learned in the law, another in economics, a third in the business of common carrier. The original commissioners are to be appointed for terms of from one to five years. Their successors can each be appointed for five-year terms. The designation of the chairman of the commission is vested with the Governor. The chairman is to receive an annual salary of \$10,500, and the other members \$10,000 each. Other officers provided for in the bill are: Secretary at \$5,000 annually; counsel and assistant counsel, to be named by the Attorney-General, at \$7,500 and \$5,000 respectively; marshal, \$2,000; investigator of accidents, \$4,000; other employees to be appointed by the commission, subject to the approval in writing of the Governor. The commission must meet at least twice monthly, and is empowered to enforce its decrees either by civil or criminal proceedings in the name of the Commonwealth against the offending corporation. Broad powers are vested with the commission in this bill, not only relating to the incorporation, construction and operation of steam and electric railways, telephone and telegraph companies, and all public service corporations, but also giving it authority to require all public service companies to account to the commission for the disposition and application of the proceeds of all sales of stocks, bonds, notes and other evidences of indebtedness, which shall be issued in such form and detail as the commission may deem advisable. The bill clothes the Dauphin County Court with exclusive jurisdiction throughout the State to hear and determine all actions brought by the commission. The commission is further clothed with authority to enforce the act of June 19, 1911, compelling railroads properly to man their trains, better known as the "Full Crew Bill." The act is to go into effect Jan. 1, 1914, but the commission is to have authority to organize and select its employees on or before Oct. 1, 1913. The bill repeals the act of May 31, 1907, creating the present State Railroad Commission.

Other bills now in committee affecting electric railways are the following: Prohibiting common drinking cups in cars under penalty of a \$50 fine for each offense; a new third-class city bill under which an annual license fee of \$100 per car may be collected from electric railways; regulating reports for purpose of taxation from railway companies; providing that on all paved highways in cities the car wheel tread of rails hereafter laid shall be of equal height, and the flange groove between said treads shall not be more than 1/4 in. in width; outer angles of each rail to be rectangles, and all paving on either side to be even with the tread, under penalty of a fine of not more than \$500 for each offense, each day's continuance of the practice to constitute a separate offense. This latter act is to go into effect Jan. 1, 1914.

PROGRAM OF ASSOCIATION MEETING

Keystone Railway Club

The executive committee of the Keystone Railway Club is to call a meeting at an early date for the purpose of arranging the details of the next meeting of the club, which is to be held during March at the Hotel Walton, Philadelphia. Arrangements have been made to have the proceedings of the last meeting and the papers presented at that meeting printed and distributed among the members.

Financial and Corporate

ANNUAL REPORTS

Twin City Rapid Transit Company

Stock and Money Markets

February 5, 1913.

The volume of transactions on the New York Stock Exchange to-day was small. Most of the active industrials and the railroad issues sustained some amount of loss. The prospects of further delay in executing the rapid transit contracts because of the granting of an injunction caused a decline of 1¼ in the Interborough-Metropolitan preferred and of ¾ in the common stock of the company. Rates in the money market to-day were: Call, 2¾@3 per cent, with the last loan at 2⅞ per cent; sixty days, 3¾@4 per cent; ninety days, 4@4½ per cent.

In the Philadelphia market the trading was narrow but the tone was steady to-day.

In the Chicago market the trading in stocks to-day was dull, and changes were confined within a narrow range. The demand for bonds was good.

While the volume of transactions in Boston was not large, most of the issues were represented in the trading. Railroad stocks were in good demand.

The Baltimore market was active and firm to-day. The bulk of the transactions in the bond market was in the railway issues.

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

	Jan. 29	Feb. 5
American Brake Shoe & Foundry (common).....	93½	94½
American Brake Shoe & Foundry (preferred).....	133¾	134¾
American Cities Company (common).....	47½	47½
American Cities Company (preferred).....	a77	76¾
American Light & Traction Company (common).....	*405	405
American Light & Traction Company (preferred).....	108	108
American Railways Company.....	40½	39¾
Aurora, Elgin & Chicago Railroad (common).....	44	42½
Aurora, Elgin & Chicago Railroad (preferred).....	86¾	86¾
Boston Elevated Railway.....	113¾	111½
Boston Suburban Electric Companies (common).....	7½	7½
Boston Suburban Electric Companies (preferred).....	65	65
Boston & Worcester Electric Companies (common)...	7	7
Boston & Worcester Electric Companies (preferred)..	40	40
Brooklyn Rapid Transit Company.....	91	90½
Capital Traction Company, Washington.....	121	123
Chicago City Railways.....	150	150
Chicago Elevated Railways (common).....	35	35
Chicago Elevated Railways (preferred).....	91	91
Chicago Railways, pteptg., ctf. 1.....	96	90
Chicago Railways, pteptg., ctf. 2.....	24	25
Chicago Railways, pteptg., ctf. 3.....	7½	7¼
Chicago Railways, pteptg., ctf. 4.....	3	3
Cincinnati Street Railway.....	118½	117½
Cleveland Southwestern & Columbus Ry. (common)...	*5½	*5½
Cleveland Southwestern & Columbus Ry. (preferred)..	*33	*33
Cleveland Railway.....	105	104¾
Columbus Railway & Light Company.....	59	19
Columbus Railway (common).....	*81¾	68½
Columbus Railway (preferred).....	84½	88½
Denver & Northwestern Railway.....	118	*118
Detroit United Railway.....	80	75
General Electric Company.....	142¾	142
Georgia Railway & Electric Company (common).....	125	126¾
Georgia Railway & Electric Company (preferred)....	83	82½
Interborough Metropolitan Company (common).....	19	18½
Interborough Metropolitan Company (preferred)....	63¾	62¾
International Traction Company (common).....	*38	*38
International Traction Company (preferred).....	*99	*99
Kansas City Railway & Light Company (common).....	18¾	*18¾
Kansas City Railway & Light Company (preferred)....	*40	*40
Lake Shore Electric Railway (common).....	*19	9
Lake Shore Electric Railway (1st preferred).....	*91	91
Lake Shore Electric Railway (2nd preferred).....	25½	25½
Manhattan Railway.....	131½	132
Massachusetts Electric Companies (common).....	17½	18
Massachusetts Electric Companies (preferred).....	76	78
Milwaukee Electric Railway & Light Co. (preferred)..	*100	*100
Norfolk Railway & Light Company.....	*25	*25
North American Company.....	80¾	80
Northern Ohio Light & Traction Company (common)..	80	80
Northern Ohio Light & Traction Company (preferred). 100	100	100
Philadelphia Company, Pittsburgh (common).....	49½	49
Philadelphia Company, Pittsburgh (preferred).....	43	42½
Philadelphia Rapid Transit Company.....	26¾	27
Portland Railway, Light & Power Company.....	68½	68½
Public Service Corporation.....	116	116
Tbird Avenue Railway, New York.....	38¾	38
Toledo Railway & Light Company.....	2	2½
Twin City Rapid Transit Co., Minneapolis (common)...	106¾	105½
Union Traction Company of Indiana (common).....	*4½	*4½
Union Traction Company of Indiana (1st preferred)..	*81	*81
Union Traction Company of Indiana (2d preferred)....	*34	*34
United Rys. & Electric Company (Baltimore).....	23½	...
United Rys. Inv. Company (common).....	32	32
United Rys. Inv. Company (preferred).....	60	59
Virginia Railway & Power Company (common).....	51¾	55½
Virginia Railway & Power Company (preferred)....	92¾	92
Washington Ry. & Electric Company (common).....	86	86
Washington Ry. & Electric Company (preferred)....	90	90
West End Street Railway, Boston (common).....	80	80
West End Street Railway, Boston (preferred).....	96½	96½
Westinghouse Elec. & Mfg. Company.....	74½	73
Westinghouse Elec. & Mfg. Company (1st preferred)..	116	117

*Last sale. a Asked.

The statement of receipts and expenditures of the Twin City Rapid Transit Company, Minneapolis, Minn., for the calendar year 1912 compared with 1911, as presented at the annual meeting of the stockholders of the company, held on Jan. 28, 1913, follows:

	1912.	1911.
Revenue from transportation.....	\$8,147,199	\$7,749,158
Revenue from operation other than transportation	61,768	62,035
	<u>\$8,208,967</u>	<u>\$7,811,193</u>
Maintenance of way and structure.....	\$364,050	\$358,606
Maintenance of equipment.....	370,251	380,270
Traffic expenses.....	39,943	42,804
Conducting transportation.....	2,680,496	2,470,401
General and miscellaneous.....	743,261	654,635
Total operating expense.....	<u>\$4,198,001</u>	<u>\$3,906,716</u>
Net revenue.....	\$4,010,966	\$3,904,477
Interest on debt and taxes.....	1,529,230	1,486,129
Surplus available for dividends and depreciation.	<u>\$2,481,736</u>	<u>\$2,418,347</u>
Dividends preferred stock.....	\$210,000	\$210,000
Dividends common stock.....	1,206,000	1,206,000
Total dividends.....	<u>\$1,416,000</u>	<u>\$1,416,000</u>
Surplus from operation.....	\$1,065,736	\$1,002,347
Appropriated for renewals.....	775,000	750,000
Income account surplus.....	<u>\$290,735</u>	<u>\$252,347</u>

Per cent total operating (including taxes and renewal appropriations) to total revenue..... 67.14 65.96

In his statement to the stockholders of the company C. G. Goodrich, the president, says in part:

"By comparison with 1911 the following increases during 1912 are shown: Gross earnings increased \$397,774, or 5.09 per cent; operating expenses increased \$291,284, or 7.46 per cent; car miles operated increased \$1,868,288, or 7.35 per cent; net earnings increased \$106,489, or 2.73 per cent.

"Three main causes contributed to the fact that the operating cost increased more than the earnings. They are as follows:

"1. It was decided by your directors in June to increase by about 10 per cent the wages of your employees in the operating and mechanical departments. This increased rate of pay for the half year caused an actual additional expenditure of \$8,4781.

"2. Our taxes were increased \$43,110.

"3. The mileage increase. This increase of 7.35 per cent is in direct proportion to the increased operating cost of 7.46 per cent, notwithstanding the increase in employees' wages. During the year 1912 we built and put into service 100 additional cars and 11.78 miles of new track and extensions, the operation of which caused the increased mileage.

"The directors have appropriated from surplus the sum of \$775,000, which has been added to the renewal fund.

"The insurance fund has been increased during the year by the sum of \$31,547.

"To provide funds for new construction and renewals \$1,000,000 of the renewal fund bonds have been sold. The income from the sale of these bonds, with surplus earnings for the year, provided means for the following expenditures on new construction without any increase in the capital liability:

New power.....	\$500,564
New shops and tools.....	64,987
Car equipment.....	522,724
Carhouses.....	49,274
Track and paving.....	236,721
Minneapolis track.....	\$209,319
St. Paul track.....	8,653
Suburban track.....	18,748
Real estate, buildings, miscellaneous.....	14,568
Total.....	<u>\$1,388,838</u>

"The sum of \$362,729 has been expended for renewals and there has been charged to the renewal fund the sum of \$189,746 on account of discontinued and obsolete equipment.

"From the accumulated surplus the directors appropriated the sum of \$120,922 to the injuries and damages reserve fund and also the sum of \$50,000 to the special reserve fund.

"The regular quarterly dividends have been declared by

your directors and paid, aggregating the sum of \$1,416,000, being at the rate of 7 per cent on the preferred stock and 6 per cent on the common stock."

The statement of the revenue passengers carried and transfers redeemed for the years 1911 and 1912 as contained in the report follows:

	1912.	1911.
Revenue passengers carried.....	162,407,993	154,380,730
Transfers redeemed	57,584,451	51,844,378

Northern Ohio Traction & Light Company

The income account of the Northern Ohio Traction & Light Company, Akron, Ohio, for the year ended Dec. 31, 1912, as compared with the previous year follows:

Gross earnings.....	\$2,996,036
Operating expenses and taxes.....	1,702,765
Net earnings	\$1,293,271
Interest on bonds and collateral trust notes.....	523,068
Available for company's uses.....	\$770,203
Preferred stock dividends.....	49,930
Net	\$720,273
Common stock dividends.....	382,500
Balance surplus for year ended Dec. 31.....	\$337,773
Surplus on Dec. 31, 1910 and 1911.....	1,157,912
Total surplus Dec. 31.....	\$1,495,685
Charged for depreciation, reconstruction, and expenditures account of preferred stock issue, etc.....	90,649
Balance surplus, Dec. 31.....	\$1,405,036

Henry A. Everett, the president, says in part in the report:

"The mileage of the system has been increased 0.71 mile by the construction of double track on East Lake Street, Canton, from Belden Avenue to Superior Street and by the addition of new sidings on Garfield Avenue, Canton, and on Bowery street, Akron, making a total, at the close of 1912, of 216.47 miles.

"The total expenditure for additions and improvements was \$1,535,522, subdivided as follows: Track and roadway, \$304,533; power houses, carhouses, etc., \$994,667; cars and equipment, \$157,036; real estate and right-of-way, \$12,542; light department, \$66,640; general expenditures, \$103.

"A total of 16,400 ft. of track has been renewed in most approved methods, all with 80-lb., 7-in. 'T' rail, laid on concrete foundations and repaved with brick.

"Extensive repairs and renewals have been continued on the various divisions of the company, and 50,700 ties and several miles of rail have been renewed.

"On the A. B. C. division, from the present terminus of the double track north to what is known as Fells Station, a double-track line for a distance of 7½ miles is being constructed on private right-of-way and will be placed in operation in the early spring.

"The Gorge Bridge, spanning the Cuyahoga River, 3 miles north of the city of Akron, has been converted into a steel structure throughout, 250 ft. of wooden trestle of original construction having been replaced by new deck girder section.

"Fifteen additional passenger cars, ten for city and five for interurban service, one 60-ft. baggage car and one wrecking car with 25-ton crane, including all of the electrical apparatus, have been added to the equipment during the year. In addition to these a contract was closed on July 13, 1912, for twenty-five city cars and ten interurban cars, including electrical equipment, which are now being received and placed in service.

"In the Beech Street power house in Akron a 600-hp B. & W. boiler and three 200-kw, three-phase transformers have been installed.

"The construction of the Gorge power station has been pressed forward as rapidly as possible considering labor conditions and the difficulty in securing materials. The 60-ft. dam was completed and the reservoir filled on Dec. 1. The first turbo-generator was placed in service on Dec. 5. All of the electrical machinery and one-half of the ultimate boiler capacity of the station are now ready for service. The rest of the boilers are being erected. The coal bunker and ash-handling machinery is in process of erection. The substation buildings at Kent, Northfield and Kenmore have been completed and the machinery is being installed. The portable substation, to be used at Bedford, is ready for service. All of the concrete piers for the hydroelectric

plant and about two-thirds of the steel flume are complete and the work of installing the machinery is progressing as rapidly as possible.

"The company has under construction on its property located in South Akron new modern carhouse and shops which will be completed and ready for operation in the near future. A private right-of-way has been purchased from the center of the city of Akron, along what is known as the hydraulic race and Akron Heights, north for a distance of 3 miles to connect with our present line at the Gorge, this being a valuable acquisition to the property.

"The pension fund maintained for the benefit of the employees has a credit balance at the close of the year of \$9,395. Since its establishment \$9,439.45 has been distributed. Ten employees are now drawing regular monthly pensions.

"The injury and damage account has been monthly credited with 2 per cent of the gross receipts. The surplus at the close of the year's business amounts to \$34,615.

"The board of directors at its regular meeting on Nov. 24, 1911, declared a dividend for the year 1912 at the rate of 4 per cent per annum, payable quarterly March 15, June 15, Sept. 15 and Dec. 15. At the regular meeting of said board held on Nov. 29, 1912, an extra dividend of one-quarter of 1 per cent was declared payable on Dec. 15, 1912, and at the same meeting the dividend for the year 1913 was declared on a basis of 5 per cent per annum, payable quarterly at the regular dividend periods.

"On account of the large expenditures necessary for the construction of the new steam and hydraulic stations, carhouses and shops, A. B. C. division double track and other improvements, the company applied to the Public Service Commission of Ohio for permission to issue an additional \$2,000,000 of 6 per cent cumulative preferred stock. After several hearings the company obtained authority to issue \$1,640,000 of said stock, the same to be disposed of at not less than par. Complying with this order, the company offered the stock to the shareholders pro rata at par, and about 50 per cent was subscribed, the balance being disposed of to Borton & Borton, Cleveland, Ohio.

"On July 1 the company redeemed \$2,000 of Lake View Land & Improvement Company bonds, and on Nov. 1 \$100,000 collateral trust serial bonds, thereby reducing the funded indebtedness.

"The company has 1435 stockholders of record, an increase of 292 over the previous year.

"Your president cannot let pass the opportunity to commend the loyal, conscientious and efficient effort of the entire staff of the company, on whom has fallen the added strain of pushing forward the successful completion of the large improvements commenced in 1912."

The following operating statistics are contained in the report:

	1910.	1911.	1912.
Average mileage in operation.....	215.20	215.76	216.47
Gross earnings per mile.....	\$10,376.36	\$11,244.06	\$12,378.05
Net earnings per mile.....	\$4,517.87	\$4,888.07	\$5,153.02
Ratio of expenses to earnings.....	55.34	55.40	56.83

East St. Louis & Suburban Company

The following statement shows the earnings, expenses and taxes of the operating companies composing the East St. Louis (Ill.) system and the fixed charges (interest and taxes of the East St. Louis & Suburban Company) for the calendar years 1911 to 1912, inclusive:

	1911	1912
Gross receipts	\$2,279,146	\$2,452,451
Operating expenses	1,204,900	1,275,118
Net earnings.....	\$1,074,246	\$1,177,333
Interest and taxes, all companies.....	612,976	656,920
Surplus	\$461,270	\$520,412
Preferred dividend	350,000	350,000
Surplus	\$111,270	\$170,412
Percentage of operating expense to gross receipts.	52.8	52

C. M. Clark, the president, says in part:

"The increase in gross earnings in 1912 over 1911 was \$173,304, or 7 per cent. The increase in net earnings was \$103,086, or 10 per cent.

"The sum of \$191,941 was expended for construction of tracks, cars, power, new installations in connection with new customers, etc., of which \$163,399 was charged to capital accounts and \$28,542.15 to renewals and replacements.

Measured on single-track basis there are 187.5 miles of track in the system, of which the operating companies own 182.7 miles, 4.8 miles being operated under trackage agreement.

"There were owned 153 passenger cars, 810 coal cars, two electric locomotives and two steam locomotives on Dec. 31, 1912. The generating capacity of the steam stations on Dec. 31, 1912, was 10,740 kw.

"The connected light and power load (not including railway system) on Dec. 31, 1912, was 11,692 kw, an increase of 2767 kw, or 31 per cent. The number of light and power customers was 5169, an increase of 840, or 19 per cent. The gross receipts from light and power business for the year increased \$62,044, or 15.6 per cent.

"A conservative estimate of the population served by the lines of the East St. Louis & Suburban Company in 1912 is 155,000, compared with 85,000 in 1900, an increase of 82 per cent. In addition the lines of the company enter St. Louis over the Eads Bridge, thereby reaching a population of nearly 800,000 additional.

"Since Jan. 1 an agreement has been reached with the Mississippi River Power Company for the delivery to your company of hydroelectric power from Keokuk for street railway, light and power purposes. This water power will be supplemented by a new large modern steam plant which will be constructed at Alton. Contracts already made with large power consumers will require this additional steam capacity and the water-power can be used in large quantities in connection with our present and proposed steam stations. A very large amount of power business is available in the territory served by your company, and it is the belief of the management that this business offers the greatest field for the future growth of your company's earnings."

St. Joseph Railway, Light, Heat & Power Company

The following statement shows the earnings, expenses and fixed charges of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., for 1911 and 1912:

	1911	1912
Gross receipts.....	\$1,099,284	\$1,179,839
Operating expenses.....	629,150	613,494
Net earnings.....	\$470,134	\$566,345
Interest and taxes.....	283,784	291,589
Surplus.....	\$186,350	\$274,756
Percentage of operating expenses to gross receipts.....	57.23	52.00

J. H. Van Brunt, vice-president, says in part:

"The increase in gross earnings in 1912 over 1911 was \$80,554.45, or 7.3 per cent. The net earnings increased \$96,210.67, or 20.46 per cent.

"The following statement shows amounts charged to construction accounts during 1912: For railway extension and improvements, \$51,344; for new cars (on account), \$18,880; for power plants (on account), \$32,794; for carhouses and miscellaneous, \$1,779; for extension overhead lines, light and power department, \$55,204; for extension of steam-heat lines, \$11,981; total, \$171,984.

"There were 47.06 miles of track on single-track basis in the system on Dec. 31, 1912, and the total equipment consisted of 145 motor cars and 41 trail cars. Five new cars were purchased and put in operation during the year.

"The total steam generating capacity on Dec. 31, 1912, was 4600 kw. This is being increased by the addition of a 3000-kw turbine and 440 hp of boilers and an extension of the power house. This work is progressing satisfactorily. During the year \$55,204 was expended for transformers, meters, street and service installation necessary in order to serve new customers. The connected light and power load on Dec. 31 was 12,445.98 kw, an increase of 1052.48 kw, or 9.2 per cent. The number of light and power customers was 7812, an increase of 1482, or 23.4 per cent. The gross receipts from light and power business for the year increased \$52,149.28, or 17.02 per cent.

"The gross earnings of the St. Joseph & Savannah Interurban Railway, the stock of which is owned by your company, were \$56,202; net earnings, \$19,296; surplus over fixed charges, \$1,205.

"During the year a contract was made with the Kansas City, Clay County & St. Joseph Railway, under which the cars of that company from Kansas City will be operated over the tracks of your company."

Receiver for Bankers' Corporation Company

Despite the fact that the Bankers' Corporation Company, a Delaware corporation with offices in Philadelphia, has already confessed insolvency in the Eastern District United States Court, which has appointed Samuel A. Whitaker, Franklin Building, Philadelphia, receiver, a hearing on a rule to show cause why a receiver should not be appointed for this corporation was held in the Dauphin County Court on Jan. 29. The matter was brought before the Dauphin County Court by the Attorney-General, on behalf of the State Banking Department, which attacks the character of the company. The hearing on Jan. 29 was largely to determine the question of jurisdiction in the case.

It was brought out that the company had disposed of about \$300,000 worth of collateral trust notes represented to be secured by bonds of various electric railways deposited with the Union Trust Company, of Pennsylvania, as trustee. Each collateral note was certified by the trust company as being one of an issue of notes secured by bonds in the hands of the trust company. It was stated that the bonds were issued by the Warren County Traction Company and the Wayne County Traction Company, of Pennsylvania, and an electric railway in St. Louis. The claim was advanced that these companies were without available assets. William S. Lambert, Philadelphia, is president of the Bankers' Corporation Company. While the hearing has been continued, it is believed the State will not press for a receiver in view of the fact that the federal court has already made such appointment.

Merger Proceedings in Chicago

The local transportation committee negotiating with the representatives of Chicago's surface and elevated railways for a general merger decided to dispense with the services of the committee of real estate experts appointed by the Chicago Real Estate Board when they set their compensation at \$10,000. The transportation committee considered the amount named excessive and decided to abandon this method of reconciling the two values placed on the elevated railways real estate by the city's and the company's experts last spring.

Athol & Orange Street Railway, Athol, Mass.—The Athol & Orange Street Railway and the Gardiner, Westminster & Fitchburg Street Railway have petitioned the Railroad Commission for authority to consolidate. The Athol & Orange Street Railway has petitioned for the right to issue \$185,000 of additional capital stock to effect the consolidation.

Bay State Street Railway, Boston, Mass.—James F. Jackson appeared before the Railroad Commission of Massachusetts on Jan. 29, 1913, on petition of the Bay State Street Railway for approval of an issue of \$800,000 of first preferred stock to be offered stockholders at \$115 per share and of an issue of \$429,000 of refunding first mortgage 4 per cent bonds dated July 1, 1904, \$266,000 by the Boston & Northern Street Railway and \$163,000 by the Old Colony Street Railway. The stock will provide for expenditures already made and the bond issue will provide for the retirement of floating indebtedness.

Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.—It is reported that Newburger, Henderson & Loeb, Philadelphia, Pa., have agreed to finance the proposed consolidation of the Corpus Christi Ice & Electric Company, the People's Light Company and the Corpus Christi Street & Interurban Railway.

Frederick (Md.) Railroad.—An application has been filed with the Public Service Commission of Maryland for permission to consolidate the Frederick Railroad, the Frederick Gas & Electric Company, the Frederick & Hagerstown Power Company and the Hagerstown Railway as the Hagerstown & Frederick Railway, with an authorized capital stock of \$3,000,000, of which \$1,000,000 is to be 7 per cent preferred stock and \$2,000,000 common stock. The new company desires authority to execute a mortgage to secure an issue of \$10,000,000 of thirty-year 5 per cent bonds, \$3,300,000 of these bonds to be used to retire issues of the constituent companies which are now outstanding.

Georgia Railway & Power Company, Atlanta, Ga.—The Georgia Railway & Power Company has declared a dividend of \$4.70 a share upon its first preferred stock, this being at the full rate of 6 per cent since the incorporation of the company last March. No dividends have as yet been declared upon the company's second preferred stock. It has been announced that the Georgia Railway & Power Company will take over the property of the East Tennessee Power Company.

Grafton (W. Va.) Traction Company.—The Kuhn interests of Pittsburgh, Pa., are reported unofficially to be negotiating with John T. McGraw, president of the Grafton Traction Company, for the purchase of the property of that company. The Kuhn interests control the Wheeling (W. Va.) Traction Company and have a pretentious water-power development under way on the Cheat River.

Illinois Traction System, Peoria, Ill.—The Illinois Traction System has purchased the property of the Abingdon (Ill.) Light & Power Company, which holds light and power franchises at St. Augustine and Prairie City. The consideration is said to have been \$60,000.

New York Municipal Railway Corporation, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has granted the application of the New York Municipal Railway Corporation for permission to issue \$100,000 of its capital stock to acquire property and for improvements, extensions, etc. The company has a total capital of \$1,000,000, but none of it has yet been issued. Later the commission adopted another order granting the New York Consolidated Railroad permission to purchase the stock of the New York Municipal Railway Corporation when issued. Both companies were organized by Brooklyn Rapid Transit interests to facilitate their participation in the proposed dual system of rapid transit. The New York Municipal Railway Corporation will make the contract with the city for the operation and a contribution to the construction of the new lines. The New York Consolidated Railroad is the owner of the existing Brooklyn elevated system and will take over the contract made by the New York Municipal Railway Corporation and operate the new lines.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—The Public Service Commission of the Second District of New York continued until Feb. 6, 1913, the hearing on the application of the Rochester, Syracuse & Eastern Railroad, the Syracuse, Lake Shore & Northern Railroad and the Auburn & Northern Electric Railroad to consolidate as the Empire United Railways, Inc., in accordance with the terms published in the ELECTRIC RAILWAY JOURNAL of Feb. 1, 1913, page 228. At the hearing before the commission at Albany, on Jan. 30, 1913, C. D. Beebe, president, and William Nottingham, attorney, stated that consents to the consolidation had been obtained from holders of 87 per cent of the stock of the three corporations, and that eventually consents would be obtained from the holders of more than 90 per cent of the stock of the companies. Mr. Nottingham emphasized the fact that the total of the securities to be issued by the new company, amounting to \$11,600,000, is \$1,200,000 less than the present securities of the constituent companies. Mr. Beebe pointed out that the Syracuse, Lake Shore & Northern Railroad has a closed mortgage and is without means to finance any needed improvements. This year the company will have to meet an expenditure approximating \$75,000 because of State highway improvements.

Toledo & Chicago Interurban Railway, Kendallville, Ind.—Evidence is being heard in the Superior Court at Fort Wayne, Ind., upon the petition of the receivers of the Toledo & Chicago Interurban Railway to sell the property of the company. This road has been in the hands of a receiver since February, 1908.

Toledo Railways & Light Company, Toledo, Ohio.—The Toledo Traction, Light & Power Company has been incorporated in Maine with a capital stock of \$15,200,000, of which \$6,000,000 is 6 per cent preferred stock and \$9,200,000 is common stock, as the successor to the Toledo Railways & Light Company, the plans for the reorganization of which were referred to at length in the ELECTRIC RAILWAY JOURNAL of Oct. 19, 1912, page 984. The unofficial statements which have been published in this connection indicate a number of

slight changes in the distribution of the securities from the plan as originally announced. It was at first proposed that the successor company should be incorporated as the Toledo Light & Railways Company.

United Light & Railways Company, Grand Rapids, Mich.—The United Light & Railways Company has sold to the stockholders \$1,000,000 of 6 per cent first preferred stock at par with a bonus of 25 per cent in common stock. This issue of stock makes the present capitalization \$6,000,940 of first preferred stock, \$3,000,000 of second preferred stock, and \$5,537,500 of common stock. The proceeds of the sale of the new stock will be used for additions to the properties of the company.

Wheeling (W. Va.) Traction Company.—The Wheeling Traction Company has elected new officers as follows: W. S. Kuhn, president; J. S. Kuhn, first vice-president; George O. Nagle, second vice-president and general manager; J. B. Van Wagener, treasurer; C. W. Schenk, assistant treasurer; W. A. Shirley, secretary; Byron Trimble, assistant secretary.

Dividends Declared

- Binghamton (N. Y.) Railway, 2 per cent.
- Boston (Mass.) Elevated Railway, 3 per cent.
- Connecticut Railway & Lighting Company, Bridgeport, Conn., quarterly, 1 per cent, preferred; quarterly, 1 per cent, common.
- Harrisburg (Pa.) Traction Company, 3 per cent.
- Massachusetts Northern Railways, Greenfield, Mass., quarterly, 1½ per cent, preferred.
- Pacific Gas & Electric Company, San Francisco, Cal., quarterly, 1½ per cent, preferred.
- Portland Railway, Light & Power Company, Portland, Ore., quarterly, 1½ per cent.
- Union Street Railway, New Bedford, Mass., quarterly, 2 per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

BATON ROUGE (LA.) ELECTRIC COMPANY						
Period.		Gross Earnings.	Operating Expenses.	Net Earnings.	Fixed Charges.	Net Surplus.
1m.,	Nov. '12	\$12,494	*\$7,328	\$5,166	\$1,730	\$3,436
1 "	" '11	10,707	*6,483	4,224	1,730	2,494
12 "	" '12	145,450	*86,315	59,135	20,763	38,372
12 "	" '11	118,025	*75,955	42,071	20,654	21,417
BROCKTON & PLYMOUTH STREET RAILWAY CO., PLYMOUTH, MASS.						
1m.,	Nov., '12	\$8,051	*\$7,282	\$769	\$1,033	\$264
1 "	" '11	8,116	*7,161	955	1,018	63
12 "	" '12	120,200	*90,109	30,091	12,525	17,567
12 "	" '11	118,833	*90,734	28,200	13,005	15,095
CAPE BRETON ELECTRIC COMPANY, LIMITED, SYDNEY, N. S.						
1m.,	Nov., '12	\$34,563	*\$15,810	\$18,753	\$5,682	\$13,071
1 "	" '11	30,991	*15,204	15,787	5,653	10,134
12 "	" '12	357,207	*194,555	162,652	68,076	94,576
12 "	" '11	335,657	*180,622	155,034	67,899	87,135
DALLAS (TEX.) ELECTRIC CORPORATION						
1m.,	Nov., '12	\$163,751	*\$91,217	\$72,534	\$24,635	\$47,899
1 "	" '11	146,013	*96,310	49,704	19,813	29,891
12 "	" '12	1,800,248	*1,089,469	710,779	285,279	425,501
12 "	" '11	1,618,655	*1,086,308	532,348	247,087	285,261
EL PASO (TEX.) ELECTRIC COMPANY						
1m.,	Nov., '12	\$75,011	*\$38,691	\$36,320	\$4,808	\$31,512
1 "	" '11	62,684	*34,579	28,105	6,983	21,122
12 "	" '12	785,585	*438,231	357,354	72,741	284,613
12 "	" '11	683,282	*406,267	277,015	80,893	196,122
GALVESTON (TEX.) ELECTRIC COMPANY						
1m.,	Nov., '12	\$38,904	*\$23,039	\$15,866	\$7,653	\$8,213
1 "	" '11	32,127	*21,544	10,583	7,324	3,258
12 "	" '12	490,123	*268,421	221,702	94,363	127,339
12 "	" '11	435,126	*251,363	183,763	83,794	99,969
GALVESTON-HOUSTON (TEX.) ELECTRIC COMPANY						
1m.,	Nov., '12	\$181,075	*\$104,786	\$76,288	\$33,722	\$42,566
1 "	" '11	132,003	*85,094	46,910	18,918	27,992
12 "	" '12	1,981,369	*1,159,651	821,719	392,011	429,707
12 "	" '11	1,501,188	*949,367	551,821	231,449	320,372
HOUGHTON (MICH.) COUNTY TRACTION COMPANY						
1m.,	Nov., '12	\$24,110	*\$14,366	\$9,744	\$5,677	\$4,067
1 "	" '11	22,000	*15,538	6,462	5,227	1,236
12 "	" '12	305,898	*172,688	132,211	66,720	66,491
12 "	" '11	301,181	*180,179	121,002	62,575	58,427

*Includes taxes.

Traffic and Transportation

Honesty, Courtesy and Sobriety as Essentials to Success

Robert E. Lee, general superintendent of the Cincinnati (Ohio) Traction Company, has made it a practice for several years past to address the trainmen in the service of the company twice each year. At a recent meeting of the men at the club rooms in Brighton, Mr. Lee made a very forceful address, in part as follows, in regard to honesty, courtesy and sobriety, which he considers essential to success in street railway work:

"I am not here to lecture you or to find fault with you, but to help you. I will not indulge in any personalities. If I do and thereby hurt anybody's feelings, call me down hard and I will stand for it. What I most particularly want to say to you is that there are three cardinal principles which make for success in our work. First, honesty and truthfulness; second, courtesy, and third, sobriety. As to the first, the dishonest man and the liar are not wanted anywhere, and when I find one in the employ of this company out he goes without ceremony. A liar is bad for the company and bad for his fellow employees.

"The second cardinal principle, courtesy, is in some respects the most important of all. Politeness does not cost you a cent, and will bring in great returns in the long run. I know that sometimes you have to bite your tongue to keep still, especially on divers occasions when, owing to slippery rails, the car has slid maybe 10 ft. past an irate old gentleman and he hops aboard with the query: 'What is the matter with that farmer up in front?' But if you tell the old gentleman in an equally irate tone to go up and ask the motorman he will say that you are as big a roughneck as the man ahead is a farmer, and a fine argument is started. On almost all occasions the best thing to do is to smile, smile and keep on smiling. Now, I do not mean for an instant that if some rowdy calls you a vile name or attempts violence you are to smile. Far from it. Srtike out, and strike out with all your might, and this company and I will stand right behind you. Above all, do not get into arguments with our dear friends, the ladies. It is useless, foolish and a waste of time. It takes two to make an argument worth while. If I find that any man has been guilty of discourtesy to any man or woman passenger I shall discharge that man immediately, whether he has been in the service one day or twenty years.

"Street railroading has reached such a development that it is positively dangerous to life and limb to place any car in charge of a motorman or conductor who drinks on duty. I will not have this to the slightest extent. Sobriety, the third principle insisted upon, will be rigidly enforced. We owe this to the people who walk upon our streets, to the innocent men and women and children who ride upon our cars. The rule that at no time shall employees of the company enter a bar while in full uniform will also be enforced."

Free Insurance and Increase in Wages for Binghamton Employees

G. Tracy Rogers, president of the Binghamton (N. Y.) Railway, issued the following announcement on Jan. 30, 1913, in regard to the establishment by the company of a system of free life insurance for all of its employees:

"Upon the death of any employee of the Binghamton Railway who has been in good standing for twelve months prior to the sickness or casualty resulting in death, said company will pay to his estate 25 per cent of the amount earned by said employee during the twelve months prior to the sickness or casualty resulting in death.

"Upon the death of any employee of the Binghamton Railway who has been in good standing for twenty-four months or more prior to the sickness or casualty resulting in death, said company will pay to his estate 50 per cent of the amount earned by said employee during the twelve months prior to the sickness or casualty resulting in death. This refers only to men in the employ of the company a full twelve months or twenty-four months or more subsequent to Jan. 1, 1913, and does not apply to officers of the company.

"Disobedience of rules sufficient to warrant a lay-off or

suspension, or accepting employment with others, would lose to the employee all right of benefit under this insurance provision up to that time, and in event of such lay-off or suspension or accepting employment with others the conditions of this insurance provision would start anew from the date of his reinstatement."

Mr. Rogers has also announced an increase of 10 per cent in the wages of all the motormen and conductors in the employ of the company.

Fare Recommendation of Wisconsin Commission

The State Railroad Commission of Wisconsin issued a recommendation on Feb. 1, 1913, extending the single street fare limit over the lines of The Milwaukee Electric Railway & Light Company to the city of Wauwatosa.

The recommendation of the commission follows:

"It is recommended that within twenty days of the date of this order the above-named companies so extend the present one-fare or single-fare limits that on the Walnut Street line they will apply to and from any portion within the city of Milwaukee and the terminal of this line in the city of Wauwatosa; and that on the Wells-Farwell Street line they will apply to and from any portion within the city of Milwaukee to a point across the Chicago, Milwaukee & St. Paul Railway tracks, about one block from the said Walnut Street line terminal in the city of Wauwatosa. These extensions in the one-fare or single-fare limits shall not carry with them any changes in the present transfer privileges that are provided in the above orders of this commission in the Hans A. Koenig case and in the other cases against the above respondents, which orders, as stated, were dated Aug. 23, 1912."

President Mortimer of The Milwaukee Electric Railway & Light Company announced that the company would comply with the recommendation. He said:

"While the commission recommends and does not order the change, we shall carry out the suggestion provided no complications occur. The extension of the single fare to the center of Wauwatosa will carry with it the transfer privileges of Milwaukee. No additional construction of tracks will be necessary to make the change."

Mr. McHenry on Railroad Electrification

In response to a recent request of the Boston banking house of Thompson, Towle & Company for a statement regarding electrification plans on the New York, New Haven & Hartford Railroad, Vice-president E. H. McHenry has issued a statement pointing out that the New Haven company is now committed to an expenditure of \$20,000,000, covering work along this line completed, in progress or authorized. In addition to the work between Woodlawn and Stamford, completed several years ago, the company has substantially finished the work on the Harlem River and Westchester lines. Construction is actively in progress between Glenbrook and New Haven, and the electrification of the main line between Boston and Providence will begin in the spring. The latter is the first step toward the ultimate electrification of all the steam railroad lines within the suburban radius of Boston. Mr. McHenry states that in his opinion electricity will be installed upon a large scale within the next decade, particularly at the great railroad centers. He believes that the initial electrification of congested traffic centers will be followed by an ever-extending zone of electrical operation until such centers are finally interconnected by electrically operated lines. In the larger cities the obligations to electrify will be forced upon the companies regardless of economy and considerations of uniformity, and disabilities attending a break in the kind of operation will make it economical and desirable to extend the electrification to parts of the railroad system which would not be justified if independently considered. Mr. McHenry says that as yet little direct economy has resulted from the electrification already completed, but that "the indirect advantages are large, and with an extension of electric operation to include passenger, freight and switching service, it is probable that a direct and sufficient return upon the necessary investment will be secured under favorable conditions. . . . In general it may be stated that the principal and almost the entire economy to be effected by electric operation

is comprised in the two items of fuel and engine repairs, which will be approximately reduced by 50 per cent."

Individual Drinking Cups on Cars.—The Union Traction Company of Indiana is preparing to place individual drinking cups in its cars for use, free, by its patrons.

Modification of Toledo Transfer System.—On Feb. 3, 1913, the Toledo Railways & Light Company, Toledo, Ohio, inaugurated a new north and south transfer system in that city which gives patrons of the company their choice of four lines north or south in either direction.

Campaign Against Trafficking in Transfers in Newark.—The Public Service Railway, Newark, N. J., has begun a vigorous campaign to prevent the abuse of the transfer privileges which it extends to its patrons in that city. On Jan. 29 and 30 the company caused the arrest of six men whom it charged with trafficking in transfers, and each of the offenders was fined \$10 in the police court.

Petition for Reduced Fare in Racine.—The Council of Racine, Wis., has adopted a resolution to the effect that a petition be filed with the Railroad Commission of Wisconsin asking that body to require The Milwaukee Electric Railway & Light Company, which operates in Racine, to sell six tickets for 25 cents good over its lines in Racine any time of the day. The commission will also be asked to direct the company to extend its lines in Racine.

Abandonment of Route Proposed in Binghamton.—The Binghamton (N. Y.) Street Railway has applied to the Public Service Commission of the Second District of New York for permission to discontinue its route on Eldredge Street, between Chenango Street and State Street. In its application the company states that it deems this portion of its road no longer necessary for the successful operation of its system and not essential for the convenience of the public.

New Elevated Station in New York.—The Public Service Commission of the First District of New York has ordered the Interborough Rapid Transit Company to construct a new station on its Sixth Avenue elevated line at Thirty-eighth Street and to place the new station in operation before the end of the present year. The new station will be in the center of a newly developed business and retail dry-goods district and convenient to the Engineers' Club and the United Engineering Societies building.

Increased Service in Washington.—The Washington Railway & Electric Company, Washington, D. C., has increased the service on seven of its lines and the Capital Traction Company, Washington, D. C., has increased the service on one of its lines at the instance of the District Electric Railway Commission. The Washington Railway & Electric Company has received another consignment of side-entrance cars, and several of the new cars have been added to the cars operated regularly on the Mount Pleasant line.

Accident Prevention Campaign.—The Aurora, Elgin & Chicago Railroad, Chicago, Ill., will stop its Aurora cars on the near side of the street, equip all the city cars in Aurora with fenders, close the platforms of all cars while in motion and permit passengers to leave the cars only from the right side. E. C. Faber, vice-president and general manager of the company, has announced a safety-first campaign which will include lectures before the school children of Aurora and East Aurora and the distribution of accident-prevention maxims.

Service Over Lulu Island Line.—The British Columbia Electric Railway, Vancouver, B. C., has established service over its new track on the Lulu Island line between Vancouver and Eburne. This line is leased by the British Columbia Electric Railway from the Canadian Pacific Railway. As originally constructed the entire line was a single track, but owing to the rapid development of the Point Grey district a double-track was constructed last year from Vancouver to Eburne. A fifteen-minute service is in force during the rush hours between Vancouver and Eburne.

New Police Traffic Rules in Indianapolis.—The Board of Public Safety of Indianapolis, Ind., at a special meeting on Jan. 24, 1913, issued an order that the traffic squad for seven days stop every driver or pedestrian violating any

traffic rule and inform him of his fault, and set Feb. 1 as the date on which arrests would be begun for violations of traffic regulations. Orders were issued to Superintendent of Police Hyland to give especial attention to the provision of the city ordinances requiring all vehicles to pass no less than 6 ft. distant from a street car receiving or discharging passengers, or to stop where this is impossible.

Ventilating Buffalo's Near-Side Cars.—E. G. Connette, president of the International Railway, Buffalo, N. Y., has explained for the benefit of the traveling public of that city in an extended newspaper article the method of ventilating the near-side cars which the company has in service. He said that air-velocity tests made recently in some of the Buffalo near-side cars show that between 300 and 600 cu. ft. of air per person per hour passes through the cars. He also explained in detail the features of the near-side cars. Referring to the development plans of the company, Mr. Connette said that it was proposed to spend \$2,000,000 in improvements during 1913.

Increase in Wages by Philadelphia & Western Railway.—The Philadelphia & Western Railway, Upper Darby, Pa., has announced an advance in the wages of motormen and conductors, effective on March 1, 1913. Under the present scale men in the service less than six months are paid 21 cents; those employed between six months and a year, 22 cents. Under the new scale all first-year men will receive 22 cents. The old scale for second, third and fourth year men, who are paid respectively 23, 24 and 25 cents, remains unchanged, but a new rate of 26 cents is fixed for the fifth and subsequent years, the present advancing scale stopping with the fourth-year rate as a maximum.

Ordinance to Reduce Fare in Omaha.—An ordinance has been introduced in the Council of Omaha to reduce the fare of the Omaha & Council Bluffs Street Railway from 5 cents to seven tickets for 25 cents, or 3.57 cents each. G. W. Wattles, president of the company, in opposing the ordinance, said that at the present time the company, after meeting all operating expenses, making proper allowance for depreciation and paying taxes and fixed charges, used 4.46 cents of each fare collected, thus leaving but a small balance for dividends. A fare of 3.57 cents would not only wipe out all dividends but leave operation at a loss. He made comparisons with other cities where there is a fare of less than 5 cents.

Increase in Wages by Lehigh Valley Transit Company.—The Lehigh Valley Transit Company, Allentown, Pa., has announced an increase in the wages of motormen and conductors on all divisions effective on March 1, 1913. Men in the first year's service are to be advanced from 21 cents to 22 cents per hour, second-year men from 22 cents to 23 cents, third-year men from 23 cents to 24 cents, fourth-year men from 24 cents to 25 cents, while a new rate of 26 cents is established for the fifth and subsequent years of service. The posted notice of the increases is signed by R. P. Stevens, president, who states that the higher scale is a recognition of the co-operation of the men. Mr. Stevens refers to the excellent results of the past year in increased receipts, decreased accidents and the absence of labor trouble and extraordinary expense.

Suits to Force Transfer Privilege.—Arguments are being heard in the mandamus proceedings brought by the villages of Oak Park, Maywood and River Forest to compel the Chicago Railways to issue transfers good on the lines of the County Traction Company and vice versa. As the city of Chicago has an interest in the earnings of the Chicago Railways Company it also is made a defendant in the case. The villages named are suburbs of Chicago lying west and northwest of the Loop district. At the present time the rate of fare to villagers desiring to reach the Loop district is 10 cents. The surface railways made parties to the suit are independent of each other and are operated by entirely separate organizations. The petitioners in the proceedings allege that the two companies have a common ownership and that the Chicago Railways Company in particular is bound by franchises which were given to its predecessor, the Union Traction Company, to arrange for the payment of a 5-cent fare between Chicago and the villages in question.

Personal Mention

Mr. Devoe P. Hodson, a former city judge of Buffalo, has been nominated by Governor Sulzer to succeed Mr. John B. Olmsted as a member of the Public Service Commission of the Second District of New York.

Mr. John C. Thompson, the retiring superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., had a reception tendered to him on Jan. 31, 1913, by the employees of the company. A purse of gold was presented to Mr. Thompson by the men as a token of their esteem.

Mr. W. M. Kavanaugh, president of the Little Rock Railway & Electric Company, Little Rock, Ark., was chosen United States Senator from Arkansas on Jan. 28, 1913, to serve until March 4. Mr. Kavanaugh is a Democrat and has many business and financial interests. He is president of the Southern Baseball League.

Mr. Clarence S. Pinkerton has been appointed street railway inspector of Cincinnati, Ohio. He will act under Service Director Price and City Solicitor Bettman of that city. The department of street railway inspection was maintained under former Mayor Schwab, but was abolished by Mayor Hunt, the present incumbent.

Mr. Thomas K. Bell has resigned as general manager of the St. Petersburg Light & Power Company and the St. Petersburg & Gulf Railway, St. Petersburg, Fla. Mr. Bell was for many years engineer of William Wharton, Jr., & Company, Inc., Philadelphia, Pa., and was also connected with the Interstate Railways, Philadelphia, and the Philadelphia Rapid Transit Company.

Mr. Miles Bronson has been appointed general superintendent of the electric zone of the New York Central & Hudson River Railroad and of the Grand Central Terminal, New York, to succeed Mr. A. R. Whaley, who was recently elected vice-president of the New York, New Haven & Hartford Railroad. Mr. Bronson is thirty-seven years old and has been in the employ of the New York Central & Hudson River Railroad fourteen years.

Mr. G. H. Caffrey, formerly superintendent of the Norwalk (Conn.) district of the United Electric Light & Water Company, has accepted the position of engineer of the Havana Railways & Light Company, Havana, Cuba. Mr. Caffrey is a graduate of the Stevens Institute of Technology and was connected with the engineering department of the New York Central & Hudson River Railroad before going to Norwalk.

Mr. W. E. Higgins has been appointed acting vice-president and general manager of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa., to succeed Mr. Charles F. Conn, resigned, who, as previously noted in the *ELECTRIC RAILWAY JOURNAL*, has been elected president and general manager of the American Cement Company, Philadelphia, Pa. Mr. Higgins was formerly assistant to the general manager of the Lackawanna & Wyoming Valley Railroad.

Mr. Olaf A. Mann has been appointed auditor of the Ithaca (N. Y.) Street Railway and the New York, Auburn & Lansing Railroad, to succeed Mr. Allan Gordon Armstrong, whose appointment as general auditor of the General Gas & Electric Company, New York, N. Y., is referred to elsewhere in this column. Mr. Mann was formerly connected with the accounting department of the New York (N. Y.) Railways, the successor to the Metropolitan Street Railway. He will take up his duties at Ithaca on Feb. 15, 1913.

Mr. George O. Nagle, who has been general manager of the Wheeling (W. Va.) Traction Company since 1904, has been elected second vice-president of the company in addition to general manager. Before becoming connected with the Wheeling Traction Company, Mr. Nagle was with Stone & Webster, with headquarters at the main office of the company in Boston. Previous to that he was manager for several years of the Savannah (Ga.) Electric Company, which is controlled by Stone & Webster. Mr. Nagle was also connected with the surface railway systems of Chicago for a number of years.

Mr. Allan Gordon Armstrong has resigned as auditor of the New York, Auburn & Lansing Railroad and the Ithaca

(N. Y.) Street Railway to become general auditor of the General Gas & Electric Company, New York, N. Y. Before accepting the position with the companies at Ithaca Mr. Armstrong was connected with the accounting and auditing departments of the New York Railways, the successor to the Metropolitan Street Railway, New York. He was previously for nine years with the Norfolk & Portsmouth Traction Company, formerly the Norfolk Railway & Light Company, which is now merged with the Virginia Railway & Power Company. His resignation from the companies at Ithaca becomes effective on Feb. 15, 1913.

Mr. Howard W. Irwin has been appointed assistant superintendent of equipment for the Bay State Street Railway, Boston, Mass., which operates nearly 1000 miles of



H. W. Irwin

track in Massachusetts, Rhode Island and southern New Hampshire, extending from Boston to Newport and Nashua and comprising the trackage formerly operated by the Boston & Northern Street Railway and the Old Colony Street Railway. Mr. Irwin is a native of Brattleboro, Vt. His primary education was had in the public schools of Natick, Mass. Later he attended Amherst College and was graduated in the mechanical engineering course at Purdue University in 1903. His first connection with the street rail-

way industry was as a conductor on the Northampton Street Railway during vacation and holiday periods. Following his course at Purdue, he entered the testing department of the General Electric Company at Schenectady, N. Y., and for about three years was at the head of the steam-turbine testing division. Later he served for a year as assistant superintendent of power for the Schenectady works. He then became general manager of the Northern Electric Company and affiliated central-station properties, Fargo, N. D. In 1909 he became superintendent of instruction of car service employees for the Boston & Northern Street Railway and the Old Colony Street Railway. In handling this work he was in charge of the design of the unusually complete instruction cars built for service on this system and fully described in this paper when they were placed in service. For the past year Mr. Irwin has been acting as assistant to Mr. E. W. Holst, superintendent of equipment of the Bay State Lines, and his appointment formally confirms his title and jurisdiction.

Mr. T. P. Artaud has been appointed assistant general manager of the Hudson & Manhattan Railroad, New York, N. Y., to succeed Mr. O. T. Boyd, resigned, and will report to Mr. Wilbur C. Fisk, the vice-president and general manager. Mr. Artaud was born in Jackson, Miss. He was graduated from Rock Hill College, at Ellicott, Md., and studied at Johns Hopkins, Harvard and Columbia. He is a mechanical and electrical engineer. His first work was in connection with the electrification of the Cary Street line in Baltimore, Md. Subsequently he served in the drafting office of the Maryland Steel Works. He became associated with the Hudson & Manhattan Railroad during the construction of the tunnel under the Hudson River between New York and New Jersey and has served in practically all of the various departments of the company. Previous to his appointment as assistant general manager, Mr. Artaud was purchasing agent of the company. As assistant general manager he will have direct supervision over the operation of the line, the power house and terminals and will also act as supervisor of purchases. He is an associate member of the American Society of Mechanical Engineers.

Mr. Thomas K. Glenn, who resigned as vice-president and general manager of the Georgia Railway & Electric Company, Atlanta, Ga., in January, 1908, to become president of the Atlanta Steel Hoop Company, has been elected third vice-president of the Georgia Railway & Power Company, the successor to the Georgia Railway & Electric

Company. Mr. Glenn has been a director of the company. Mr. Glenn began his street railway career in Atlanta in 1891 with the Atlanta Consolidated Street Railroad and was connected with that company and its successors continuously until 1908. The position of third vice-president of the Georgia Railway & Power Company is a new one with the company.

Mr. O. T. Boyd has resigned as assistant general manager of the Hudson & Manhattan Railroad, operating under the Hudson River between New York and New Jersey. He became connected with the Hudson & Manhattan Railroad in June, 1909, as general passenger agent, and in January, 1912, was appointed assistant general manager. Before Mr. Boyd entered the service of the Hudson & Manhattan Railroad he was city passenger agent of the Pennsylvania Railroad in Washington, D. C., for three years. He served the Pennsylvania Railroad for twelve years in various capacities.

Mr. Edward E. McCall, justice of the Supreme Court of New York, was nominated by Governor Sulzer of New York on Feb. 3, 1913, to succeed Mr. William R. Willeox as chairman of the Public Service Commission of the First District of New York. The nomination was subsequently confirmed by the Senate. Justice McCall was born in Albany on Jan. 6, 1863. He was educated in the public schools of that city and was graduated from the Albany High School. He entered the New York University Law School and was graduated in 1884 with honors and as valedictorian of his class. He formed a partnership with Mr. William C. Arnold, but this was dissolved after several years and Mr. McCall continued to practise alone. He acted as personal counsel to his brother, the late John A. McCall, when the latter was president of the New York Life Insurance Company. He was subsequently nominated for the position of justice of the Supreme Court of the State of New York.

Mr. E. T. Munger, who since Jan. 1, 1909, has been general superintendent of the Hudson & Manhattan Railroad, operating under the Hudson River between New York and New Jersey, has resigned that office as a result of the financial reorganization of the company which is now under way. As head of the transportation department of the company Mr. Munger's principal duty was to carry out the public-be-pleased policy of Mr. William G. McAdoo, the president of the company, and in hiring men he paid especial attention to securing such help as would be courteous and attentive to the public. Mr. Munger personally engaged every transportation employee on the system,



E. T. Munger

altogether about 1500 men. Before becoming connected with the Hudson & Manhattan Railroad Mr. Munger was superintendent of motive power and equipment of the Metropolitan West Side Elevated Railway, Chicago. He was graduated from the University of Wisconsin in 1892 and became connected with the Hall Signal Company as draftsman and construction foreman. In 1894 he entered the employ of the National Switch & Signal Company, but resigned a year later to become foreman of construction of the Metropolitan West Side Elevated Railway, in charge of wiring cars, stations and power houses. In 1898 Mr. Munger was appointed engineer of the Englewood & Chicago Railway in charge of the construction and installation of that company's storage battery surface line between Englewood and Blue Island. On the completion of the road he became general manager of the Havana Telephone & Electric Light Company, Havana, Ill., but re-entered the service of the Metropolitan West Side Elevated Railway in 1903 as master mechanic, and continued in that position until March 14, 1908, when he was appointed superintendent of motive power of the Metropolitan West Side Elevated Railway.

Construction News

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

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

RECENT INCORPORATIONS

***Indianapolis & Cincinnati Electric Railroad, Indianapolis, Ind.**—Incorporated in Indiana in the interests of the Indianapolis & Cincinnati Traction Company. In explaining the purpose of the new company C. L. Henry, president of the Indianapolis & Cincinnati Traction Company, said the new company had been formed to extend the lines of the Indianapolis & Cincinnati Traction Company from Rushville to Cincinnati by way of Brookville, Ind., and Harrison, Ohio. The Indianapolis & Cincinnati Electric Railroad is capitalized at \$10,000, and may be merged with the Cincinnati, Harrison & Indianapolis Traction Company, which is now in existence.

***Iowa Southern Railway, Des Moines, Ia.**—Incorporated in Iowa to build a 25-mile electric or steam railway from Albia to Centerville. Capital stock, \$900,000. Incorporators: William Gardner, Richard Aishton, John Caldwell and Jonah Cleveland.

***Orleans-Kenner Electric Railway, New Orleans, La.**—Incorporated in Louisiana to build an electric railway between New Orleans, Kenner and Hanson City. Right-of-way is being obtained. A. Smith Bowman, New Orleans, president of the Bellevue Farms Company, is interested.

***Toledo Traction, Light & Power Company, Toledo, Ohio.**—This company has been incorporated in Maine with a capital stock of \$17,200,000 presumably as the successor to the Toledo Railways & Light Company, the plan for the reorganization of which company has been published in the ELECTRIC RAILWAY JOURNAL.

FRANCHISES

Little Rock, Ark.—The Little Rock Railway & Electric Company, Little Rock, has asked the Council for a franchise to extend its lines to Biddle, a suburb of Little Rock.

Los Angeles, Cal.—The Los Angeles Railway will ask the Council for a franchise for an extension of its line on Sixteenth Street to the western city limits of Los Angeles.

Santa Ana, Cal.—The Pacific Electric Railway has asked the Council for a franchise for a line in Santa Ana.

Martinsville, Ill.—The Decatur, Sullivan & Mattoon Transit Company has received a franchise from the Council in Martinsville. This company has asked the Board of Trustees of Moweaqua for a franchise in Moweaqua. [E. R. J., Jan. 25, '13.]

Dubuque, Ia.—The Union Electric Company, Dubuque, has received a twenty-five-year franchise from the Council to extend its line up West Locust Street in Dubuque to West Dubuque.

Ashland, Ky.—The Councils of Ashland and Russell, Ky., and the fiscal courts of Boyd and Russell Counties are expected to take action in the near future in granting a franchise to the Ohio Valley Electric Railway, Ashland, for an interurban line, which will connect Ashland with Russell and thence run to Huntington, W. Va., where there is already a connection. The right-of-way is now being secured.

***Donaldsonville, La.**—S. Wexler, New Orleans, has submitted plans to the City Council in which he offers to build a 16-mile electric railway between Donaldsonville, White Castle and Napoleonville if the Council will grant him a franchise in Donaldsonville.

Cortland, N. Y.—The Cortland County Traction Company has asked the Council for a franchise to extend its line along Railway Avenue west to Oswego Street in Cortland.

Granville, N. Y.—Thomas F. Haley, Granville, has received a franchise from the Council for an electric railway from Granville through North Granville.

Islip, N. Y.—The Suffolk Traction Company, Patchogue, has asked the Islip Town Board for a franchise to extend its line from Patchogue to Sayville. If the franchise is granted the company will use the tracks laid by the South Shore Traction Company about four years ago.

Youngstown, Ohio.—The Lake Erie & Youngstown Railroad has received a twenty-year franchise from the Council over Covington, Federal and Front Streets in Youngstown.

***Medford, Ore.**—The F. P. Minney Company, Oakland, has received a franchise from the Council in Medford. This is part of a plan to build an electric line through the Rogue River Valley. W. E. Beveridge, chief engineer.

Portland, Ore.—The Portland, Eugene & Eastern Railway has received a franchise from the City Council to electrify its line on Fourth Street, Portland.

Charleston, S. C.—The Charleston & Summerville Interurban Railway has received a six months' extension of time in which to begin the construction of its 20-mile line between Charleston and Summerville. J. L. David, president. [E. R. J., Oct., 19, '12.]

Chattanooga, Tenn.—The Chattanooga Railway & Light Company has received a thirty-eight-year franchise from the Council to extend its lines over certain streets in Chattanooga.

St. Elmo, Tenn.—The Lookout Mountain Railway has asked the Council for a franchise to build a line in St. Elmo. Joseph E. Brown is interested. [E. R. J., Nov. 2, '12.]

***Dallas, Tex.**—L. A. Stemmons, representing the Dallas & Oak Cliff Electric Railway, has asked the County Commissioners for a twenty-year franchise for a line from a junction on the line of the Northern Texas Traction Company's loop in Oak Cliff along Marlborough Avenue and Brooklyn Street into Sunset Hill at Oak Cliff Boulevard.

New Braunfels, Tex.—The San Antonio & Austin Interurban Railway, San Antonio, will ask the Council for a franchise in New Braunfels. The line will connect San Antonio, Austin, New Braunfels and San Marcos. H. G. Henne, New Braunfels, is interested. [E. R. J., Jan. 25, '13.]

Port Townsend, Wash.—W. B. Webb and associates have received a fifty-year franchise from the Council for a line in Port Townsend. [E. R. J., Jan. 25, '13.]

Vancouver, Wash.—The Northwestern Electric Company has received a franchise to build a line across the government grounds at Vancouver. The company has asked for a franchise in Portland. It is reported that the company plans to construct a line up White Salmon River Valley.

Point Marion, W. Va.—The West Penn Railway, Pittsburgh, has asked the Council for a franchise in Point Marion.

Point Marion, W. Va.—The West Virginia Traction & Electric Company, Wheeling, has asked the Council for a franchise in Point Marion.

TRACK AND ROADWAY

Fresno, Hanford & Summit Lake Interurban Railway, Fresno, Cal.—This company has applied to the Railroad Commission for authority to issue \$1,250,000 of bonds. It is proposed to use the proceeds in the construction of a line extending from Fresno easterly to Centerville and southeasterly to Kingsburg, 40 miles. The company has procured practically all of the needed rights-of-way and has completed the roadbed over most of the route. It has constructed culverts over all waterways.

Pacific Electric Railways, Los Angeles, Cal.—Extension of this company's lines into the districts of East Long Beach, including Belmont Heights and the Temple district, is being considered by this company.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—Grading has been completed by this company on the last stretch of its line between Bays Point and Sacramento. Rails have been ordered and the ferry slips at Chipps Island and Mallard Island are nearing completion. The Yolo Basin trestle will be 13,000 ft. long, and 6000 ft. of this is already finished.

Crescent City Railway, Riverside, Cal.—Work has been begun by this company on the grading of the roadbed for the extension of the Riverside-Bloomington line to Rialto. Oscar Ford, Rialto, has been awarded the contract for the construction of the line.

Sacramento Valley West Side Electric Railway, Willows, Cal.—This company will soon award contracts to build its line between Red Bluff, Davis and Dixon, connecting at Dixon with the Oakland, Antioch & Eastern Railway. C. L. Donohue, Willows, president. [E. R. J., Nov. 2, '12.]

***Miami, Fla.**—The Ocean Beach Realty Company, of which Joseph A. MacDonald is president, plans to build an electric railway from Homestead or Detroit to Palm Beach. At Miami a steel and concrete bridge is to span the bay at a point just north of First Street, landing on the peninsula at the north end of the holdings of the Ocean Beach Realty Company. The bridge will be 3 miles in length. The company will soon ask the Council for a franchise to build its line over certain streets in Miami.

Georgia Railway & Electric Company, Atlanta, Ga.—This company has been asked to consider plans to extend its Highland Avenue line in Atlanta for 1 mile beyond its present limits.

Rome Railway & Light Company, Rome, Ga.—This company plans to build two extensions, one 1½ miles and the other 3 to 4 miles, to East Rome in the spring.

Americus, Tifton & Atlantic Railway, Tifton, Ga.—Right-of-way has been obtained, surveys completed and construction will be begun soon by this company on its line from Americus to Milltown, via Oakfield, Doles, Ashburn, Tifton and Nashville, I. W. Myers, Tifton, president. [E. R. J., Jan. 4, '13.]

Waycross Street & Suburban Railway, Waycross, Ga.—Work has been begun by this company on its extension along Albany Avenue in Waycross.

Tri-City Railway, Davenport, Ill.—Double track will be laid by this company on Third Avenue between Fifteenth and Twentieth Streets in Rock Island.

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—Elections will be held in Richland, Noble and Rushville Townships, Rush County, to vote on a proposition of a tax of 20 cents on \$100 in aid of the extension of this company's line through Rush County.

Cedar Rapids & Marion City Railway, Cedar Rapids, Ia.—Extensive improvements, which are planned by this company, include addition of one-third to the present trackage, new and heavier rails on old tracks and laying of new tracks on two of the old lines. The improvements involve the construction of 6½ miles of new track, in addition to the reconstruction of some of the old lines, making a total of 8½ miles.

Kentucky Utilities Company, Lexington, Ky.—This company plans to construct a line through Bath and Montgomery Counties in Kentucky, leading out of Sharpsburg.

Louisville & Interurban Railway, Louisville, Ky.—This company has been asked to consider plans to extend its line east and northeast along the Brownsboro Road out of Louisville.

Louisville (Ky.) Railway.—Work has been begun by this company double-tracking a 2-mile stretch of its line south on Third Avenue to Iroquois Park between Meadow Brook station and the park, affording through double-tracking to the southern terminal.

Louisiana Traction & Power Company, Lafayette, La.—Preliminary surveys have been completed by this company from Lafayette to Jennings. This line will connect Lafayette, Morgan City, Alexandria and Abbeville. J. A. Landry, Lake Charles, president. [E. R. J., Feb. 1, '13.]

Twin City Rapid Transit Company, Minneapolis, Minn.—An extension along Xerxes Avenue in the Lake Harriet district, Minneapolis, will soon be built by this company.

Meridian Light & Railway Company, Meridian, Miss.—Work will be begun at once by this company on the extension of its Eighth Street line in Meridian to Oakland Heights from Fortieth Avenue and Paulding Street.

***Bonner Springs, Mo.**—Surveys are being made to build an electric railway from Kansas City to Bonner Springs, via Kaw Valley. J. D. Waters, Bonner Springs, is said to be interested.

Newbern-Ghent Street Railway, Newbern, N. C.—Plans are being considered by this company to extend its lines to Pollocksville or Trenton.

Cincinnati (Ohio) Traction Company.—Plans are being considered by this company for an extension to Bond Hill.

Nipissing Central Railway, Cobalt, Ont.—This company has been asked to consider plans for an extension from New Liskeard, the present terminal, to North Temiskaming.

Niagara Falls, Welland & Lake Erie Railway, Niagara Falls, Ont.—Work will be begun in the spring by this company on its line between Fort Erie and Fort Colborne. The plans call for the erection of a bridge at Fort Erie for a connection with the lines of the International Railway at Buffalo. Thomas R. Cummings, chief engineer.

Humber Valley Railway, Toronto, Ont.—This company has applied to the Ontario Legislature for approval of its plans to build a double-track electric railway through the Humber Valley from Lambton to the mouth of the Humber River and along the shore to Sunnyside. This line will be built by Home Smith and the Toronto Land Corporation.

Toronto & York Radial Railway, Toronto, Ont.—This company will apply to the Legislature for the right to enter into an agreement with the city of Toronto for the double tracking of Yonge Street from the southern terminus of the railway to York Mills. It is also proposed to apply for the right to construct lines west to connect with the Mimico division and east to connect with the Scarboro division. The company in addition wants its authorized bond issue increased from \$20,000 to \$30,000 a mile.

Erie (Pa.) Traction Company.—Plans are being considered by this company to build an extension to Corry.

Pottsville Union Traction Company, Pottsville, Pa.—This company, which is operated by the Eastern Pennsylvania Railways Company, plans to extend its line from Pottsville to Shenandoah over the summit of Broad Mountain.

Reading (Pa.) Transit Company.—Surveys are being made by this company to extend its line between Myerstown and Womelsdorf, a distance of 8 miles.

***Chambersburg & Shippensburg Railway, Shippensburg, Pa.**—This company has been organized in Pennsylvania to build an electric railway between Red Bridge Park and Shippensburg. It will be necessary to build only from Red Bridge Park. There it will join the Chambersburg, Greencastle & Waynesburg Railway tracks and use them to Memorial Square, Chambersburg, under a lease. The power plant of the company will be located at Red Bridge Farm. Capital stock, \$250,000. Officers: T. M. Mahon, president; William H. Fisher, vice-president; C. P. Miller, treasurer; J. G. Schaff, secretary, and J. A. Strite, solicitor.

Warren (Pa.) Street Railway.—Announcement is made by this company that it will extend its lines 9 miles to Youngstown in the spring.

***Bristol, Tenn.**—James B. Cox, Knoxville, and associates are considering plans to build an electric railway between Bristol and Johnson City, via Austin Springs. Right-of-way is being secured.

Memphis (Tenn.) Street Railway.—This company is reported to have ordered 500 tons of rails from the Pennsylvania Steel Company. The company has announced that it will begin the construction of two extensions in the immediate future, one from the present Central Avenue terminus to Cooper Street and the other from Florida Street on Trigg Avenue to Riverside Park.

El Paso (Tex.) Electric Railway.—Grading on this company's line from El Paso to Fabens, 30 miles down the El Paso Valley, will be begun by the Stone & Webster Engineering Corporation at once. The grading contract has been awarded to the Dudley & Orr Company.

Northern Texas Traction Company, Fort Worth, Tex.—During the next month this company plans to begin work double-tracking the Fort Worth-Dallas line between Fort Worth and Handley. The company also expects to extend its double track from Boundary, Oak Cliff, to Westmoreland, a distance of 2 miles.

San Antonio & Austin Interurban Railway, San Antonio, Tex.—Preliminary surveys are being made by this company on its 80-mile interurban railway between Austin and San Antonio. The following officers have been elected: Vories P. Brown, president; W. B. Tuttle, San Antonio, vice-presi-

dent; Jesse D. Oppenheimer, treasurer, and S. C. Bell, secretary. [E. R. J., Jan. 25, '13.]

San Antonio, Fredericksburg & Northern Railroad, San Antonio, Tex.—Preliminary arrangements are being made by this company to build its 25-mile line from Fredericksburg to a connection with the San Antonio & Aransas Pass Railway, 4 miles north of Waring, Tex. The headquarters of this company are at the Gunter Building, San Antonio. R. A. Love, president. [E. R. J., Jan. 11, '13.]

San Antonio (Tex.) Traction Company.—Plans are being made by this company to double-track and extend some of its lines in San Antonio.

Texas City (Tex.) Street Railway.—Rails are being laid by this company at Tenth Street and Ninth Avenue in Texas City. At this point the line connects with the Texas City Terminal Company's tracks. The main line of this company will run from the waterfront at the docks west to Sixth Street to Eighteenth Avenue, Texas City. Thomas J. Davies, president. [E. R. J., Dec. 21, '12.]

SHOPS AND BUILDINGS.

British Columbia Electric Railway, Vancouver, B. C.—This company has purchased the Pythian Castle Hall on Douglass Street and Pandora Avenue in Victoria, and will reconstruct it to be used for an office building and suburban depot for the Saanich line. The company plans to build new carhouses between Bay Street and Haultain Street in Victoria. The cost is estimated to be about \$50,000.

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—This company has purchased property in Fairland on which it will soon build a new passenger station.

Des Moines (Ia.) City Railway.—During the summer this company plans to build new carhouses in Des Moines. The site has not yet been selected.

Interborough Rapid Transit Company, New York, N. Y.—This company has been ordered by the Public Service Commission to build a new elevated station at Thirty-eighth Street and Sixth Avenue in New York City.

Portland Railway, Light & Power Company, Portland, Ore.—With the completion of this company's new carhouses and repair shops at Rhone, Mall and East Seventeenth Streets, Portland, the company's old shops at Twenty-third, Milwaukee and Clay Streets have been abandoned and all the work is now being handled from the one central plant.

Greenville, Spartanburg & Anderson Railway, Anderson, S. C.—This company has awarded the contract to the Wilkeson-Moffett Construction Company, Durham, N. C., for the construction of its new machine shops and carhouses in Greenville. The carhouse will be 65 ft. x 200 ft. and the repair shops 65 ft. x 125 ft. Both structures are to be constructed of white brick, one story high, with steel roofs.

Texas City (Tex.) Street Railway.—This company will build its new carhouses at the corner of Ninth Street and Tenth Avenue in Texas City. R. M. Orth, general manager.

POWER HOUSES AND SUBSTATIONS

Bay State Street Railway, Boston, Mass.—An addition will be built by this company to its plant on Middlesex Street, Lowell. The structure will be 35 ft. x 95 ft. and one story high. The cost is estimated to be about \$10,000.

Twin City Rapid Transit Company, Minneapolis, Minn.—Nearly \$2,000,000 for improvements was included in the budget agreed upon by this company at a recent meeting of the directors. Among the improvements scheduled is a new 15,000-kw unit at the steam power station and a transformer station.

Morris County Traction Company, Morristown, N. J.—Plans are being considered by this company to build a new central station.

Montreal (Que.) Tramways.—This company plans to add to its equipment at its station on William Street a 2000-kva synchronous motor, with a 1500-kw, 600-volt direct-connected generator. The Canadian Westinghouse Company will supply the machines. The Montreal Tramways will also install a 15-ton monorail hoist, supplied by John Milten & Son, Ltd., Montreal, for handling the machinery.

Manufactures and Supplies

ROLLING STOCK

United Railroads, San Francisco, Cal., expects to purchase fifty cars of the California type during 1913.

Easton (Pa.) Transit Company has ordered three semi-convertible pay-within cars from The J. G. Brill Company.

Toledo Railways & Light Company, Toledo, Ohio, expects to purchase twenty prepayment cars and build an additional twenty cars of the same type in its own shops.

Spartanburg Railway, Gas & Electric Company, Spartanburg, S. C., has ordered from the American Car Company five 20-ft. 8-in. closed cars mounted on Brill 21-E trucks.

New England Investment & Securities Company, Springfield, Mass., is reported to have ordered ten 35-ft. cars from the Wason Manufacturing Company for operation between Springfield and Worcester.

Great Northern Railway, St. Paul, Minn., has ordered two 70-ft. gas-electric motor cars from the General Electric Company. They will be placed on branch line service between Rockport and Anacortes, Wash.

Minneapolis, St. Paul, Rochester & Dubuque Traction Company, Minneapolis, Minn., will place in service on its line between Minneapolis and Northfield two more gas-electric motor cars which were ordered from the General Electric Company. These new cars will be of the 70-ft. type and will make a total of ten similar self-propelled gas-electric units now in operation on this line. A gas-electric locomotive has also been ordered for light freight and passenger work, and an order has been received from the same company to equip a Strang gas-electric car with General Electric apparatus.

TRADE NOTES

Western Electric Company, New York, N. Y., has elected Gerard Swope, general sales manager, and Albert L. Salt, general purchasing agent, vice-presidents of the company.

Simplex Electric Company, Boston, Mass., has changed its name to the Simplex Wire & Cable Company. The change of name involves no change in the management or interests of the company.

Weir Frog Company, Cincinnati, Ohio, has appointed M. J. Madison superintendent of its plant at Cincinnati. Mr. Madison was formerly assistant superintendent of the Morden Frog & Crossing Company.

Sanderson & Porter, New York, N. Y., announce that Richard S. Buck has retired from the firm and has become chief engineer of the Dominion Bridge Company, Canada. Seton Porter has been admitted as a member of the firm of Sanderson & Porter.

Ohio Brass Company, Mansfield, Ohio, has recently secured the exclusive sales rights for the National railroad trolley guard, which is a patented device for preventing electric cars from becoming stalled on steam road crossings when the trolley wheel leaves the wire.

H. W. Johns-Manville Company, New York, N. Y., has appointed C. L. Wheeler its traveling representative in the Atlanta territory. Mr. Wheeler is an electrical engineer of practical experience and formerly covered the Southern States for various large electrical and jobbing concerns. He will devote his attention to the electrical products of the company.

Allis-Chalmers Company's properties at Milwaukee and West Allis were sold on Feb. 3 by Jerry W. Hazelton, special master, to J. H. McClement, of New York, chairman of the reorganization committee, for \$2,500,000. Mr. McClement's bid was the only one made. Otto H. Falk and Daniel W. Call have been acting in the capacity of receivers of the company since May 28, 1912.

John Hoffhine, for nine years assistant chemist on the Union Pacific Railroad at Omaha, has become connected with the American Brake Shoe & Foundry Company, with headquarters at 30 Church Street, New York, N. Y., effective Feb. 1. Mr. Hoffhine entered the testing department of the Union Pacific Railroad at Omaha in 1904, where he soon advanced to the position of assistant chemist. He

conducted exhaustive tests and analyses of the associated line steel rails, and under the direction of W. R. McKeen, Jr., former superintendent motive power and machinery, Mr. Hoffhine had charge of the material testing and research work in connection with the Harriman lines' standardization of passenger cars, freight cars and locomotives.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has received the following orders for railway motors: St. Petersburg Investment Company, St. Petersburg, Fla., one double equipment of No. 306 motors and K-36-J control; Georgia Railway & Power Company, Atlanta, Ga., twenty-five double equipments of No. 306 motors and K-35-G control and seven double equipments of No. 306 motors and HL control; Oakland, Antioch & Eastern Railway, San Francisco, Cal., one 600-1200-volt, quadruple equipment of No. 322-E motor and HL control; Jewett Car Company, Newark, Ohio, two quadruple equipments of No. 101 B-2 motors and K-28-B control for use on the cars which this company is building for the Richmond & Rappahannock River Railway, Richmond, Va.

ADVERTISING LITERATURE

Titanium Alloy Manufacturing Company, Niagara Falls, N. Y., has printed in booklet form a new carbon-titanium specification for rails.

Ohio Brass Company, Mansfield, Ohio, has issued a folder which discusses some of the advantages of the O-B electric car signal system.

Indianapolis Brass Company, Indianapolis, Ind., has issued a circular which briefly describes and illustrates several of its products, including I. B. C. trolley frog, motor-men's glass, Samson splicers and the I. B. C. pole sleeve.

W. N. Matthews & Brother, St. Louis, Mo., have issued a folder which calls attention to the Matthews guy anchor. Other folders issued by the company describe Matthews easy lamp changers and Matthews Giant boltless guy clamps.

Sterling-Meaker Company, Newark, N. J., has issued a twenty-four-page catalog which fully describes and illustrates the Giant brake. This brake is made in two forms, equipment A and equipment B. Either of these equipments is furnished with 18-42 or 14-46 gear ratio. The same box houses either ratio, thus facilitating change from one to the other.

R. D. Wood & Company, Philadelphia, Pa., have issued a 160-page catalog on gas producers and producer gas power plants. Besides illustrating and describing the company's apparatus, the publication contains much valuable information regarding producer gas when used for power or furnace work. Some abstracts from W. J. Taylor's paper, "Energy of Fuel, Solid, Liquid or Gaseous," are also included in the catalog.

Hess-Bright Manufacturing Company, Philadelphia, Pa., has issued a twenty-eight-page catalog on "Ball Bearings on Machine Tools." The publication describes the difference between Hess-Bright ball bearings and the early adjustable types and fully explains the reasons for the durability of H-B bearings. A folder issued by the company contains the results of power tests of Hess-Bright ball-bearing hangers made in two representative plants.

C. W. Hunt Company, West New Brighton, N. Y., has printed a sixty-four-page catalog which describes the various arrangements of Hunt conveyors that have been designed and installed by the company. It also contains a general description and illustrates the mechanical construction of Hunt conveying apparatus. More than half of the publication is devoted to illustrations of various installations, together with such brief notes as the peculiarities of the plant suggest.

Union Switch & Signal Company, Swissvale, Pa., has issued Bulletin No. 61, which fully describes and illustrates the interurban automatic block signaling system which is installed on the Washington, Baltimore & Annapolis Electric Railroad, between Naval Academy Junction and Annapolis, Md. The signal installation comprises 13.2 miles of protected track, eight standard single-track blocks and one special block, seventeen semaphore signals and sixteen light signals. The longest block is 11,610 ft. and the shortest 5430 ft., an average of 8680 ft.