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A Canadian Meeting

The Canadian Street Railway Association has just held a profitable annual meeting, and the businesslike way in which the sessions were conducted is worthy of commendation. This association has on its membership roll the names of all the larger roads in Canada and nearly all of the smaller roads. Its members are enthusiastic in association work. This is evidenced by the attendance and by the earnest discussion of the well-prepared papers which were presented at the Windsor meeting. Nearly every member company had one or more representatives at the meeting, notwithstanding the fact that the territory of the association is about 4000 miles long. There were delegates from St. John, N. B., and from Victoria, B. C. The Canadian roads for the most part are located in rapidly growing territory and have to strive to keep up with the expansion requirements. The problems confronting the association include that of formulating a standard code of rules, and it has appointed a committee to consider the choice of a set of operating rules for presentation to the governmental authorities. It is to be hoped that these rules may be made to conform to the rules used in the States and approved by the American Electric Railway Association, of which body a great many of the Canadian roads are members.

Making a Closed Car Comfortable for Summer

A constructional feature of many of the semi-convertible cars now in operation which tends to impair their popularity for summer riding is the use of stationary sash for the end panels of the car body and in the vestibule framing. The older types of these cars, such as the accelerator design, have only a single end door, which, when closed, does not permit a good draft in the car. Where the platforms are not vestibuled relief can be obtained merely by opening the doors and keeping them open with a retaining catch of some kind. On fully inclosed platforms, however, the vestibule should be equipped with drop or sliding sash so that they may be open as well as the car doors. It would be much more expensive, of course, to remodel into drop or sliding sash the fixed windows at the end of the car body, but it may be worth while to do this in spite of the cost. On one line that we have in mind it is not unusual to see the semi-convertible cars carrying barely half a dozen persons each, while the convertible and open-bench cars on the same route are crowded. An excellent design for summer use is a convertible cross-seat car with exit and entrance doors which slide into a central bulkhead. This arrangement permits two-thirds of the front to be wide open whenever such a condition is found desirable. On the Lehigh Valley Transit System in Easton, Pa., cars of this design are giving even more satisfaction than the open-bench rolling stock formerly considered indispensable for summer.

STEEL MOTOR CARS

The steel motor cars of the Long Island Railroad and the Southern Pacific Company which are described elsewhere in this issue were built for substantially similar services. Both types of cars are being operated in multiple-unit trains on recently electrified suburban lines of steam railroads. A comparison of the two designs, however, shows that they differ widely in nearly every important structural detail, in seating and platform arrangements and in general dimensions and weight. These differences are indicative of the present state of the art of steel passenger car design. As yet there is no agreement among designers of steel cars as to the general principles of unit stresses, factors of safety, economical distribution of material and other basic points. In the matter of details such as floors, post sections, roof construction and interior finish the almost unlimited possibilities of making light pressed sections in all conceivable shapes invite each designer to incorporate special patterns of his own invention.

The first steel passenger cars were built only six or seven years ago, and perhaps it is too early to expect much progress toward standardization such as has taken place in other branches of car design. The builders of steel passenger cars, as a rule, have not been responsible for the designs from which the cars were built and, therefore, they have not been able to develop standard details and methods of construction. In fact, the manufacturing facilities at different plants of the same builders are quite as varied as the cars which they turn out. Steel passenger cars are emerging from the experimental stage, and some degree of standardization with a resulting decrease in manufacturing cost undoubtedly will take place as the demand for such cars increases and actual service develops the good and bad features of the different types now in use.

In comparing the Long Island and Southern Pacific cars the most noticeable points of difference are the unit weights and the framing details. The Long Island cars were designed for strength rather than light weight, although their weight per foot of length is little greater than that of the first steel cars built for that road in 1905, while the weights per square foot of floor area and per passenger seat are considerably less than in the old cars. As compared with the unit weights of the Southern Pacific motor cars, however, the Long Island cars are much heavier. The Southern Pacific cars are 72 ft. 10½ in. long over buffers and weigh 109,400 lb. The Long Island cars are only 64 ft. 5¾ in. long and weigh 107,100 lb. The weights per foot of length are respectively 1500 lb. and 1660 lb., while the weights per square foot of floor area are 148 lb. and 168 lb. Although the Southern Pacific cars are only 6 in. wider at the eaves than the Long Island cars and have a center aisle of the same width, their seating capacity is increased 25 per cent by the use of three-passenger seats on one side of the aisle. On this account the relative weights per passenger seat show large differences. The mild climate of California permitted the omission of inside lining and dead-air space in the sides of the Southern Pacific cars so that the clear width inside was increased about 8 in. This additional space and the extra width of 6 in. at the eaves provided the necessary 14 in. for the additional seats on one side of the aisle. The weight per seat in the case of the Southern Pacific motor cars is only 943 lb. as against 1488 lb. for the Long Island cars. Based on the combined weights of a train unit consisting of a motor and

a trailer car, the Southern Pacific cars weigh only 761 lb. per seat. This compares favorably with the weight per seat of the lightest wooden double-truck street cars.

The low weight of the Southern Pacific cars is due principally to the very light construction of the bodies. The heaviest members used in the body framing are the 7-in., 9.75-lb. channel center sills and the cast-steel bolsters. Most of the floor load between bolsters is carried by the plate girder sides below the windows. Without going into an analysis of stresses in these side girders it would appear from an inspection of details of construction that the sides of the Long Island cars are heavier and stronger than the sides of the Southern Pacific cars, while the distance between points of support on the cantilevers is only 26 ft. 6 in. as compared with a distance between bolster centers of the Southern Pacific cars of 45 ft. The center sill in the Long Island cars is a box girder composed of two 9-in., 15-lb. channels with top and bottom cover plates, and of itself is a much stronger backbone for the underframe than the two light channels used in the Southern Pacific cars. Furthermore, the equal distribution of load on the center sill of the Long Island cars by the use of cantilever cross members insures a minimum vertical deflection.

In high-speed multiple-unit cars stiffness is as essential as strength in the underframing on account of the heavy weight of the control and brake apparatus suspended under the car between the bolsters. If the car body framing is not stiff enough to prevent vertical oscillations at the center the impact of the suspended mass, weighing from 7000 lb. to 10,000 lb., in falling through even a short distance will produce severe stresses which in turn must certainly rack the car body. Experience alone can determine the effect of this vibration and resultant impact on the riveting and on the structure of the metal itself. The effect will be more severe in long cars with great amplitude of vibration than in short cars.

The Long Island cars with inclosed platforms and monitor deck roofs resemble an ordinary steam railroad coach in exterior appearance, while the Southern Pacific cars are of distinctive design with arched roofs, open platforms and wire mesh gates over the steps. The wide steps divided by a partition rail which are a feature of the Southern Pacific car platforms tend greatly to accelerate the entrance and exit of passengers. Without a partition railing it is almost impossible to load and unload passengers simultaneously, and although the saving in time at each station stop is small the aggregate saving per trip in local suburban service where the stops are close together may amount to several minutes on a run of 15 miles or more. If the time thus saved at stations were utilized in coasting, the reduction in power consumption would amount to a considerable sum in the course of a year.

The simplicity of construction and the light weight of an arch roof as compared with a monitor deck roof are well illustrated in these two types of cars. The roof framing of the Southern Pacific cars consists of one-piece carlines pressed from 1/16-in. steel plate. A much more complicated construction, including malleable iron deck posts, is used in the Long Island cars. The deck sashes in the Long Island cars are glazed with green pebbled glass which does not admit any useful light to the interior, and they are pivoted horizontally so that they do not act efficiently as ventilators. The monitor deck seems to have been retained largely out of respect to past standards of wooden car construction.

THE PACIFIC COAST CLAIM AGENTS

The account of the third annual convention of the Pacific Claim Agents' Association which was published in our issue of last week presents ample internal evidence that the members of this organization are imbued with the most progressive ideas despite their enforced isolation from the great majority of their fellow-workers. The large number of railway accident swindlers in the Far West makes intimate co-operation between the claim agents in neighboring territories an absolute necessity. Furthermore, it is much more inconvenient for a claim agent to spend several days in traveling to and from a national convention than it would be for an engineer, transportation man or even an executive. The latter can usually postpone immediate consideration of the problems for which they are held responsible if need be, but the claim agent, like the physician, is subject to the call of duty at any moment. Confronted by these conditions it was but natural that the steam and electric railway claim agents on the Pacific coast should join hands in a local organization although they also appreciate highly the work of their respective national bodies, to which many of them belong. At present about 75 per cent of all the steam and electric railways on the Pacific slope are members of the local association. It is possible that its scope will be widened to include a central bureau of information about the accident fakcers who operate in the Pacific Coast States.

Of the papers which were read at the May convention, the most important were those describing the efforts of the Tacoma, Seattle and Spokane companies to acquaint the public with the principles of accident prevention. Every live claim agent knows that much good can be accomplished by tactful suggestions to the rank and file as well as to the officers of the operating and maintenance departments. Most adjusters, however, are too diffident to go before the people, either in person or in writing, to explain how many accidents are due to the negligence of the passenger and to tell how their repetition can be avoided. Such a perfunctory sign as "Don't get off until the car stops" suffers the contempt bred by familiarity and hardly can be offered as educational literature. The most effective appeal to the public has been made by means of classroom talks to school children. In Seattle alone the negligence accidents in which children were involved decreased from thirteen to four per month after the campaign of instruction was well under way. This method of going to the children has two important advantages—it reaches those most impressionable to new ideas, and it reacts favorably on the parents, who cannot help approving this work even if they do feel that they, as adults, are able to take care of themselves in platform and running-board gymnastics. More recently the Portland (Ore.) Railway, Light & Power Company, one of the pioneers in this movement, has sent out letters on this subject to the school authorities in many large cities giving an account of its own methods and experiences.

In Tacoma the education of the public began with the owners and drivers of vehicles. There, too, tangible results are shown by a 50 per cent decrease in collisions after one year's agitation. At first thought it would seem almost impossible to place such traditional enemies as drivers and motormen on a friendly footing. Nevertheless, this end was successfully attained. The vehicle owners were persuaded that it was to their interest to order their men to keep clear of

the tracks under specified conditions, while the motormen were instructed to help teamsters whenever possible, especially in pushing their trucks along ice or sleet-covered tracks. The Seattle company has succeeded in interesting its patrons in still another phase of accident prevention by offering prizes to every fiftieth and one hundredth woman who was seen to alight from a car face front at certain important intersections. In this case the humorous aspect of a serious question resulted in observation and discussion on the part of many people who otherwise would have paid little or no attention to this matter.

THE NEW YORK SUBWAY REPORT

The long-expected report of the committee of the Board of Estimate and of the Public Service Commission, First District, on proposed subway lines was made public on the afternoon of June 13. As indicated in the semi-official announcements printed in this paper last week, it provides for two extensive systems, one to be operated by the Interborough Rapid Transit Company and the other by the Brooklyn Rapid Transit Company, both to serve Manhattan Borough from the Battery to Fifty-ninth Street, and with three new East River tunnels. An outline of the general features of the proposed system is published elsewhere in this issue. The total outlay of the extensions, as at present proposed, amounts to over \$257,000,000. This makes the proposed work of construction commensurable in magnitude with the Panama Canal, whose estimated cost for construction and engineering is \$298,000,000; the rest of the estimated cost of the Panama Canal of \$375,000,000 represents the cost of administration and sanitation, the purchase of the rights of the old French company and other expenses not connected with the actual construction and engineering. The system now proposed in New York embodies the two principles which were stated in these columns last week to be most important in this undertaking, namely, to provide rapid transit facilities on a sufficiently large scale and to provide easy access for a single fare from all parts of the city to the main business districts of Manhattan and Brooklyn. In the selection of routes the committee has shown excellent judgment.

Of equal importance in the proposed plan with the routes to be constructed are, of course, the terms under which the companies will be allowed to make these extensions and the future transit policy of the city. Under the proposal important franchises are offered to both companies under a contract which provides for the division with the city of the cost and profits of the new lines and under which the interest on the city bonds issued to defray the cost of construction is to be taken out of the net profits only after the payment of the actual annual charges of the operator for carrying the cost of equipment and such portion of the cost of construction as is not met from the funds of the city. On the other hand, the companies are required to give up important rights now owned and to agree to somewhat rigorous provisions for the sale of portions of their properties to the city. We are glad to see that the city representatives have met the transportation situation in a broad and comprehensive way, even to the extent of recommending third tracks on the Manhattan elevated lines, and we only hope that their treatment of the financial phases of the proposal will be found upon careful analysis to be upon an equally broad basis so that the plan, as outlined, will prove to be financially possible to the companies.

SOUTHERN PACIFIC ELECTRIFICATION AT OAKLAND, CAL.—ROLLING STOCK AND REPAIR SHOPS

The work of equipping the Oakland, Alameda and Berkeley suburban lines of the Southern Pacific Company for electric operation with direct current at 1200 volts is nearing completion, and on June 1 the Alameda line was opened. The Fruitvale power station of the company which will supply electricity for the operation of these suburban lines was described in the *ELECTRIC RAILWAY JOURNAL* of Feb. 4, 1911. This article will describe the new steel cars which have been built for this service, and also the repair shops which are located at West Alameda.

CARS

The initial rolling stock equipment for the Alameda line consists of ten combination coach and baggage motor cars, twenty motor coaches and thirty trailer coaches, all built at the St. Charles (Mo.) plant of the American Car & Foundry Company. All three types of cars are of the same general design and dimensions. The combination cars have the vestibule omitted at one end and 15 ft. of the body has been utilized for a



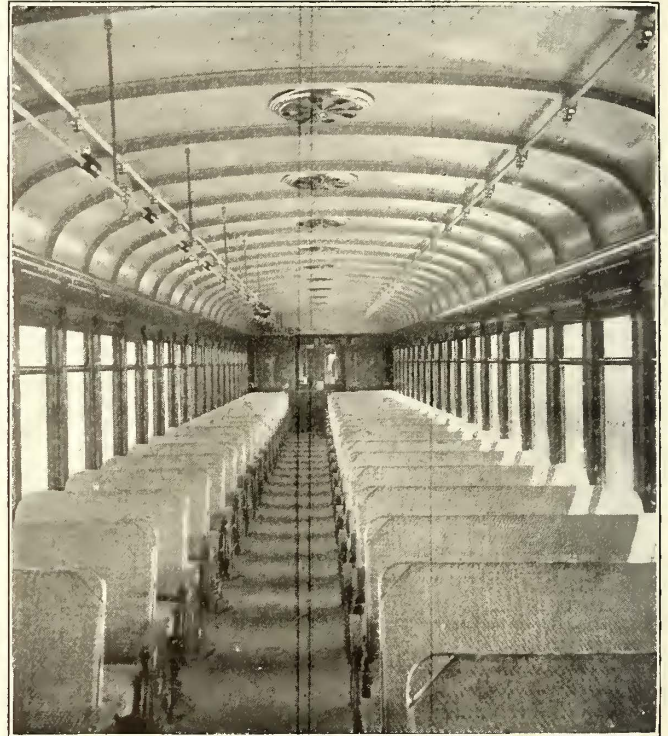
Southern Pacific Electrification—End View of Steel Motor Car, Showing Roller Pantograph

motorman's and baggage compartment with sliding doors in each side. Each motor car has sufficient motor capacity to handle a trail car, and the trains will be made up of from three to six cars, in general composed of a combination motor car and an equal number of motor and trailer coaches. The combination coach and baggage cars will be used at the head end of trains.

The cars are built entirely of steel and are 72 ft. 10½ in. long over buffers. In order to provide the maximum number of seats to accommodate passengers during the rush hours of the ferry service to and from San Francisco the bodies were designed with a width of 10 ft. 4 in. over side sills. This permits the use of three-passenger cross-seats on one side of the 25¾-in. aisle and two-passenger cross-seats on the other side, thereby increasing the seating capacity 25 per cent. The motor and trailer coaches will seat 116 passengers and the combination cars will seat 88 passengers. No lavatories are provided in the motor and trailer coaches, but the combination cars have a single lavatory fitted with a dry hopper.

UNDERFRAMING

The bodies are of very light weight and the principal members of the framing are of unusually small size considering the length of the cars. The center sills are 7-in., 9.75-lb. channels spaced 15½ in. apart, and the side sills are 7-in. x 3½-in. x 7/16-in. angles. No intermediate longitudinal sills are used. The bolsters are cast steel and the end sills are pressed in channel section out of 3/16-in. plate. Between the bolsters are four body transoms made of 5-in. x 3/8-in. plates, one passing over and one under the center sills, and both being securely riveted to the angle side sills. These members serve to transmit the principal weight of the flooring between bolsters to the side frames. The side sills and center sills are further tied together by bridging pieces 5 in. deep pressed to channel section from 3/16-in. plate. These pieces are inserted between the sills at intervals of 3 ft. 7 in., and they carry the light Z-bar longitudinals which support the corrugated steel floor plates. The clear space of 2 in. below the bridging pieces facilitated the installation of piping and conduits. The floor is composed of Keystone corrugated plates, on which a layer of Flexolite composition flooring is applied.



Southern Pacific Electrification—Interior of Steel Car Showing Two and Three-Passenger Cross Seats

SIDES AND ROOF

The sides of the car below the windows form plate girders 3 ft. deep, and they are depended upon to carry most of the load between bolsters. The belt rail under the windows is composed of a 3/8-in. x 4-in. flat plate on the outside and a 2-in. x 2-in. x ¼-in. angle on the inside between the posts. The posts were pressed out of 1/16-in. steel plates and were subjected to the sherardizing process before being put in place in order to prevent corrosion. An angle 4 in. x 3½ in. x 5/16 in. rests on top of the posts and forms the side plate. On the outside of this angle is riveted a 1/8-in. x 12½-in. letter-board plate, which is lapped 2 in. by the bottom edges of the roof sheets.

The roof is arched on a flat curve and is supported by carlines pressed from 1/16-in. steel plates which rest on side plate angles directly over the side posts. The roof sheets also are 1/16-in. steel plates.

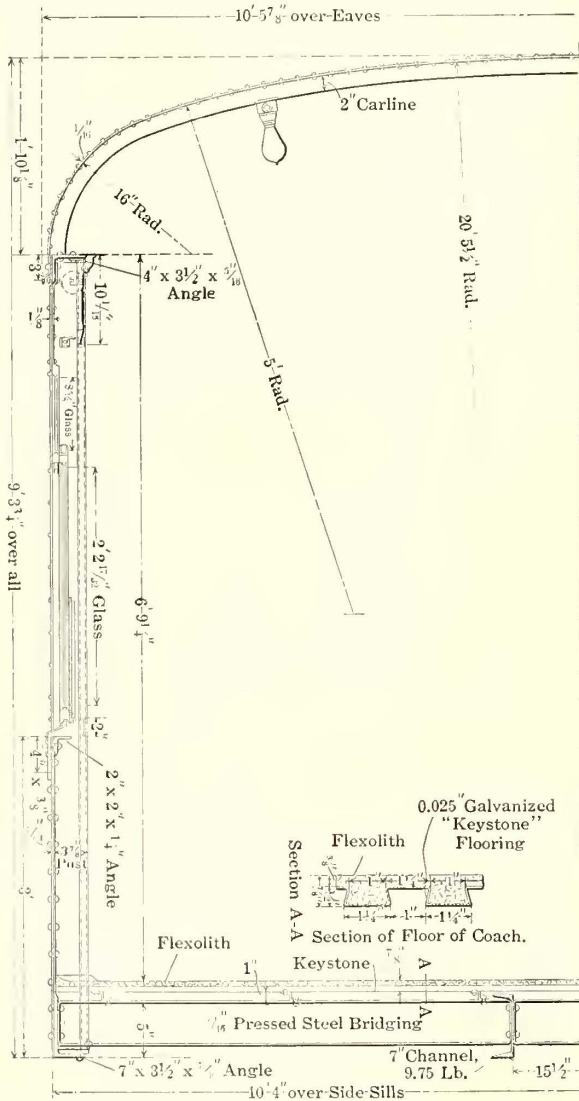
PLATFORMS

The motor and trailer coaches have platforms at each end 6 ft. 3 in. long. All the members of the platform underfram-

are Hale & Kilburn Walkover pattern, with rattan backs and bottoms.

PAINTING

The outside of the cars is painted dark olive color, which is common standard for all passenger equipment of the Harriman lines. The interior finish is dark bronze with a light bronze color for the inside of the window sashes. An écu-colored ceiling gives the cars an exceedingly light appearance. The steel work of the cars was thoroughly sandblasted, both inside and out, before any painting was done. The painting was done in accordance with specifications issued by the railroad company, which require substantially the following method:



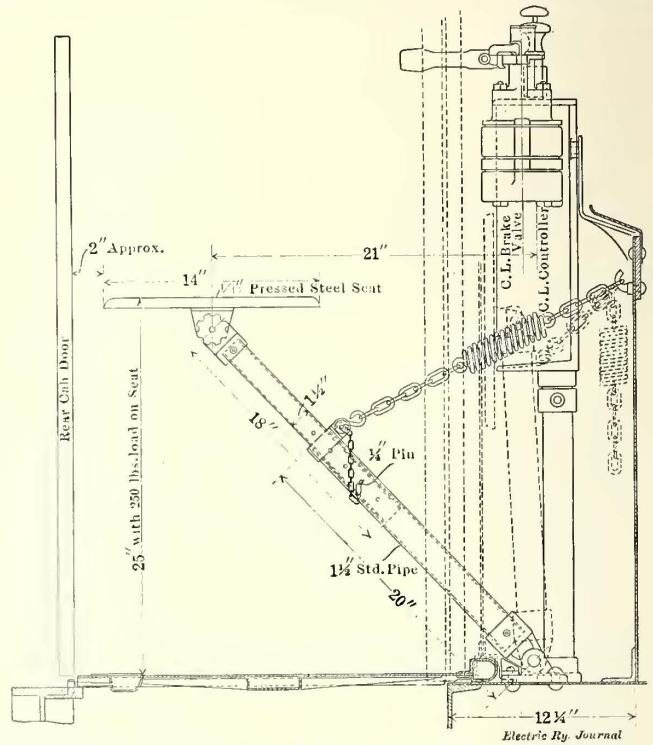
Southern Pacific Electrification—Half Cross-Section of Steel Motor Car

	No. of Hrs. Drying.
First primer.....	72
Second primer.....	48
First surfacer.....	24
Second surfacer.....	24
Putty.....	24
Third surfacer.....	24
Glazing composition.....	24
Rubbing.....	—
First coat body color, dark olive.....	12
Second coat body color, dark olive.....	12
Lettering.....	—
First coat varnish.....	48
Second coat varnish.....	48
Third coat varnish.....	48

The interior side finish was applied the same as for the outside except that two coats of special ground color were applied with one coat of dark bronze color. The headlining was painted the same as the outside except that three écu color coats were applied and then two coats of varnish.

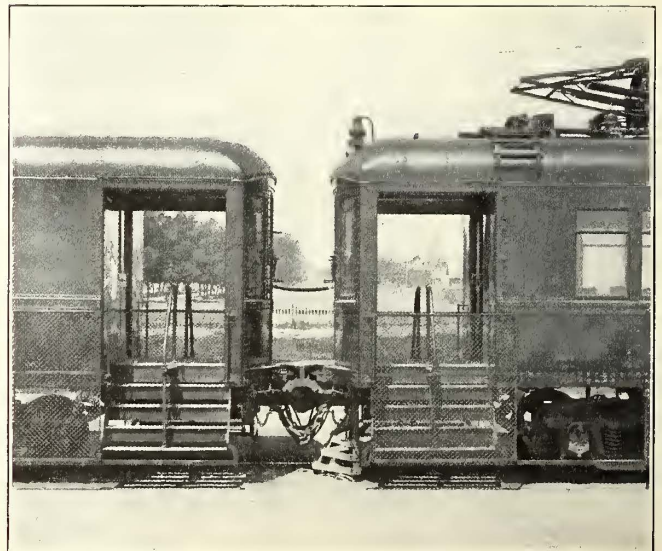
TRUCKS

The trucks under the motor cars are of the two-bar equalizer type, made by the Baldwin Locomotive Works. They have a wheelbase of 7 ft. and a capacity for a center plate load of 40,000 lb. The axles are of Taylor iron 6 1/2 in. in diameter at the center and having journals 5 in. x 9 in. The wheels are 36 1/2 in.



Southern Pacific Electrification—Folding Motorman's Seat

in diameter and are of the steel-tired type with cast-steel spoke centers. One of each pair of wheels has an extended hub to receive the gear, which is shrunk on. The trailer trucks are very similar to the motor trucks, except that they are of somewhat lighter construction, being designed for a center plate load of only 35,000 lb. The journals are 4 1/4 in. x 8 in., and the wheels

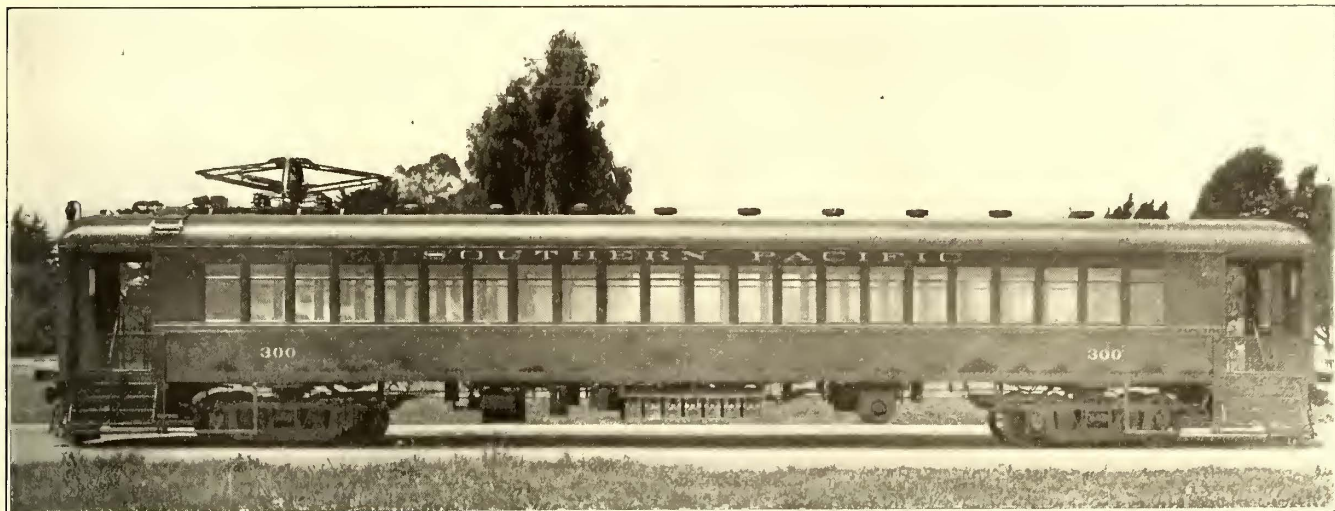


Southern Pacific Electrification—Platform Gates and Couplings

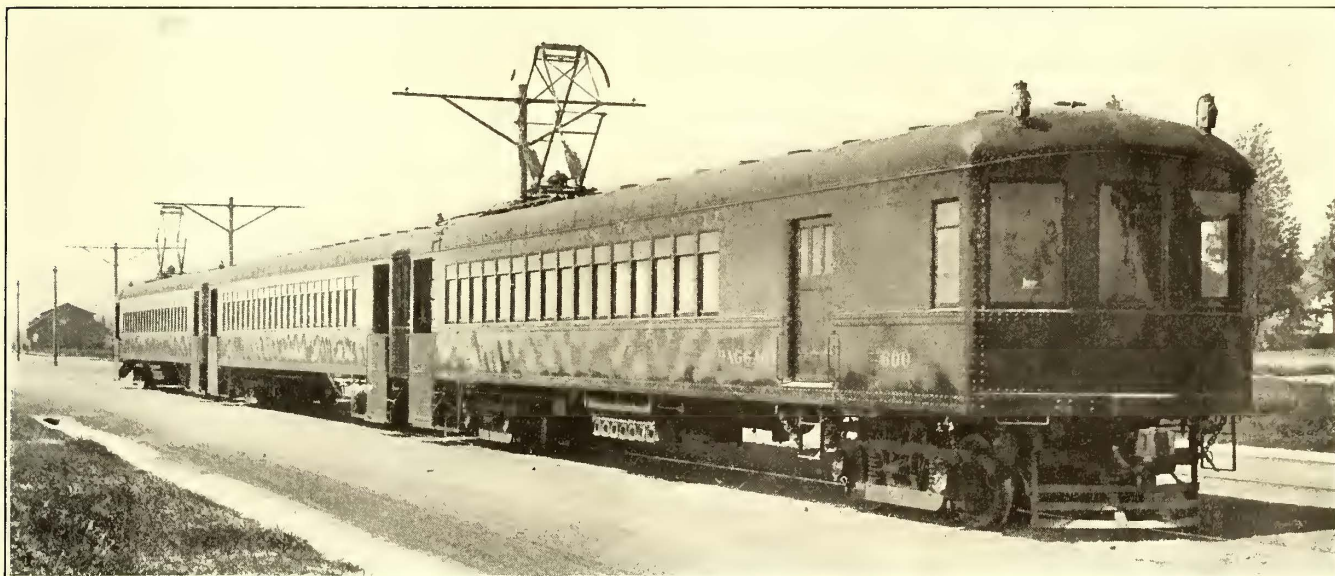
are rolled steel 33 in. in diameter. The motor trucks weigh 15,000 lb. without motors and the trailer trucks weigh 10,000 lb.

WEIGHT

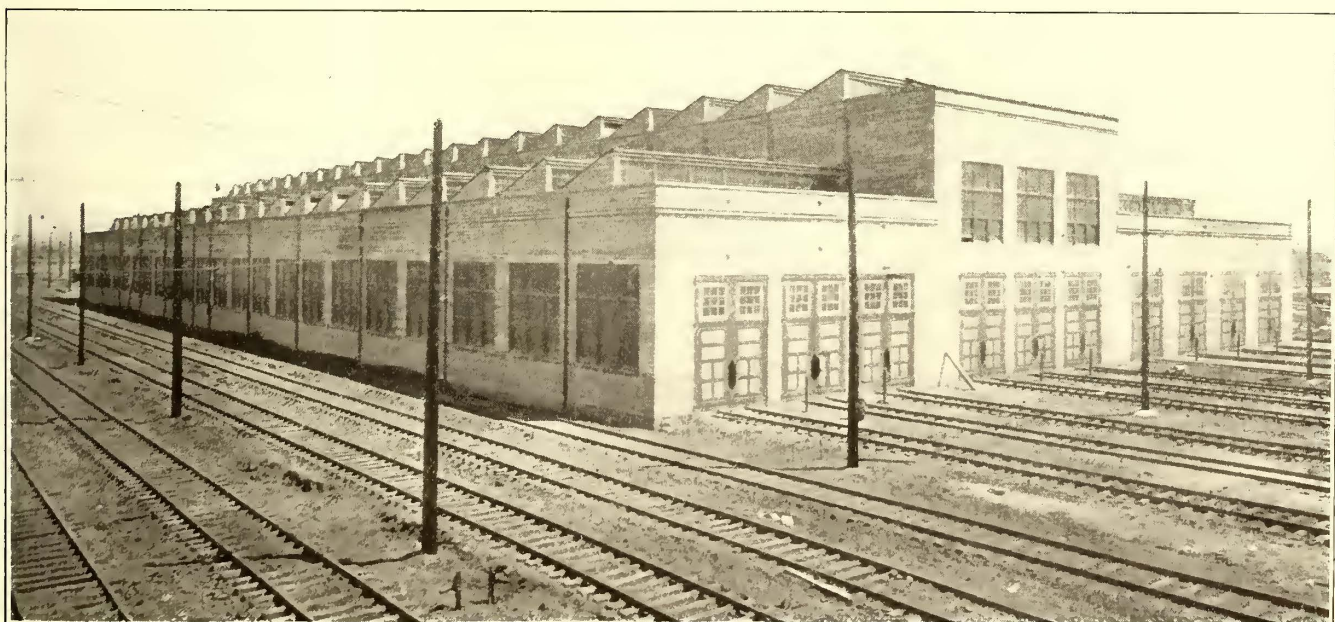
The motor coaches when completely equipped and ready for service weigh 109,400 lb. and the trailer coaches weigh 67,200 lb. The weight per passenger seat, based on the combined seat-



Southern Pacific Electrification—Steel Motor Passenger Car



Southern Pacific Electrification—Three-Car Train



Southern Pacific Electrification—Repair Shops at West Alameda

ing capacity and weights of a motor coach and a trailer coach, is 761 lb. Omitting the weight of the seats, draft gear and spring buffers the car bodies alone weigh only 47 lb. per square foot of floor area, or 486 lb. per linear foot.

BRAKES AND MOTORS

The cars are equipped with Westinghouse pneumatic train signals and schedule A M L automatic air brakes having the features of quick service, quick recharge, graduated release and high pressure in emergency applications. The air brake compressor is operated by a motor wound for 1200 volts. It has a capacity of 35 cu. ft. of free air per minute and is controlled by an automatic governor, which maintains the main reservoir pressure between 85 lb. and 100 lb.

Each of the motor cars is equipped with four GE-207-A motors of 125 hp each. The motors are geared to give a maximum speed of 40 m.p.h., although the schedule speed is only 20 m.p.h. The two motors on each truck are permanently connected in series. The control apparatus is the Sprague-General Electric, Type M. Current at 600 volts for the control and lighting circuits is supplied by a dynamotor mounted on each motor car. A pneumatically operated roller pantograph trolley is used to collect current from the overhead contact wire.

REPAIR SHOPS

The inspection and repair shops for the Oakland, Alameda and Berkeley lines are located in West Alameda at the junction of the Oakland and Alameda lines running to the Alameda Mole. The main building is of steel frame and concrete construction. It is 460 ft. long and is divided into three bays. A saw-toothed roof extends the full length of the building over each bay.

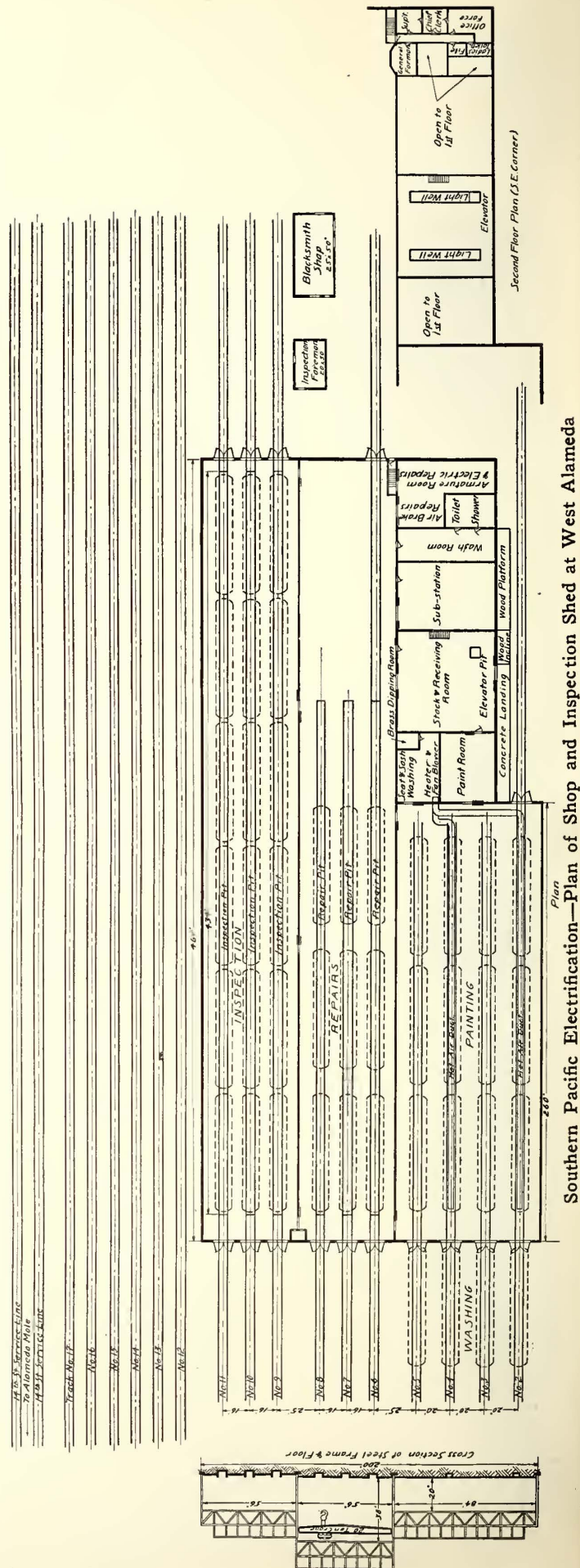
The north bay or inspection shed has three through-running tracks with pits 38 in. deep under their entire length. The pit tracks are laid on 10-in. x 12-in. longitudinal timbers which raise the top of the rails about 14 in. above the main floor. Each pit is equipped with a compressed air line for blowing out apparatus, a 600-volt d.c. testing line, and the 220-volt a.c. lighting circuit for the pit lighting. All pit lights, plug receptacles and compressed air taps are recessed in the pit walls so that they are less liable to damage and offer no obstructions in the pits. Each track will accommodate a six-car train. A total of eighteen cars may be placed in the house at one time for inspection.

The overhead trolley is run through the inspection shed. The section of trolley wire over each track is controlled by a manually operated switch which energizes the wire while the switch is held closed. When the switch is released it returns to the "off" position and cuts off the current and grounds the trolley wire which it feeds. This arrangement affords a protection to shopmen working on the collectors on the car roofs while cars are in for inspection, as the trolley wires are always grounded except when it is desired to move a train out of the house after inspection is completed.

In addition to the pit lamps the inspection shed has two rows of four four-light incandescent clusters suspended from the roof girders about 20 ft. apart. There is also a row of two-light clusters on each side wall.

The middle bay constitutes the repair shop and machine shop; the repair shop occupies the west end, while the machine shop is located in the east end. There are three tracks in this shop. Two stub tracks lead in from the west end and one track runs through the shop. These tracks have repair pits 24 in. deep occupying one-half of the length of the shop, so that nine cars may be handled at one time for general repairs. The east end of this bay is used as a machine shop. A wheel lathe, boring mill and wheel press are located at the extreme end with four short tracks for wheel storage just outside the building. These machines are provided with individual motor drive.

A 20-ton traveling crane runs the entire length of the building in this bay and is used for lifting cars, trucks and motors, also for handling wheels and axles and heavy work around the machines. The crane runway is of sufficient height to permit trucks to be lifted and moved over the tops of the car bodies.



Southern Pacific Electrification—Plan of Shop and Inspection Shed at West Alameda

The lighting in this shop is the same as in the inspection shed except that the ceiling clusters have ten lights instead of four on account of the increased height required by the crane.

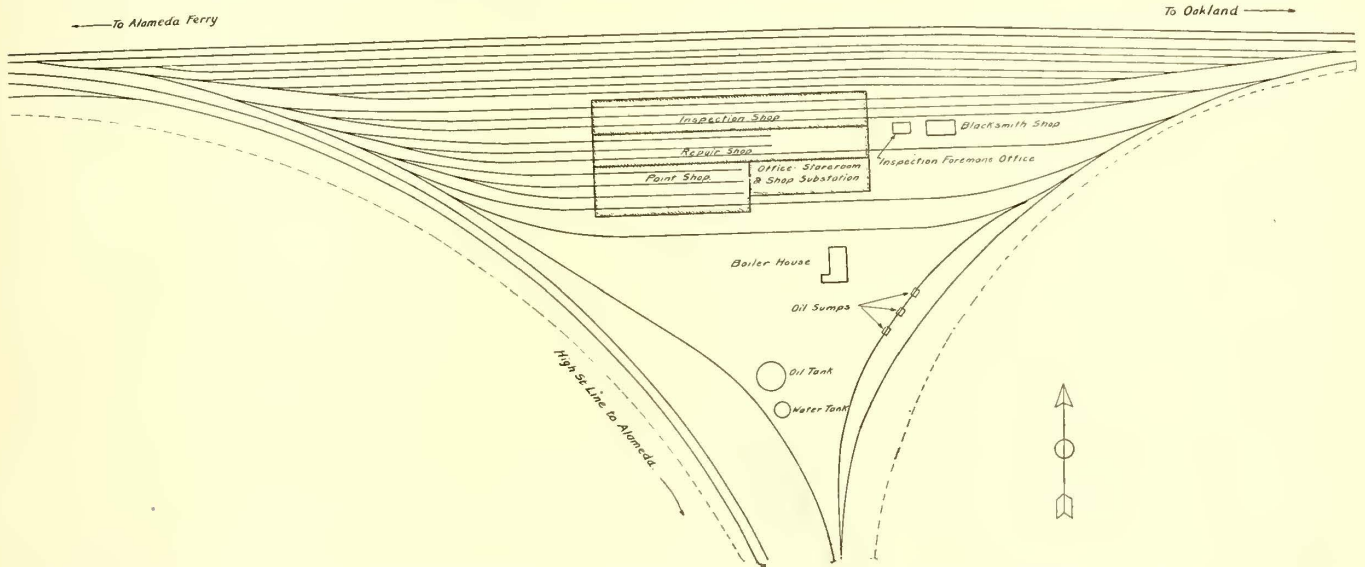
The paint shop occupies the west end of the south bay, the other end being utilized for a storeroom, lavatory, substation, etc.

There are four tracks in the paint shop, one of which runs through the east wall and parallels the storehouse loading platform. The paint shop will hold twelve cars. Portable scaffolds set in the floor may be located at any point alongside the cars and at any desired height required for painting. The paint shop is heated with hot air forced through ducts

In addition to the main shop building there are three small concrete buildings, the boiler house, blacksmith shop and motor-man's headquarters. The boiler house is located just south of the main building and contains one 100-hp marine boiler, a 500-gal. capacity fire pump and a 250-cu.-ft. air compressor for supplying compressed air to the shops. The blacksmith's shop, located just east of the main shop, is equipped with a 1000-lb. steam hammer, punch and shears and two forges. Adjacent to it is a two-story concrete building containing headquarters for motormen and also the inspection foreman's office.

ENGINEERING

All of the work described in this article was carried out under



Southern Pacific Electrification—Storage Yard and Shops at West Alameda

underneath the floor by a fan blower. Leading off from the paint shop are the paint stock and mixing room and the seat washing and brass dipping rooms.

The storehouse is located in the center of the south bay. It is served by a track running parallel to the building on the outside, from which freight may be unloaded on a receiving platform. A mezzanine floor and elevator add considerably to the storage capacity of the stockroom. Part of the storeroom is utilized for oil storage. Seven large tanks fitted with Bowser self-measuring pumps have been installed.

SUBSTATION

Next to the storeroom is a substation, to which current is delivered from the Fruitvale power station at 13,200 volts. This substation is primarily used to supply alternating current and direct current at different voltages required by shop tools and equipment. The equipment includes:

Three 100-kva transformers, which transform the incoming line voltages of 13,200 volts to 220 volts, for shop-lighting system and a.c. motor-driven shop tools.

Two 50-kw motor-generator sets, which furnish 220 volts for the d.c. motor-driven shop tools.

One 26-kw 1200-600-volt dynamotor for supplying the 600-volt d.c. line in the pits for testing out car control apparatus.

One 50-kw frequency changer, which transforms 25 cycles at 220 volts to 60 cycles at 2300 volts, to furnish current for lighting station buildings, yards, etc.

Two 25-kva, 13,200-2300 volt-transformers for supplying current for the interlocking and block signal system.

The equipment also includes a concrete bus structure and an eleven-panel switchboard containing the necessary instruments and switches for the control of the above apparatus.

Next to the substation is the washroom and locker room for the shop force, which is very complete in its equipment, including several shower and tub baths. The armature room, electric repair shop and the air brake repair shop are located in the extreme east end of the south bay. The offices are in a second story of the south bay, directly over the armature room.

the general direction of E. E. Calvin, vice-president and general manager, Southern Pacific Company. The cars and shops were designed and built under the supervision of A. H. Babcock, electrical engineer, Harriman Lines, who delegated to H. W. Clapp the immediate responsibility for the details. Mr. Clapp was assisted by P. B. Pendill on the cars and shops.

The annual report of the chairman of the County Council of London, England, states that 30 miles of electric tramway were opened in 1910. On Dec. 31, 1910, there were 136 route miles, of which 119 miles are electric. Through running arrangements have been completed between the Council's tramways and a number of tramways on the outskirts of London. During the year conciliation boards were adopted to deal with the differences between the tramway staff and the committee in regard to rates of wages and general conditions of labor. No case in which a decision is rendered by a conciliation board can be reopened for twelve months, and the plan of conciliation is to be in force until six months after notice has been given by one side to the other of a desire to terminate it, but no such notice is to be given before Oct. 31, 1912. The average daily number of cars in operation is 953 electric cars and 120 horse cars. During the year 451,439,216 passengers were carried; 210,000,000 of these passengers paid penny fares. The number of car miles run was 43,160,186. The total capital expenditures on the undertaking up to March 31, 1910, were £10,709,504. The total receipts were more than £2,023,000, and the operating expenses were £1,234,000, so that there was a balance of about £789,000. After allowing for debt and other charges, the surplus carried to appropriation account was £192,109, of which £123,231 was carried to the renewals fund and £59,978 to the general reserve fund.

The St. Louis, Springfield & Peoria Railway of the Illinois Traction System has been advised by the secretary of the American Railway Association that its application for associate membership has been approved.

NEW STEEL MOTOR CARS OF THE LONG ISLAND RAILROAD

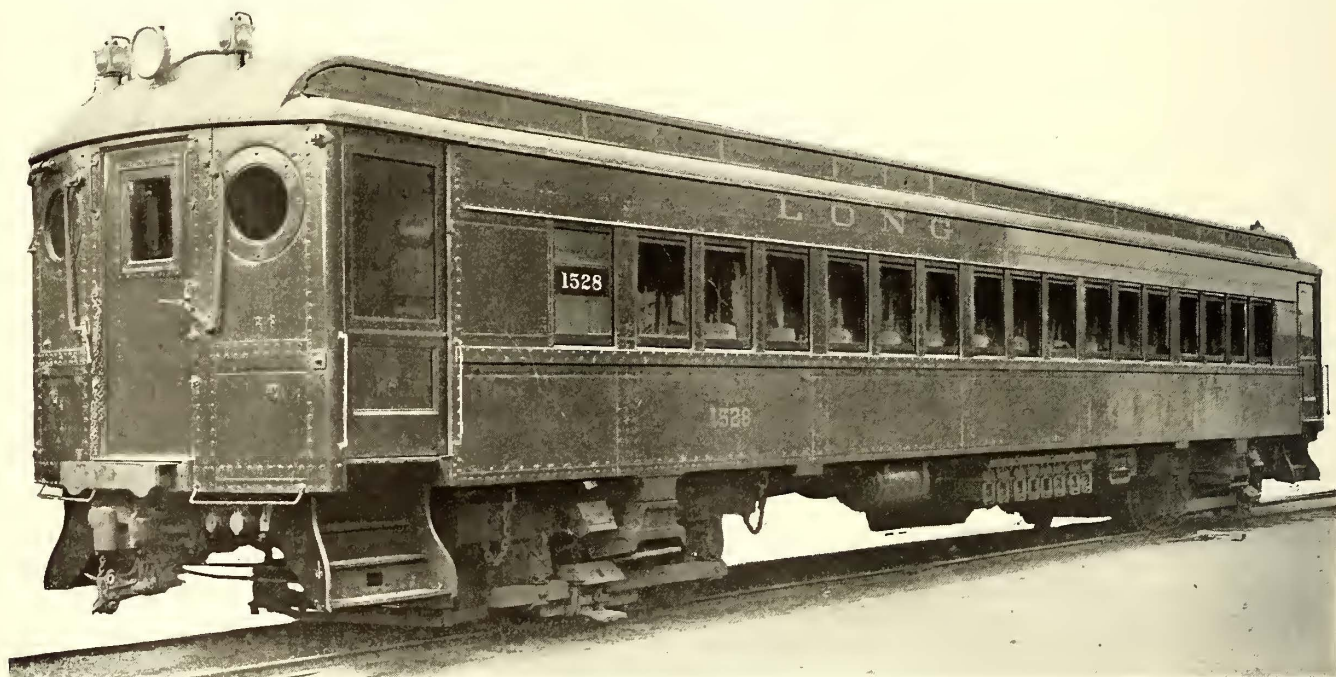
The first steel motor cars put in service on the electric division of the Long Island Railroad between Flatbush Avenue and Jamaica were built in 1905. They were designed by George Gibbs, chief engineer of electric traction, Long Island Railroad, who also designed the first steel cars for the New York subway, which were built about the same time. As the two services were very similar, the structural features of Long Island cars differed from the subway cars in only a few details of platform construction and other minor parts. The 134 cars of this type which were built during 1905 and 1906 were sufficient to handle the suburban service operated from the Flatbush Avenue terminal in Brooklyn, but in anticipation of the opening of the Pennsylvania Terminal and the operation of electric trains between New York, Jamaica and points beyond, orders were placed with the American Car & Foundry Company during 1909 and 1910 for 200 new steel passenger motor cars, 15 steel combination passenger and baggage motor cars and 7 steel baggage motor cars. The first of the new passenger cars were received from the builders early in 1910 and most of the 150 cars included in the original order were wired, equipped and

operated in the same trains with the 41-ft. motor cars or the wooden trailers now in use.

The 41-ft. cars have four cross seats in the center on each side and longitudinal seats at each end with a total seating capacity for 52 passengers. They have no toilet facilities, as the runs in which they are used are of comparatively short length. In the 54-ft. cars reversible cross seats were used. There are 32 double seats and 4 single corner seats, giving a total seating capacity for 72 people. A toilet room containing a dry hopper is built in one end of most of the passenger and combination cars.

UNDERFRAMING

The distinguishing feature of the underframing of the 54-ft. cars is the use of a heavy box girder center sill to which the load carried by the sides is transmitted by two cantilevers which take the place of body bolsters. These cantilevers are box girders with continuous top and bottom plates which pass over and under the center sill. They are spaced 13 ft. 3 in. from the center of the car and the overhang beyond them to the end sills is 13 ft. 10 $\frac{7}{8}$ in. The vertical load on the center sill, therefore, is very evenly distributed, as are also the loads carried by the sides. The box girder center sill is built up of two 9-in. 15-lb. channels spaced 16 $\frac{3}{4}$ in. apart, a top plate $\frac{1}{4}$ in.



Long Island Steel Car—Side View

placed in service by the end of the year. Fifty additional motor passenger cars are now being built. The baggage and combination cars also have been received and placed in service.

The new steel cars differ from the older cars in many important details of design and equipment. In the following description frequent references to differences between the old and new cars will be found. For a complete description of the old cars the reader is referred to the issues of the STREET RAILWAY JOURNAL for Aug. 11 and 18, 1906. As the old cars are 41 ft. long over body corner posts and the new cars are 54 ft. 6 $\frac{3}{4}$ in. long, they will be referred to respectively as the 41-ft. cars and the 54-ft. cars in making comparisons.

The 54-ft. cars are the new Pennsylvania Railroad standard design for suburban passenger service with some slight modifications in the vestibules and other details to permit the installation of the necessary electrical equipment. They are 9 ft. 11 $\frac{1}{2}$ in. wide over eaves and 13 ft. high from rails to top of roof as compared with a width of 8 ft. 8 in. and a height of 12 ft. $\frac{3}{4}$ in. for the 41-ft. cars, but they can be operated over all of the electrified tracks of the Long Island Railroad without encroaching on the clearance limits. Owing to differences in the couplers and platform height the 54-ft. cars cannot be

x 26 in. and a bottom plate $\frac{3}{8}$ in. x 24 in. Between the cantilevers and the end sills the center sill is reinforced by an additional bottom plate $\frac{3}{8}$ in. x 24 in., so as to stiffen it at the points of support on the center plates. The cantilevers are built up of $\frac{3}{8}$ -in. x 15-in. top and bottom plates, between which are riveted two webs pressed out of $\frac{1}{4}$ -in. plate. Cross ties formed of 5-in. channels connect the bottom of the side framing with the center sill at a number of points. These serve as supports for the apparatus hung under the car body and prevent the sides from bulging. The center sill extends out to the platform end sills and the draft gear is supported in a cast-steel housing which is riveted on the under side. The body center plates are truncated cones of cast steel 13 $\frac{3}{4}$ in. deep riveted on the under side of the center sill and the side bearings are also steel castings which are riveted to the bottom angles of the car sides. They bear on the truck side bearings which are supported on the ends of the truck bolsters projecting beyond the truck side frames. The body end sills are made of cast steel in two pieces and they perform the same structural functions as the channel cross ties.

SIDE FRAMING

The sides are formed of a 5-in. x 3 $\frac{1}{2}$ -in. x 5/16-in. bottom

flange angle and plates 3 ft. wide by 0.11 in. thick. These plates come together on the outside of the main posts, which are spaced 8 ft. 6 in. apart and the butt joints are concealed by cover plates 8 in. wide which are carried up to the eaves on the faces of the posts. Just under the windows is a continuous belt rail formed of a ½-in. x 4-in. plate having the top edge slightly beveled. The window sills are formed of a bent plate lapping over the side sheets under the belt rail and turned down on the inside over the top edge of the inside lining. The six main window posts on each side are pressed from steel plates 0.11 in. thick in the shape of the letter U with the flange formed on the inside face. A panel plate 0.06 in. thick is riveted on these flanges, and the rows of rivets are concealed by the overlapping edges of the pressed plates which form the sash guides. These guides are supported by malleable iron filler castings, attached to the sides of the post. The main posts are continuous up to the deck sill, but they do not have exactly the same contour as the lower deck roof, being bent in toward the center of the car on a radius of 13 in. A 6½-in. plate forms the outside window lintel and its lower edge is crimped to form a water table so as to prevent water from running down on the windows. Above this is a 12-in. letter-board plate, the top edge of which is lapped by the lower deck roof sheets. The intermediate window posts rest on the belt rail and are continued up to the deck sill. Like the main posts they are pressed in the shape of the letter U, but they are of smaller size with the projecting flanges on the outside and are covered by a plate 5⅜ in. wide. The thin plate which surrounds the post on the inside and forms the sash stops is pressed with raised corners to give the appearance of a narrow panel, conforming to the panels on the main posts.

Below the windows the thin steel plates forming the inside lining are supported at the top and bottom by continuous angles riveted to the flanges of the main posts. A dead-air space of

The inside frieze above the windows is made up of two thin plates pressed to form suitable ornamental moldings at the top and bottom. Above the frieze is the lower deck headlining which is curved to the contour of the underside of the main and intermediate posts. The headlining is formed of



Long Island Steel Car—Interior View

sheets of composite board which are confined at the bottom by the frieze molding and at the top by the deck sill molding.

FLOOR

The floor is composed of square corrugated steel sheets on top of which is a layer of "Monolith," ⅝ in. thick. In the center of the car the floor sheets are supported on furring strips laid on the top plate of the center sill and at the sides they rest on a continuous angle 2½ in x 2½ in. x 3/16 in. which is riveted to the flanges of the main posts. In the 41-ft. cars the floor is composed of waved corrugated steel on top of which is a layer of "Monolith" plastic flooring. Maple floor strips are used in the 41-ft. cars, but in the 54-ft. cars the surface of the composition floor is not so protected.

Below the main floor of the 54-ft. cars is a false floor composed of thin steel sheets covered on top with a layer of asbestos burlap. This floor is secured by clips so that it can be removed easily to get at the main floor above.

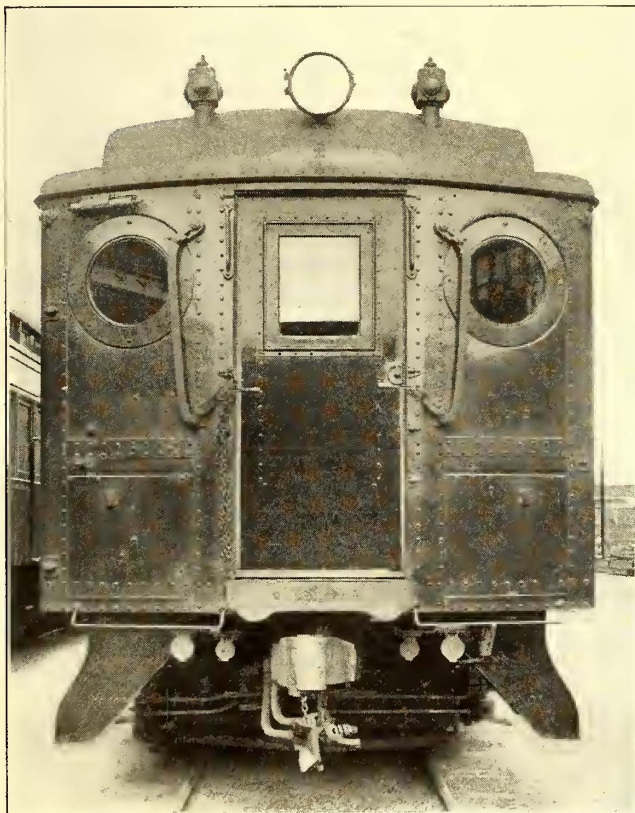
ROOF

The lower deck roof is made of steel sheets 0.06 in thick with the joints welded by the oxy-acetylene process. These sheets are supported at the eaves by a pressed channel riveted on the main posts. At the deck sill they are turned up behind and riveted to the malleable iron deck sash frames. Resting on top of each main post is a malleable iron deck post which supports the upper deck overhang. A steel sheet bent around the tops of these deck posts forms the deck apron, below which is inserted a row of ventilator screens.

The upper deck is made of steel sheets 0.09 in. thick which are also welded together. They extend out over the deck posts and are supported on pressed channel carlines spaced to correspond with the posts in the car sides. Sheets of composite board, ⅜ in. thick, are attached on the underside of the carlines with moldings to cover the joints, leaving a dead-air space of 2 in. between the roof sheets and the headlining. The upper deck is continued out over the vestibules and terminates in curved ends which are carried down to the vestibule hood bows. The deck sashes have wooden frames and are glazed with green pebbled glass. They are pivoted to open on a horizontal axis.

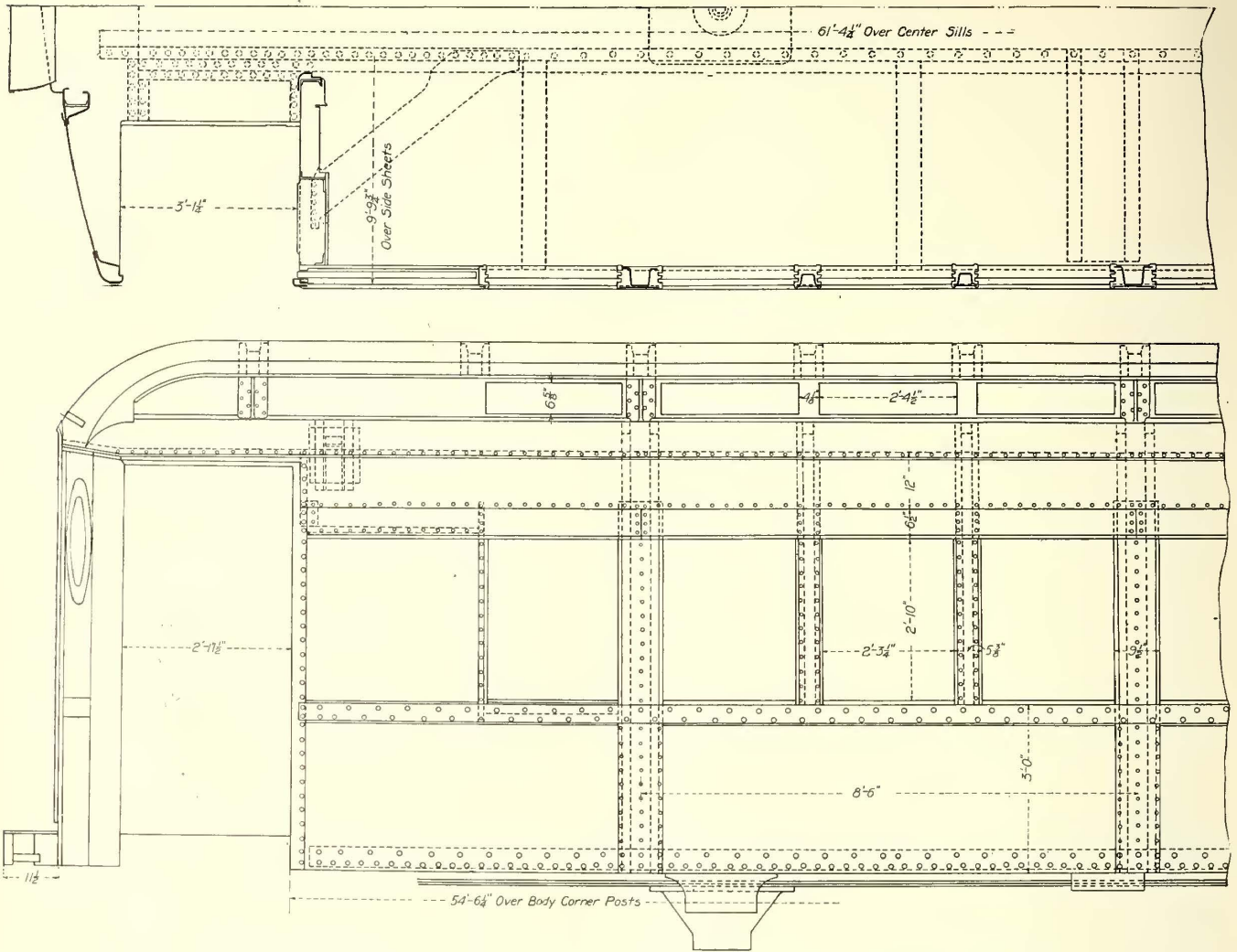
VESTIBULES

The vestibules of the 54-ft. cars differ in a number of particulars from those of the 41-ft. cars. The side doors slide

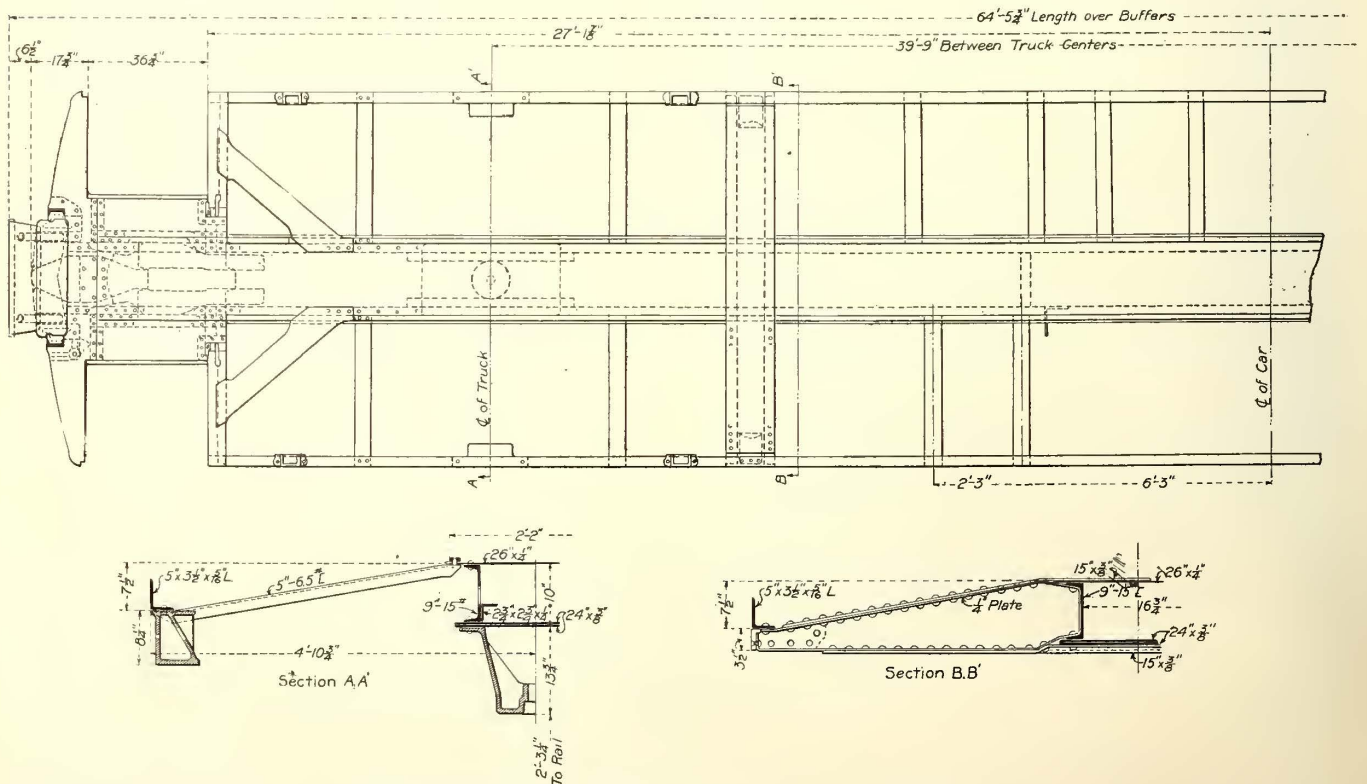


Long Island Steel Car—End View

4 in. is thus formed between the lining and the side sheets. The bottom supporting angle which is 8⅜ in. above the floor line forms a shelf to which is attached the top plate of the heater box. The wall seat end supports are also carried on this angle, the supporting plate being concealed back of the lining.



Long Island Steel Car—Half Side Elevation and Section Through Window Posts



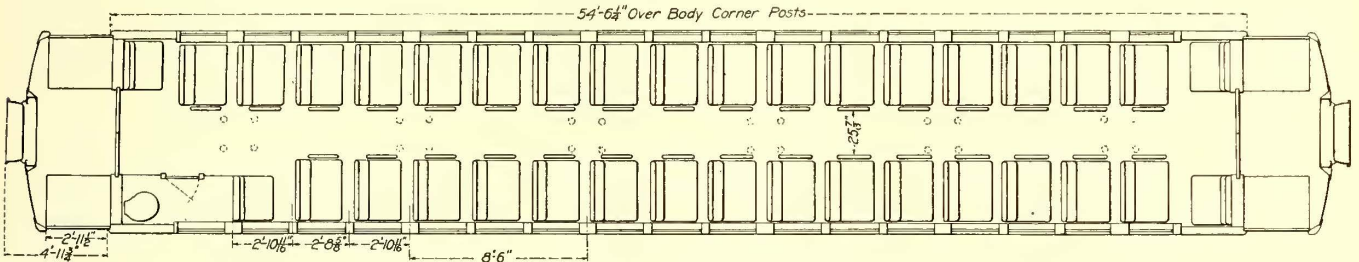
Long Island Steel Car—Plan and Sections of Underframe

back into pockets in the side of the car body and are opened and closed by the Gibbs mechanical door-operating device as in the older cars. The trap doors over the steps are hinged against the end of the body and extend out flush with the side of the car. They have a coil spring on the hinge rod which is strong enough to raise the door when the floor catch is released. In the 41-ft. cars, which are narrower, the trap door overlaps the platform floor plates when closed and is arranged to slide out on the hinge rod beyond the side of the car so as to bridge the space between the car and the platform of those stations where the platform is level with the floor of the car.

The 41-ft. cars have square windows in the ends of the vestibules, but the new cars have circular windows resembling the portholes in the side of a ship. The glass in the window on the left-hand side is fixed in a solid malleable iron frame, but on the right-hand side, where the motorman stands, the iron frame is hinged to open inwardly and is locked shut with a special clamping device. The end door opens inwardly and folds back against the master controller and the brake valve, which are mounted on the right-hand side of the vestibule end. The switchboard is mounted on the left-hand side of the end bulkhead of the car at the motor truck end. It is inclosed by a one-piece pressed-steel door. Double sliding doors with a mutual operating device are used in the end bulkhead. The ceiling of the vestibules is formed of steel plates in which is inserted a removable manhole plate to permit access to the wiring for the marker lamps and headlight on the roof. The floor is covered with a pebbled rubber tread.

COUPLERS AND DRAFT GEAR

The 41-ft. cars are equipped with Van Dorn couplers and draft gear, but the new cars have M. C. B. type couplers, West-

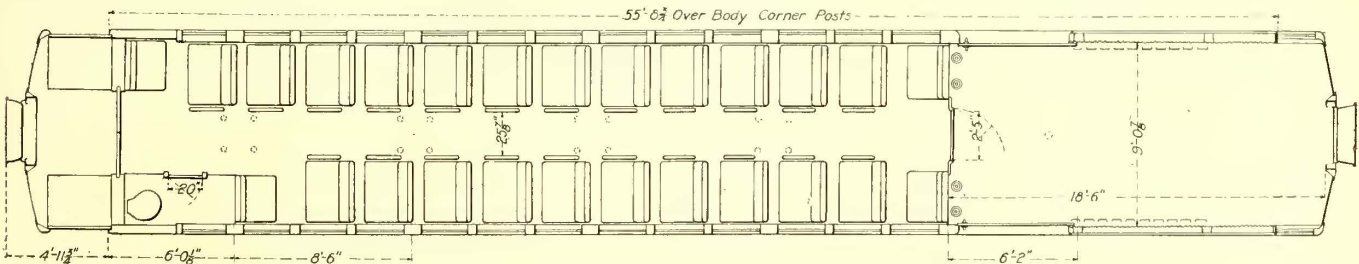


Long Island Steel Car—Floor Plan of Passenger Coach

inghouse friction draft gear and spring buffer plates so that they can be operated in trains with standard coaches. They are also equipped with Westinghouse automatic air couplers. The draft gear is attached under the center sill in a cast-steel housing and the coupler is pivoted so that it has some lateral movement within the limits of the spring centering device which is used.

INTERIOR FINISH

The interior of the cars is finished in a dark green color with pale green headlining and plain gold striping in the window post panels. The seats are Hale & Kilburn, No. 195, with pressed steel frames. They are upholstered in rattan. Figured Pantasote curtains are hung at the windows. The electroliers in the upper deck are ornamental bronze of an

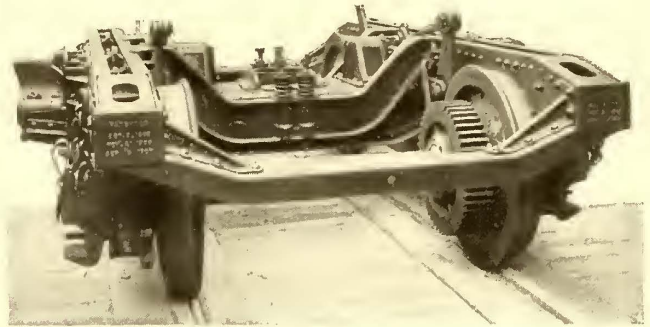


Long Island Steel Car—Floor Plan of Combination Passenger and Baggage Car

artistic pattern. Some of the cars have continuous rod basket racks on both sides, but most of them have none. On the outside the cars are painted Tuscan red with gilt lettering and a minimum amount of striping.

TRUCKS

The car bodies are mounted on a motor truck and a trailer truck of the same general design, which is the standard for all new cars of the Pennsylvania Railroad and its affiliated lines. The trailer trucks were illustrated and described in the ELEC-



Long Island Steel Car—Motor Truck

TRIC RAILWAY JOURNAL of June 27, 1908, page 177. The motor trucks, one of which is illustrated, differ from the trailer trucks only in the use of cast-steel transoms for supporting the motors. As will be seen from the engraving, the side frames consist of a pair of channels to which the pedestals are riveted. The load on the side frames is carried by pedestal springs and no equalizers are used. The pressed-steel bolster passes under the side frames and is supported at each end by a sextuple elliptic spring which is carried by hangers attached between the side frame channels. The side bearings are carried on the ends of the bolster outside of the side frames. End play of the

bolster is limited by coil springs inserted between the side bearings and the truck frame. The steel frame pilot is attached to the truck end piece instead of to the vestibule underframing, as in the 41-ft. cars.

WEIGHT

The following table shows the comparative weights of the old and new cars:

	54-ft. Cars.	41-ft. Cars.
Weight of body.....	54,332	44,424
Weight of trucks.....	33,168	23,284
Weight of electrical equipment.....	19,600	14,430
Total weight.....	107,100	82,138
Weight per foot of length.....	1,660	1,600
Weight per passenger seat.....	1,488	1,580
*Weight per sq. ft. floor area.....	168	185

*Total weight divided by product of length over vestibules multiplied by width over all.

MOTORS

As the new cars are intended primarily for a combination of local and express service in and out of the Pennsylvania Terminal Station in New York, the motor equipment required was

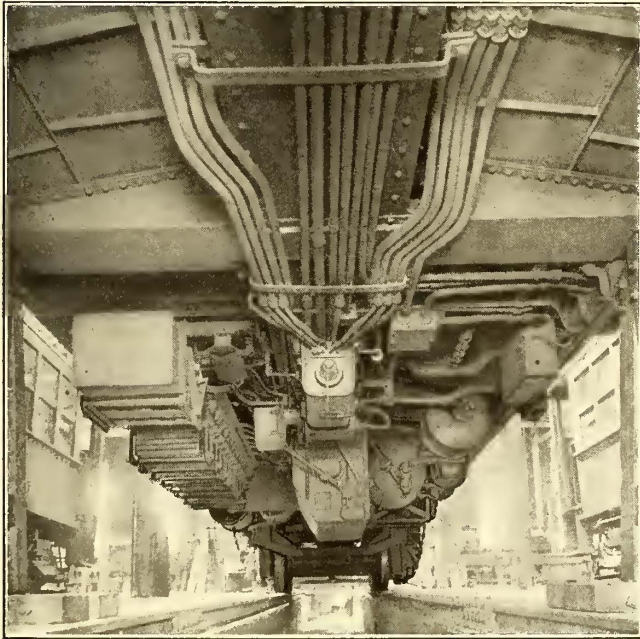
inclosed box and openings covered with fine-mesh wire screen are cut in the top of the bolster to form inlets for the air which is passed through the blowers. The blowers exhaust through flexible bellows tubing into the bottom of the motor frames at the pinion end and the air blast passes through and around the armature and out through the perforated inspection covers at the commutation end. Each fan has a capacity of 600 cu. ft. of free air per minute.

The purpose of the blowers is to increase the continuous capacity of the motors by limiting the temperature rise. The increased capacity due to their use is between 50 per cent and 60 per cent. Without them it would be impossible to maintain the desired schedules with the size of motor which is used.

CONTROL

The control system is of the Westinghouse unit-switch type using storage batteries for energizing the control circuits. Except for a few slight modifications it is the same on the 54-ft. cars as on the 41-ft. cars and the equipments on both types of cars could be made to work together by using special compromise jumpers if it should be necessary to do so. The principal differences in the control equipment of the two types of cars are the omission of motor cut-outs, the provision for connecting an overhead trolley to the bus line if necessary at some future time, and the location of the main switch under the side of the car instead of on the vestibule switchboard. In addition the control line consists of ten wires instead of seven wires as in the old cars. One of the extra wires is for the master governor synchronizing circuit, another is for the electropneumatic train signal circuit and the third is a blank wire available for operating a direct-current pantograph trolley.

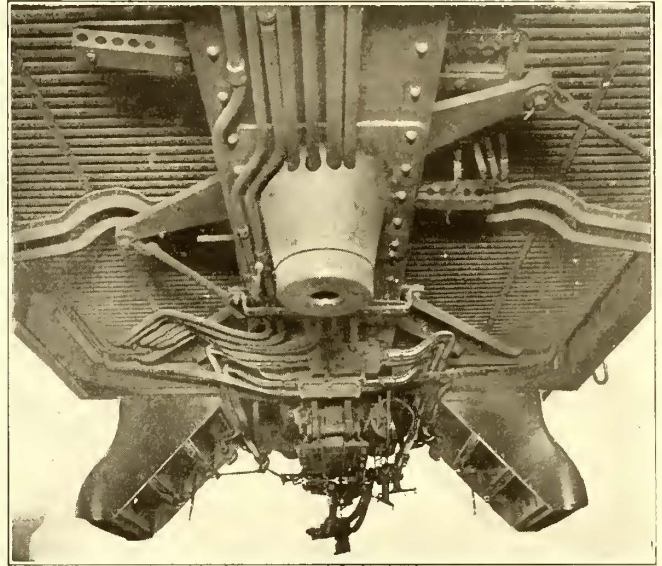
The motor cut-out in the 41-ft. cars consists of a drum switch mounted in the car body under one of the cross seats. This switch, when turned, breaks the control circuits of those unit-switches not required to be closed for the operation of one or the other motor. As one motor is so seldom cut out this feature in the control equipment of the new cars was eliminated.



Long Island Steel Car—View Under Car Looking Toward Center from Motor Truck End

The sequence of the unit-switches and the method of making the motor connections is the same in the old and new equipments. A schematic diagram of the circuits is shown on page 1060. Current from the third-rail shoes passes through the shoe fuses to the bus line and thence through the main switch and main fuse to the line switch. The first step of the master controller closes the line switch and switches M_1 and JR . This throws the two motors in series with all the resistance in cir-

cuit. The second step closes switch S and cuts out the first section of resistance. From steps 3 to 8 the resistances are cut out in succession until the two motors are running in series without external resistance. The next three steps in the transition from series to parallel connections follow each other automatically. Switch J closes, thus completing a second path for the current flowing through No. 1 and No. 2 motors. Then switch JR opens and all the resistance switches open, after which switches M_2 and G close and complete separate paths to



Long Island Steel Car—View Under Car Looking Toward End from Center of Car

ground through each of the motors and half of the resistance. The bridging connection through switch J then opens and the next three steps cut out the three groups of resistance in the circuit of each motor. A no-voltage line relay and a current limit relay are used as in the 41-ft. car equipments to open all contactors in the event of current going off of the bus line and to prevent the further progression of the contactors when the current passing through No. 1 motor exceeds a safe value. The line switch circuit-breaker cut-out and reset circuits and the emergency brake or "dead man" circuits are exactly the same as in the old cars.

SWITCHBOARD

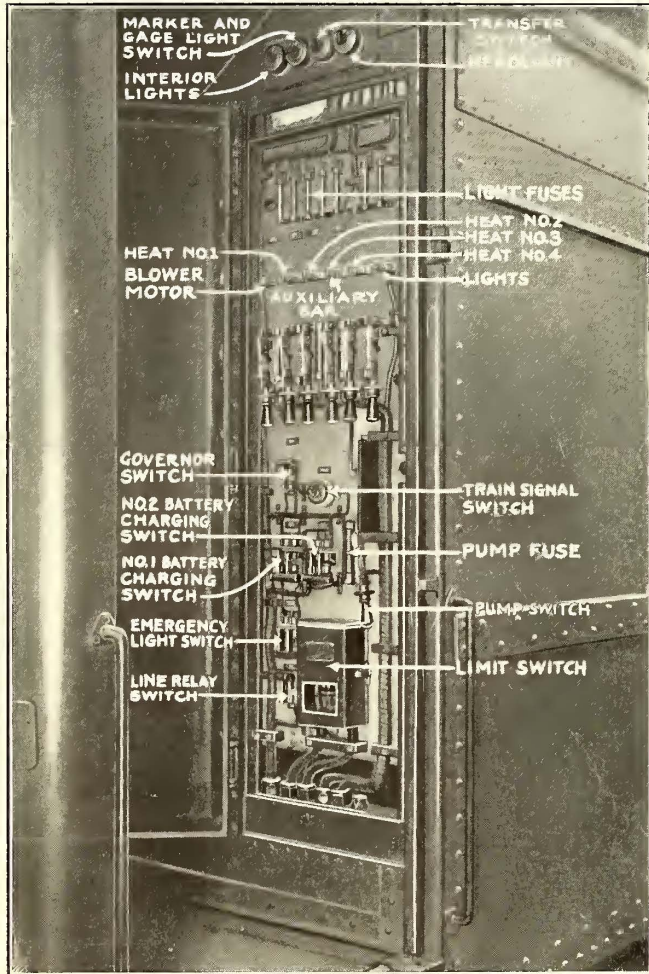
The switchboard is placed in the vestibule at the motor truck end of the car. On it are mounted the current limit relay, line relay, cut-out switch, battery-charging switches, emergency light switch, pump and air signal switches and the light, heating and blower motor cut-out switches and inclosed fuses. The wiring is run in from the bottom and is all mounted on the front of the board. A No. 4 wire leads to the switchboard from the bus line through the busbar of the main switch and an auxiliary fuse mounted under the car. This wire is connected to an auxiliary busbar on the switchboard and from this busbar are fed the blower motor, heaters and lights, each circuit being separately fused on the board. A spare conduit leads to the board through which the auxiliary circuits could be connected to the overhead trolley circuit if a trolley ever was required. The switchboard is of slate made in two halves for convenience in installing. As the circuits broken on the switchboard with the exception of the air compressor motor circuit carry only small currents, only one arc shield or barrier is required, between the pump switch and the bundle of wires leading to the heater circuit fuses. All of the wiring is heavily taped and impregnated and is securely held in place with clips bolted through the board.

BRAKES

The 54-ft. cars are equipped with Westinghouse air brakes, schedule A M L, and the Westinghouse governor synchronizing system. The A M L equipment differs from the A M R

equipment used on the 41-ft. cars in several important respects. In the A M R equipment a control pipe is used in addition to the brake pipe to provide the quick recharge and graduated release features. The brake pipe pressure is vented into the brake cylinders at the beginning of an emergency application, but the brake cylinder pressure in an emergency application is only slightly higher than in a full service application. With the A M L equipment a supplementary reservoir is used and no control pipe is required. This equipment has the quick serv-

valve, thus assuring the propagation of quick action through the train very rapidly. The supplementary reservoir pressure of 70 lb. then equalizes with the brake cylinder pressure of 50 lb. obtained by full equalization with the auxiliary reservoir, and the resultant pressure in the brake cylinder rises to 65 lb. This gives 30 per cent increase of braking power in emergency without affecting the flexibility of service operation. The 54-ft. cars have 16-in. cylinders while the 41-ft. cars have cylinders only 12 in. in diameter. The A M L equipment is equally suitable for single car operation or the operation of trains up to twelve or more cars.



Long Island Steel Car—Switchboard

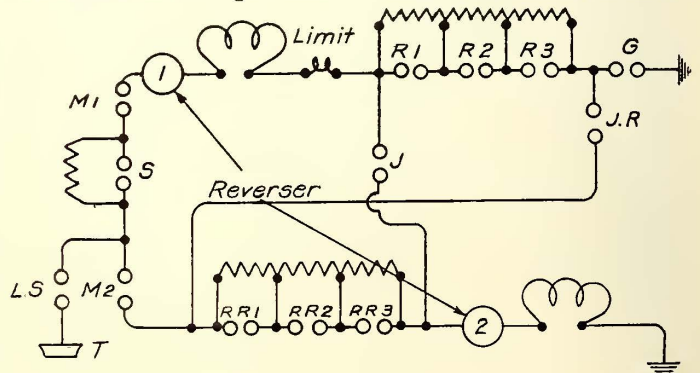
ice, quick action, quick recharge and graduated release features and the additional feature of high cylinder pressure in emergency applications which can be obtained even after a full service application. From 85 to 100 lb. main reservoir pressure is carried and all the main reservoirs in a train are connected to a continuous main reservoir pipe. The brake pipe pressure is 70 lb. and it is maintained through a feed valve mounted on the base of the motorman's brake valve. Only the feed valve mounted on the base of the brake valve which is in use is operative. In making a service application air is admitted from the auxiliary reservoir to the brake cylinder in the ordinary manner by reducing the brake pipe pressure. The pressures in the brake cylinder and the auxiliary reservoir equalize at about 50 lb. An equalizing piston and a double reservoir are combined with the brake valve so that it is impossible to reduce the brake pipe pressure below 50 lb. in making a service application. When the brake valve handle is moved to the emergency position the brake pipe pressure is vented direct to atmosphere through a large port, and as soon as the brake pipe pressure falls to 30 lb. or below the emergency feature in the type L-3-9 triple valve becomes operative, opening communication between the supplementary reservoir and the brake cylinder and at the same time cutting off the auxiliary reservoir. In addition to this the brake pipe is vented to atmosphere through the triple

The governor synchronizing system which is used on the 54-ft. cars causes all the air compressors in a train to start and stop simultaneously. The main reservoirs, of which there are two on each car, are connected to a main reservoir pipe which is continuous throughout a train, so that it is desirable to keep the pressure in all reservoirs equalized and not overwork the compressor on the car on which the brake valve is being operated. The synchronizing apparatus consists of a master governor and an electro-pneumatic compressor switch on each car and a synchronizing wire in the control train line. The master governor resembles the Westinghouse type J pump governor and is operated by the air pressure in the main reservoir of the car on which it is mounted. One of the contacts is connected to the positive wire of the control storage batteries and the other is connected to the synchronizing wire. When any master governor is closed by a fall of main reservoir pressure the synchronizing wire throughout the train is energized with battery current. The compressor switch on each car consists of the switch portion of a type J governor with the addition of an electromagnet valve controlling the admission of air to the operating cylinder. The switch is opened by admitting air to the operating cylinder and returned to its closed position by a spring when the air is exhausted.

The admission of air to the cylinder is accomplished by de-energizing the magnet and the air is exhausted by energizing the magnet. The electromagnet is connected on each side to the synchronizing wire and on the other side to the negative wire of the control storage batteries. When the synchronizing wire is energized through any master governor the electromagnet valves of all the compressor switches in the train are closed and the compressors operate. As soon as the synchronizing wire is de-energized by the opening of all the master governors the compressor switch magnet valves open and admit air under the operating pistons. This opens the compressor motor circuits and stops the compressors.

LIGHTING

The interior lighting of the cars consists of five ceiling electroliers of five lights each and two end electroliers of three



Long Island Steel Car—Diagram of Control Connections

lights each over the end doors. In addition to these lights there are at each end of the car two dome lights above the vestibule side doors, two marker lights, a gage light and the headlight. The ceiling electroliers each have four side lights, which are on four separate circuits fed from the third rail and a center light which is connected in multiple on an emergency light circuit supplied from the control storage batteries. One knife switch on the switchboard connects the auxiliary bus with a short bus,

to which are connected the headlight circuit, the marker and dome light circuit and a third wire leading to a snap switch. When this switch is closed the short bus is connected to another short bus from which five interior lighting circuits are led. Each of these circuits is separately fused at the bus. Four of the circuits run through the ceiling electroliers and the fifth includes two of the three lamps over the end door at the switchboard end and the three lamps over the end door at the opposite end. From the short bus the headlight circuit branches and is carried through a snap switch and suitable resistance at each end of the car to the headlight at that end. The headlight at either end of the car may be turned on or off independently of all other lights.

The marker, dome and gage lights at both ends of the car are supplied from the short bus through a common fuse. The circuit passes through a cut-out snap switch and thence through a two-way transfer switch mounted beside the cut-out switch. At the other end of the car is another transfer switch. In one position of the transfer switch at the switchboard end the two marker lights and the gage light at that end are lighted, and at the other end either the two dome lights or the marker and gage lights, depending on the position of the transfer switch at that end. One of the three lights in the electrolier above the end door at the switchboard end is connected in this circuit and is always lighted when the marker and dome light cut-out switch is closed, regardless of the positions of the two transfer switches.

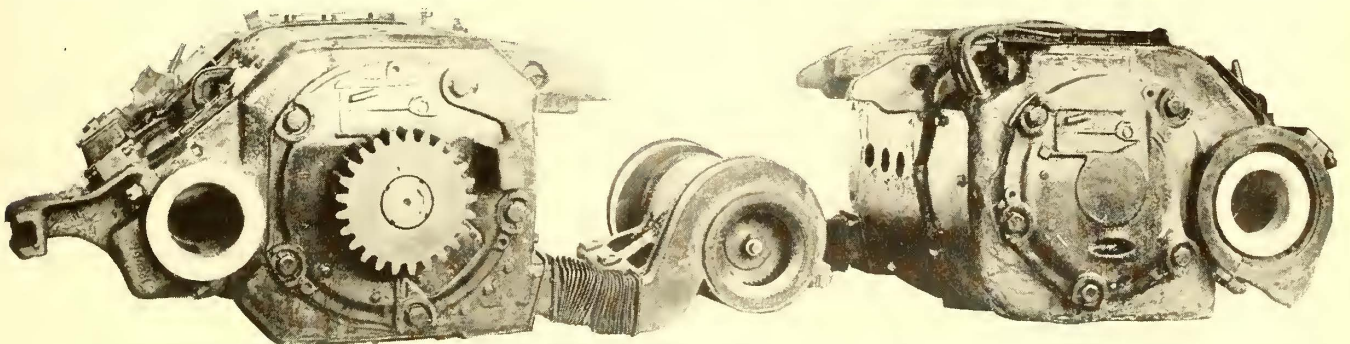
All the light wiring is run in iron pipe conduit on the outside of the roof and all connections are made in weatherproof junction boxes.

HEATERS

The interior of the car is heated by thirty-six Consolidated electric heaters mounted in the heater boxes built along the floor of the car against each side. The heaters are of the double-coil type and are arranged in two groups of two circuits each with four heater switches to give two degrees of heat. Each circuit is separately fused on the switchboard. The vestibules are heated by cab heaters which are turned on or off by a special switch mounted on the floor below the master controller. When the current is on a knob projects out of the heater switchbox and if the vestibule end door is opened it strikes this knob and automatically sets the switch to the off position.

TRAIN SIGNAL

All the new cars are equipped with the Westinghouse electro-pneumatic train signal apparatus. This consists of a conductor's signal switch operated by the signal cord which runs through each car, an electro-pneumatic signal valve and a small whistle in each vestibule which is supplied with air from the



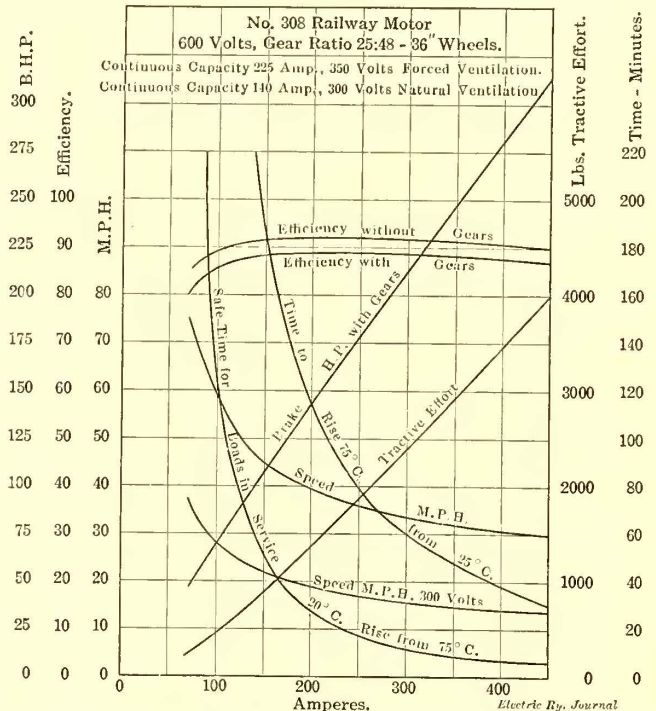
Long Island Steel Car—Motors with Blower, Which Is Carried Inside Bolster

brake system when the signal valve opens. A single wire in the control line runs throughout the train and all the signal switches and valves are connected on one side to this common wire. The signal switch on each car is connected to the positive side of the control storage battery on that car and the signal valve is correspondingly connected to the negative side of the battery. When the signal switch on any car is closed current flows through the wire in the control line and opens all the signal valves in the train, thereby sounding the whistles

in each vestibule. In case it is not desired to blow the signal whistle on any intermediate car the signal valve can be cut out by turning a snap switch on the switchboard which is inserted in the local battery circuit.

WIRING AND EQUIPPING CARS

The cars were received from the Berwick plant of the American Car & Foundry Company on their own trucks but without motors, control apparatus or conduit piping. They were fully



Long Island Steel Car—Characteristic Curves of No. 308 Motor

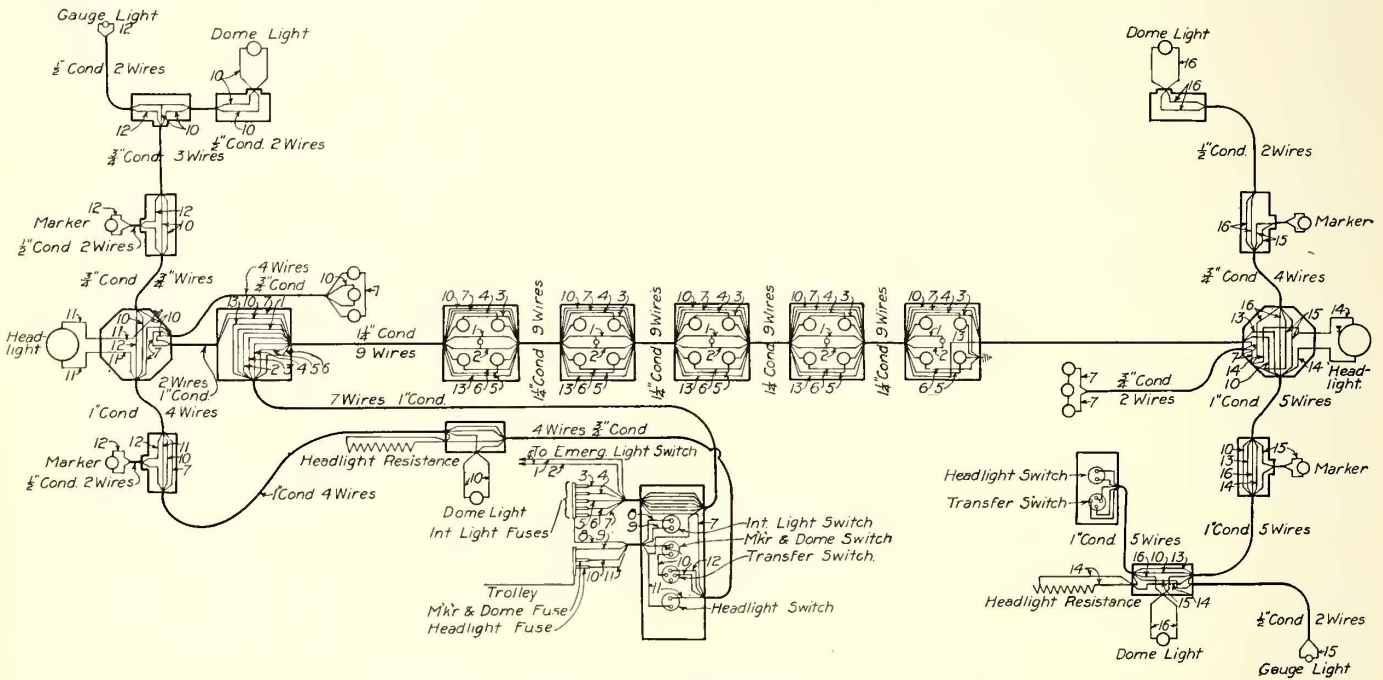
equipped at the Morris Park shops of the Long Island Railroad by the railroad company's shop force, which was considerably augmented to carry on the work. Before the first car was received a preliminary study and layout of the apparatus and piping under the car was made, but this was entirely changed, and the final layout was determined by trial on an actual car. As will be seen from the accompanying drawings and engravings from photographs of the under side of a car, the electrical apparatus is located between the cantilevers, and the conduit is concentrated under the center sill so as to prevent damage in case the car is "side-wiped" or is overturned. The reverser,

line switch and switch group are mounted under the center sill, the reverser being nearest to the motor truck so as to reduce the length of the motor leads to the minimum. The bus line has four junction boxes, one at each end where the four-point jumper socket connections are taken off, one beside the reverser in which the third-rail shoe connection on the motor truck, the bus-fuse connection and the main switch connection are made, and one just inside the cantilever at the trailer truck end in which the trailer truck third-rail shoe connection is made.

The main switch, trolley switch, main fuse, auxiliary fuse and bus fuse are grouped on one side near the reverser. On the same side are the brake cylinder, auxiliary reservoir, supplementary reservoir and the air compressor. On the opposite side of the car are mounted the duplicate control storage batteries, line relay, signal magnet valve, emergency brake valve, battery-charging relay, battery resistance, grid resistances, control reservoir and two main reservoirs. Above the floor under the seats are mounted the compressor switch and master governor. This arrangement of apparatus distributes the weight evenly and permits of a direct system of piping and wiring.

All wiring throughout the cars is run in iron-pipe conduit. After the details of the layout of apparatus had been decided on the first car was completely piped and wired. The piping was

minutes of the meetings held during the past year and the progress made by the association. This matter was presented by Acton Burrows, publisher of the *Railway and Marine World*, who has been secretary of the Canadian Association for a number of years. At the first session A. D. B. Van Zandt, publicity manager Detroit United Railway, presented a paper entitled "Let the Public Know," which brought forth a very interesting discussion on the subject of publicity for public service corporations. Other papers presented during the day ably treated the subjects of the comparative cost of steam and hydroelectric power, the distribution of power for electric railway operation and accounting methods in the repair shop. At the conclusion of the first day's session all the men attending the convention enjoyed a 14-mile trolley ride and a short



Long Island Steel Car—Diagram of Lighting Circuits

cut and bent as required by successive trials. It was then taken down and each length was painted red to serve as a master template for cutting and bending the pipes for all other cars. The various pipes were cut and bent in quantities in advance of their installation so that the work of wiring the cars proceeded rapidly after they were brought into the shop. The cables were also made up in advance. They were cut to the exact length and one terminal soldered on before drawing through the conduit. The switchboard wiring was cut, bent and wrapped by boys working at a bench. For this purpose a template was made up with pegs inserted in it around which the wires were formed to the proper shape. The work of equipping a car and its trucks complete required six days.

steamer ride to Bois Blanc Island in the Detroit River, where they were the guests of the Sandwich, Windsor & Amherstburg Railway at a dinner given under the guidance of James Anderson.

The second day's session was held at the Ponchartrain Hotel in Detroit and was occupied largely by the presentation and discussion of a paper on "Street Railway Track," by John Kerwin, superintendent of track of the Detroit United Railway. At this session new officers were elected for the ensuing year as follows: President, James Anderson, general manager Sandwich, Windsor & Amherstburg Railway; vice-president, Patrick Dubee, secretary Montreal Street Railway; secretary-treasurer, Acton Burrows, *Railway and Marine World*, Toronto; assistant secretary, Aubrey Burrows. Executive committee: Edward P. Coleman, Hamilton; H. M. Hopper, St. John; J. E. Hutcheson, Ottawa; C. B. King, London; Martin N. Todd, Galt.

At the conclusion of the morning session of the second day the members in a body inspected a Kerwin rail-grinding machine which had been brought to the track adjacent to the hotel and was in regular operation.

About twenty railway men were guests of Elmer J. Smith, of the Peter Smith Heater Company, on an automobile ride and at a luncheon given at the Detroit Boat Club.

At 3:30 in the afternoon forty association members and guests were taken to Toledo over the high-speed Detroit, Monroe & Toledo line of the Detroit United Railway system. Several of the operating heads of the road acted as hosts. On arrival at Toledo the party was met by several officials of the Toledo Railways & Light Company and all were entertained at a banquet at the Boody House, given by the Detroit United Railway.

ANNUAL MEETING CANADIAN STREET RAILWAY ASSOCIATION

The Canadian Street Railway Association held enthusiastic and profitable meetings at Windsor, Ontario, on June 6, and at Detroit, Mich., on June 7. On the former day the association was entertained by its newly elected president, James Anderson, of Windsor, and on the latter day the association members were the guests of the Detroit United Railway.

About thirty members of the association responded to the roll call and the business sessions were presided over by James Anderson, general manager Sandwich, Windsor & Amherstburg Railway, who has been vice-president of the association during the past year. Duncan McDonald, general manager Montreal Street Railway Company and president of the association, could not be present.

The first session was largely devoted to consideration of the

PENNSYLVANIA COMMISSION REPORT ON PHILADELPHIA RAPID TRANSIT COMPANY

An abstract of a portion of the report on the property of the Philadelphia Rapid Transit Company made to the Pennsylvania State Railroad Commission by Ford, Bacon & Davis, New York, was published in the last issue of the *ELECTRIC RAILWAY JOURNAL*. The report also discusses operating statistics as follows:

OPERATING STATISTICS

It states that the business of the company during 1909 was affected by a strike which lasted from May 29 to June 6 and that of 1910 by a strike from Feb. 19 to April 2. The traffic of the surface system in 1908 was largely affected by the inauguration of the subway-elevated service. While the primary statistics for the last two years are affected by the strikes, no extraordinary strike expenses are included in the operating expenses and, in general, the service was reduced as well as the traffic. There was a decrease on the surface lines between 1907 and 1910 of 18 per cent in passengers carried and of 17 per cent in car miles run. Including the elevated-subway line there was a decrease of 12 per cent and 13 per cent respectively. Excluding the strike period of 1910 the average passengers per day on all lines decreased 3.2 per cent between 1907 and 1910.

PASSENGER RECEIPTS

In 1907 the company sold six tickets for 25 cents; free transfers were issued on cash fares or tickets at many points of intersection, and at others 3-cent exchange tickets good until used were sold. In 1908 the sale of six-for-a-quarter tickets was discontinued, a time limit was enforced on the exchanges and transfers were issued only on cash fares. This resulted in an increase in average rate of fare, and therefore the decrease in passenger receipts is not so great as in total passengers carried, being only 8 per cent for the surface lines and 0.6 per cent for the entire system. The passenger receipts of the surface system increased from 22.2 cents per car mile in 1907 to 24.8 cents in 1910.

Thirty-three lines out of the total of 89 have receipts per car mile in 1910 greater than the average of 24.84 cents. Lines having the largest receipts per car mile in 1910 were:

Seventeenth and Eighteenth Streets.....	45.2 cents
Twelfth and Sixteenth Streets.....	42.4 cents
Nineteenth and Twentieth Streets.....	41.6 cents

Twelve lines have receipts less than 14 cents per car mile, which represents the average cost of operation without taxes in 1910 as reported by the company.

The passenger receipts per mile of route were \$14,920 for the surface system in 1910. The lines to South Philadelphia produced the largest earnings per mile of route, amounting to \$28,800. The long lines from the north suburbs to the delivery district produced \$11,200 per mile and the suburban lines produced only \$2,738 per mile. The subway-elevated earned \$98,900 per mile of route in 1910.

CAR MILEAGE

While the total passengers carried on the surface system decreased by 18.3 per cent from 1907 to 1910, the company decreased its car mileage by 17.4 per cent. The greatest reduction was on the group of double-end lines running from Northeast to South Philadelphia, which were more seriously affected by the strike.

The mileage of trailers in 1910 constituted only 0.1 per cent of the whole; the mileage of freight cars 0.06 per cent; that of mail cars 0.39 per cent. The subway-elevated line carried 8 per cent of the passengers and operated about 6 per cent of the car miles. The company considers that 0.52 per cent of the car mileage was non-revenue-producing, this being the mileage of cars from the depots to the nearest points on the lines on which they run.

OPERATING EXPENSES AND NET EARNINGS

With a decrease from 1907 to 1910 of 18.3 per cent in passengers and 8 per cent in earnings, the operating expenses of

the surface system decreased 6.8 per cent. The net earnings of the surface system decreased 6.3 per cent in three years. The net earnings of the surface and subway-elevated systems combined show an increase of 4.2 per cent in three years.

SURFACE OPERATING STATISTICS

The 3-cent exchanges were used by 42,467,617 passengers in 1910, whereas before the enforcement of the time limit they were used by 115,995,631 in 1907. The number of free transfers at the same time decreased 8.2 per cent, while the total revenue passengers decreased 19.8 per cent. The deadheads or passes, representing complimentary passengers and employees, constitute an unusually small proportion, being about 0.6 per cent. The fact that the average maximum cars operated (being the average for the year of the maximum number of cars in use at one time in each month) decreased less than the car miles indicates that base-schedule cars were taken off to a greater extent than were rush-hour cars. There has been a small increase in track mileage of 5.2 miles.

SURFACE OPERATING STATISTICS BY UNITS

The average fare per revenue passenger, including exchanges, increased gradually during the three years, from 4.26 cents to 4.88 cents, while the operating expenses per revenue passenger increased from 2.38 cents to 2.76 cents. The ratio of operating expenses to gross earnings declined from 55.1 per cent in 1907 to 53.1 per cent in 1908, and further to 50.7 per cent in 1909, but rose to 54.9 per cent in 1910.

Maintenance of way, structures and line per mile of single track operated declined from \$2,506 in 1907 to \$1,714 in 1910, in part on account of the release from paving obligations. Maintenance of equipment per average maximum car operated was slightly larger in 1910 than in 1907, but was about 10 per cent smaller in 1908. The cost of power distributed increased from 0.55 cent per kw-hour in 1907 to 0.72 cent in 1909 and 1910. Platform wages (motormen and conductors) have increased from 41.7 cents to 46 cents per car hour, or 10.3 per cent.

Free transfers were used by 15 per cent of the revenue passengers in 1907, 18.5 per cent in 1908, 13.5 per cent in 1909 and 17.2 per cent in 1910. Three-cent exchanges were used by 27.5 per cent in 1907, 17.8 per cent in 1908, 10.2 per cent in 1909 and 12.5 per cent in 1910.

The service has been such that the total passengers of all classes vary little per car mile, per car hour, or per round trip. The average speed has remained stationary at practically 8 m.p.h. The average length of round trip has increased slightly from 12.3 to 12.5 miles. The power consumption per car mile rose from 2.3 kw-hours in 1907 to 2.7 kw-hours in 1910, due to increase in size and number of motors.

SUBWAY-ELEVATED OPERATING STATISTICS

The subway-elevated operating statistics are chiefly interesting when compared with those for the surface system, the subway-elevated having been in full operation only two years. The passenger receipts are 34 cents per car mile, against 24.8 cents for the surface system in 1910, and \$4.40 per car hour against \$1.98. The report says, however, that the operating expenses cannot be fairly compared in all particulars because the general expenses common to both systems have not been apportioned and because the subway-elevated equipment is new. The transfer passengers represent about the same percentage as on the surface system. The average schedule speed was 12.9 m.p.h. in 1910, against 8 m.p.h. on the surface. The current consumption was 5.3 kw-hours per car mile, against 2.7 for the surface cars, and 0.67 kw-hours per passenger carried, against 0.45 kw-hours per passenger on the surface system.

COMPARATIVE STATISTICS WITH OTHER CITY SYSTEMS

Table I shows comparative statistics with New York, Brooklyn, Boston and Chicago. The New York statistics cover Manhattan and the Bronx only and in all of the cities except Boston the figures relate only to the surface traffic. In Boston the figures involving earnings and expenses, except maintenance of equipment, include the elevated system. In the statistics on the number of passengers the Philadelphia figures include the

3-cent exchanges; and in Philadelphia and Chicago the transfer passengers include complimentary and employees' tickets. These are omitted in New York, Brooklyn and Boston. It should be borne in mind that in New York, Brooklyn and Chicago a much larger proportion of the long-distance, high-speed traffic is carried by the elevated railways and subways than in Philadelphia.

SEATS PER PASSENGER

The report states that by a count of passenger miles it was found the average mile per surface passenger (all classes) in Philadelphia was about 2.3 miles. This is less than one-half of the seat miles per passenger ride. In other words, there

TABLE I.—SHOWING COMPARATIVE OPERATING STATISTICS OF STREET RAILWAYS IN NEW YORK CITY, BOSTON, CHICAGO AND PHILADELPHIA.

	New York	Brooklyn	Boston	Chicago	Philadelphia
Population					
U. S. 1910 Census (in thousands)...	2,762	1,634	1,043	2,185	1,604
Increase over 1900, per cent.....	34.7	40.1	20.4	28.7	20.3
Land area served in sq. miles, 1900..	62.59	77.63	87.35	179.58	169.73
Population (in thousands) per sq. mile, 1900.....	44	21	12	12	9.5
Number of dwellings (in thousands), 1900	100	113	117	193	249
Population per dwelling, 1900.....	20.4	10.2	7.4	8.8	5.3
Track					
Surface track, miles.....	494.62	512.05	410.04	572.93	545.74
Subway and elevated track, miles....	199.97	103.79	24.09	149.22	14.65
Ratio, subway and elevated, to total, per cent	28.8	16.8	5.5	20.7	2.6
Proportion of line, double track, per cent	87	96	85	95	42
Population served per mile of track....	5,585	3,191	2,545	3,814	2,940
Miles of track per sq. mile of area served	7.9	6.6	4.7	3.2	3.2
Car Miles Operated					
Car miles (in millions).....	68.96	55.45	43.59	81.47	66.68
Car miles (in thousands) per mile of track	139	108	106	142	122
Car miles per capita.....	25	34	42	39	42
Average Speed					
Average speed (miles per hour).....	7.43	8.00	9.76	....	7.96
Average Length of Trip					
Average length of round trip, miles... ..	8.89	8.38	9.24	....	12.50
Average Maximum Cars Operated					
Average maximum cars operated.....	2,464	1,709	1,600	....	1,776
Average maximum cars per mile of track	5.0	3.3	3.9	....	3.3
Population served per average maximum cars operated.....	1,376	956	652	....	903
Seats per Car					
Average seats per car.....	38.7	45.0	....	....	34.1
Seat Miles					
Seat miles operated (in millions)....	2,668	2,495	....	....	2,274
Seat miles per capita.....	966	1,527	....	....	1,418
Seat miles per passenger ride.....	4.5	5.6	....	....	5.7
Passengers					
Revenue passengers, in millions.....	430.67	298.70	236.37	429.09	338.52
Transfer passengers, in millions.....	160.53	149.00	115.08	310.90	60.50
Transfer passengers, per cent of revenue passengers.....	37.3	49.9	41.0	72.5	17.9
Passengers per Service Unit					
Per car mile.....	8.6	8.1	8.1	9.1	6.0
Per round trip.....	....	71	75	....	75
Passengers (all classes) in thousands, per mile of track.....	1,195	874	857	1,292	732
Rides per annum per capita.....	214	274	337	339	249
Fares per annum per capita.....	156	183	227	196	211
Power					
Kw-hours distributed per car mile....	2.90	....	....	3.49	2.71
Station load factor, per cent.....	37	35	39	44	37
Total Gross Earnings					
Total gross earnings, in millions of dollars	22.95	15.12	14.49	21.95	17.04
Gross Earnings per Unit					
Per passenger (all classes) in cents... ..	3.88	3.38	3.66	2.97	4.27
Per car mile, in cents.....	33.3	27.3	28.4	26.9	25.6
Per mile of track, in thousands of dollars	46.4	29.5	33.7	38.3	31.2
Per capita, in dollars.....	8.31	9.26	13.88	10.05	10.63
Passenger Receipts					
Per revenue passenger, in cents.....	4.98	4.87	4.99	4.96	4.88
Per passenger (all classes) in cents....	3.63	3.25	3.54	2.88	4.14
Receipts per Operating Unit					
Per car mile, in cents.....	31.1	26.2	27.4	26.2	24.8
Per seat mile, in cents.....	0.80	0.58	....	....	0.73
Operating Expenses per Unit					
Per cent of gross earnings.....	68.4	64.8	65.1	64.1	54.9
Per revenue passenger, in cents.....	3.65	3.28	3.35	3.29	2.76
Per car mile, in cents.....	22.8	17.7	18.4	17.3	14.0
Maintenance of Way and Structures					
Per mile of track, in dollars.....	5,870	2,507	2,445	2,694	1,695
Per car mile, in cents.....	4.21	2.32	2.30	1.89	1.39
Per cent of gross earnings.....	12.7	8.5	10.1	7.0	5.4

Maintenance of Equipment					
Per average maximum car, in dollars..	706	874	525	....	524
Per car mile, in cents.....	2.52	2.69	1.93	1.48	1.40
Per cent of gross earnings.....	7.6	9.9	7.1	5.5	5.5
Total Maintenance					
Per car mile, in cents.....	6.73	5.01	4.23	3.37	2.79
Per cent of gross earnings.....	20.2	18.4	17.2	12.5	10.9
Cost of Power					
Per kw-hour distributed, in cents....	1.22	0.43	0.74	0.83	0.65
Per car mile, in cents.....	3.55	2.58	2.39	2.89	1.43
Per cent of gross earnings.....	10.6	9.4	8.5	10.7	6.8
Platform Wages					
Per car hour, in cents.....	46.7	41.6	63.2	....	46.0
Per car mile, in cents.....	6.28	5.20	6.47	6.80	5.77
Per cent of gross earnings.....	18.9	19.1	26.8	25.2	22.6
Total Operation of Cars					
Per car hour, in cents.....	63.2	59.2	83.4	....	53.5
Per car mile, in cents.....	8.50	7.39	8.22	7.88	6.72
Per cent of gross earnings.....	25.6	27.1	29.0	29.2	26.3
Damages and Legal Expenses					
Per cent of gross earnings.....	7.3	5.9	5.8	7.4	6.7
Per 1000 passengers (all classes), in dollars	2.85	1.98	2.13	2.21	2.88
Per car mile, in cents.....	2.44	1.60	1.66	2.00	1.72
Other General Expenses					
Per cent of gross earnings.....	4.7	4.0	4.6	4.3	4.2
Per car mile, in cents.....	1.56	1.09	1.29	1.16	1.06
Total General Expenses					
Per cent of gross earnings.....	12.0	9.9	10.4	11.7	10.9
Per 1000 passengers (all classes), in dollars	4.67	3.33	3.80	3.48	4.65
Per car mile, in cents.....	4.00	2.69	2.95	3.16	2.78
Fatal Accidents (Surface)					
Car miles operated, in thousands, per person killed	801.8	924.2	1381.8	....	952.6
Passengers carried, in millions, per person killed.....	6.87	7.46	10.70	....	5.70
Passengers carried, in millions, per passenger killed	49	29	35	....	57
Personal Injuries (Surface)					
Total persons injured, in thousands... ..	14.64	8.65	3.11	....	7.24
Car miles, in thousands, per person injured	4.70	6.40	16.42	....	9.21
Passengers carried, in thousands, per person injured	40.37	51.74	127.27	....	55.08
Payments for Injuries and Damages					
Amount, in thousands of dollars....	1,682	884	844	....	1,149
Per car mile, in cents.....	2.44	1.60	1.66	....	1.72
Per 1000 passengers, in dollars.....	2.85	1.98	2.13	....	2.88
Per cent of transportation revenue....	7.84	5.98	6.00	....	6.95

are operated in Philadelphia an average of two and one-half times as many seats as passengers. This ratio of seats per passenger is larger in Philadelphia than in New York or Brooklyn, where the firm has also conducted passenger-mile counts.

EXCHANGE PASSENGERS, RUSH-HOUR SERVICE AND POWER

The number of 3-cent exchange passengers in 1910 in Philadelphia was 42,467,617. In that city also the maximum number of cars operated in rush hours is approximately 39 per cent to 45 per cent greater than on the base-schedule during the middle of the day. In some of the other cities twice as many cars were operated at the rush hours as during the middle of the day. The low figure of 2.71 kw-hours per car mile in Philadelphia is due somewhat to smaller and lighter cars in the city.

GROSS EARNINGS PER UNIT

Due to the small number of free transfers and 3-cent exchanges, the earnings per passenger are largest on the Philadelphia system and smallest in Chicago, where they are 30 per cent less. On the other hand, due to small cars and the large car mileage operated, the gross earnings per car mile are smallest in Philadelphia.

RECEIPTS PER PASSENGER MILE

A division of the passenger receipts by the average length of ride per revenue passenger, as ascertained by count, shows that the average passenger receipts per passenger mile on the surface system in Philadelphia are approximately 1.75 cents. From the count of passenger mileage made by Ford, Bacon & Davis in some of the other cities in this list and in similar cities, it is believed that these receipts per passenger mile in Philadelphia are higher than in any of the other cities named, in some of which the receipts per passenger mile are believed to be as low as 1.25 cents, and they compare favorably with those of other large street railway systems in this country.

OPERATING EXPENSES PER UNIT

In referring to the low percentage of operating expenses to gross earnings and the operating expenses per revenue passenger and per car mile the report says:

"From this will be noted that the reported operating ex-

penses, exclusive of taxes, of the Philadelphia system, are lower than those of any of the other systems by almost 10 per cent of the gross earnings. This ratio of operating expenses is largest in New York and in the other three cities averages about 65 per cent. The large difference in favor of the cost of operating the business of the Philadelphia system is accounted for by the large average receipts per passenger and per passenger mile, the comparative cheapness of cost of power and car operation and the small amount spent and charged to operating expenses for maintenance and renewals of physical property. * * * In operating expenses per car mile, the Philadelphia system is again lowest, due partly to the same causes which reduce its operating ratio, and partly to the smaller and lighter cars."

MAINTENANCE OF WAY AND STRUCTURES

In discussing this figure the report says that the New York figures are high owing to the underground trolley construction, and that in Chicago a large portion of track reconstruction had

TABLE II.—COMPARISON OF ACCIDENTS REPORTED FOR PAY-WITHIN AND OTHER CARS OCCURRING DURING YEAR TO JUNE 30, 1910.

Class of Accident	FOR PAY-WITHIN CARS.		FOR OTHER SURFACE CARS.		TOTAL FOR SURFACE CARS.	FOR SUBWAY-ELEVATED CARS.
	Number of Accidents.	Ratio to Total Surface Car Accidents of Same Class.	Num-ber of Accidents.	Ratio to Total Surface Car Accidents of Same Class.	Number of Accidents.	Number of Accidents.
Boarding cars.....	431	16.0%	2,261	84.0%	2,692	95
Leaving cars.....	297	6.5	4,244	93.5	4,541	56
Station.....	...	.....	.....	.....	.....	265
Passengers falling from cars.....	15	3.0	485	97.0	500	...
Passengers falling on cars.....	438	36.6	757	63.4	1,195	...
Pedestrians struck..	412	27.6	1,084	72.4	1,496	...
Collisions with cars..	623	24.4	1,939	75.6	2,562	...
Collisions with cars, vehicles, etc.....	3,384	28.4	8,538	71.6	11,922	...
Miscellaneous.....	373	16.7	1,852	83.3	2,225	...
Other reports of slight occurrences.	2,270	31.8	4,866	68.2	7,136	134
Total.....	8,243	24.0%	26,026	76.0%	34,269	550
		PAY-WITHIN		OTHER SURFACE		TOTAL
		Num-ber.		Per Cent.		Surface.
Cars operated as per schedule at June 30, 1910.....	478	25.9%	1,368	74.1%	1,846	

TABLE III.—CAR MAINTENANCE RECORDS IN PHILADELPHIA.

Total Pull-Ins.....	1907.	1908.	1909.	1910.
Number.....	5,874	3,805	2,293	2,713
Schedule car days per pull-in.....	112	169	247	209
Car miles operated, in thousands, per pull-in.....	13.74	20.84	30.49	24.58
Pull-Ins Caused by Failure of Equipment.				
Number.....	2,736	1,733	1,186	1,325
Schedule car days per pull-in.....	241	370	478	428
Car miles operated, in thousands, per pull-in.....	29.50	45.77	58.96	50.32
Car Inspection and Repair Men.				
Number.....	889	813	824	884
Schedule car days per man.....	743	788	688	642
Car miles, in thousands, per man.....	90.79	97.56	84.86	75.43
Cost of Car Maintenance.				
Amount, in thousands of dollars.....	863.56	783.49	796.27	864.68
Per scheduled car day, in dollars.....	1.31	1.22	1.40	1.52
Per car mile, in cents.....	1.07	0.98	1.14	1.30
Car Painting.				
Cars completely painted.....	455	448	473	568
Cars partly painted and varnished.....	786	535	755	1,359
Total cars painted.....	1,241	983	1,228	1,927
Car Cleaning.				
Average number of cleaners.....	212	164	145	175
Cost of cleaning, in thousands of dollars.....	133.54	107.06	97.83	103.91
Cost per 1000 car miles, in dollars.....	1.65	1.35	1.40	1.56

been charged to capital. The expense of maintenance of way and structures for Brooklyn and Boston is believed to be more nearly normal, and in these two systems averages about 2.3 cents per car mile, or about 9 per cent of the gross earnings, as compared with 1.39 cents per car mile and 5.4 per cent of gross earnings in Philadelphia. On the other hand, as stated, the Philadelphia track construction is of a heavier, more substantial character than the average of these other cities, which should result in lower cost of maintenance.

In discussing the percentage of maintenance of equipment and total maintenance to gross earnings, the report says that

both are too low and that the company should increase the latter by about 7 per cent more of its gross earnings.

POWER

The cost of power per kw-hour and per car mile is low. The former is due to low cost of production and the latter in part to the light weight of the car equipment and in part to good operating efficiency in this particular.

ACCIDENTS

The total annual number of claims made for damages on the Philadelphia surface system has decreased from 19,373 in 1907 to 7,665 in 1910. During the same period the ratio of claims disposed of to claims presented increased from 64.6 per cent to 86.1 per cent.

The report states that the pay-within car has materially reduced the number of alighting and boarding accidents, as shown in Table II. On the other hand, the report says that a large proportion of accidents occurring on these cars from passengers falling shows the necessity of additional steadying devices both inside the car and especially on the platform.

In discussing the subject of car maintenance, the report gives the statistics published in Table III and points out that the number of pull-ins is much smaller in Philadelphia both in total and per unit of service than with other large railway systems. The rule has been to keep the cars out in operation as long as practicable.

PARTS RENEWED

The number of pairs of wheels changed has decreased from 13,547 in 1907 to 8120 in 1910. The number of gears renewed decreased from 724 in 1907 to 277 in 1909, increasing again to 807 in 1910. The number of pinions renewed decreased from 4187 to 2901 in 1910, while the number of armatures removed increased from 7006 in 1907 to 10,860 in 1910, and the number of fields removed increased from 1321 in 1907 to 5263 in 1909, decreasing to 4319 in 1910. This indicates that the amount of electrical repairs has considerably increased in this period both in total and per unit of service.

CAR PAINTING

The report says that at an average of one partial painting and varnishing in fifteen months the present 3292 cars should go through the paint shop at the rate of about nine cars per working day. During the past four years 379 cars have gone through the paint shop, or an average of 4.5 cars per working day. The average amount of painting for this period has, therefore, been just about half as much as usual practice would dictate. This condition improved somewhat in 1910, however, as 1927 cars were put through the paint shop, or an average of 6.4 cars per working day.

The report states that the number of car cleaners and cost of car cleaning given in Table III should be sufficient to keep the cars in good condition, as these amounts are larger in proportion to the service operated than on other large systems.

TRAFFIC AND SERVICE

Systematic observations of traffic and service were made during the period from July 12, 1910, to Feb. 1, 1911. These observations on all parts of the system comprised:

(1) Preliminary car-riding observations, from July 12 to September 1, to determine (a) characteristics of traffic and (b) principal time points.

(2) Preliminary rush-hour street observations between 4 p. m. and 7 p. m., from July 15 to Aug. 26, 1910, to determine (a) number of passengers carried past or away from each important point, (b) regularity of schedule and (c) car loading.

(3) General passenger count of entire system, being a 24-hour car riding count of an average of 12 per cent of the cars of each line by selected groups, made on week days except Saturdays, Sundays and holidays, between Aug. 29 and Sept. 22, to record (a) passengers on and off at each stop, and (b) time of car at schedule points.

From these records in connection with counts of transfers and exchanges for the same days the engineers determined for each line and for the system the following:

(a) Average length of ride per passenger, (b) number of

passenger miles operated, (c) average rate of fare per passenger mile, (d) proportion of passengers originating and delivered in each section, (e) approximate destination and routes of passengers, (f) points of maximum loading, (g) load zones, and (h) balancing of traffic on double-end lines.

(4) Rush-hour street observations at boundaries of delivery district between 4 p. m. and 7 p. m. to determine (a) number of passengers carried into and out of delivery district, (b) regularity of schedule and (c) car loading.

This count was made daily by selected groups of lines from Aug. 29 to Sept. 22, also simultaneously for all lines on Oct. 5 and 6, also daily by selected groups of lines for a composite day of the period from Dec. 19 to Dec. 23, inclusive.

(5) Street observations of car equipment from July 15 to Oct. 1, to determine (a) type of cars used on each line and (b) condition of car maintenance.

(6) Street observations between 10 a. m. and 2 p. m., from Dec. 1, 1910, to Feb. 1, 1911, to determine (a) adequacy of non-rush or base schedules, and (b) regularity of schedule.

GENERAL PASSENGER COUNT

The general passenger count was conducted by observers placed on one car in every eight of each line for 24 hours to record the number of passengers on and off at each stop. As about 1,800 cars were operated, it was not feasible to cover the entire system in one day, and therefore the count was made by groups of related or adjacent lines, extending from Aug. 29

or seating capacity provided. The receipts per seat mile were high where the average ride was short and the traffic heavy. The report also calls attention to the fact that the elevated system shows receipts per seat mile only 5 per cent less than the average for the surface systems.

AVERAGE WEIGHTS CARRIED

The average weight of empty cars on the surface system was 13.8 tons or 700 lb. per seat, this being equivalent to 1930 lb. per passenger carried. The average weight of cars and passengers carried on the surface system was 2120 lb. per passenger, and on the subway-elevated line 3420 lb. per passenger.

RECEIPTS AND OPERATING EXPENSES PER PASSENGER MILE

These two figures are given in columns 7 and 8 of Table IV. In these figures the suburban lines have not been shown as their operating expenses vary greatly from the average for the surface system. The report says: "It is interesting to note that the length of routes and density of traffic are such that the length of a passenger's ride may exceed the length of haul for which operating expenses equal receipts on five lines out of seven to the northeast, on thirteen lines out of nineteen to North Philadelphia, on all lines to the north suburbs, on one line out of seventeen to South Philadelphia, on seventeen out of seventeen to West Philadelphia and on twenty-three out of twenty-six crosstown lines. This means that on sixty-five lines out of ninety-two, counting double-end lines as two each, many passengers ride who do not pay operating expenses, without con-

TABLE IV.—STATISTICS OF TRAFFIC AND SERVICE PHILADELPHIA RAPID TRANSIT COMPANY.

	Average Length of Ride Per Passenger (All Classes) (Miles).	Cash Receipts Per Passenger Mile.	Passengers per Car.		Receipts per Seat Mile.				Receipts and Operating Expenses per Passenger Mile.			
			Average Passengers Each Car.	Percent of Average.	Seats per Passenger.	Ratio to Average.	Receipts per Seat Mile.	Ratio to Average.	Passenger Receipts (for Composite Day of Riding Count Aug. 29, Sept. 22, 1910)	Operating Expenses upon Average Car Mile for Year to June 30, 1910)	Per Cent Expenses to Passenger Receipts	
Lines from delivery district to:												
Northeast	2.57	1.61c	16.1	115	2.6	93%	0.63c	102%	1.61c	0.87c	54%	
North Philadelphia.....	2.24	1.95	14.6	104	2.7	96	0.72	116	1.95	0.96	49	
North Suburbs.....	3.72	1.09	18.0	129	2.3	82	0.48	77	1.09	0.78	72	
South Philadelphia.....	1.86	2.33	14.0	100	2.7	96	0.85	137	2.33	1.00	43	
West Philadelphia.....	2.47	1.78	13.3	95	3.0	107	0.60	97	1.78	1.05	59	
Average delivery district lines..	2.42	1.72	15.0	107	2.7	93	0.65	105	1.72	0.93	54	
Crosstown lines:												
West	1.34	2.20	10.6	76	3.7	132	0.60	97	2.23	1.32	59	
South	1.42	2.35	9.8	70	4.1	146	0.60	97	2.35	1.43	61	
North	1.98	1.87	11.6	83	3.5	125	0.54	87	1.88	1.21	64	
Average crosstown lines.....	1.74	1.98	11.1	79	3.6	128	0.56	90	1.98	1.26	63	
Suburban lines.....	8.72	1.57	9.5	68	3.8	135	0.41	66				
Average, surface system.....	2.31	1.75	14.0	100	2.8	100	0.62	100	1.75	1.00	57	
Subway-Elevated	3.27	1.27	22.6	161	2.1	75	0.59	95	1.27	0.62	49	

to Sept. 22, 1910. No observations were taken on Saturdays, Sundays or holidays.

The records made on the cars were combined, giving the net number of passengers between stops. These numbers multiplied by distance equal the passenger miles carried. The average length of ride per passenger was then obtained by dividing the total passenger mile as above by the number of passengers counted. From this unit calculated for each line, the total passenger mileage for all passengers carried was obtained.

The average length of ride by groups of lines is shown in the first column of Table IV. The average length of ride as given is for passengers of all classes, whether riding on tickets, cash, 3-cent exchanges or free transfers. The average length of ride per revenue passenger (including 3-cent exchanges) was 2.71 miles on the surface system and 3.96 miles on the subway-elevated, or an average of 2.79 miles on the entire system.

PASSENGERS PER CAR MILE

The number of passengers per car mile for all different lines was also obtained. It varied from 13.4 on the Fifty-second Street line to 1.07 on the Zoo line.

SEATS PER PASSENGER AND RECEIPTS PER SEAT MILE

Excluding less important lines, the seats per passenger (all classes) varied from 5.3 on the Dickinson line north of Market Street, to 1.5 on the Fox Chase line south of Market Street.

The receipts per seat mile are shown in column 5 of Table IV and, as will be noticed, the seats per passenger varied inversely as the length of ride and directly as the number of cars

considering in the cost of operation, taxes, interest and depreciation on the investment required in their service."

RUSH-HOUR CORDON COUNTS

On Wednesday and Thursday, Oct. 5 and 6, between the hours of 4 p. m. and 7 p. m., "cordon" counts were made of passengers traveling on all lines into and out of the main delivery district in Philadelphia. These figures were carefully taken from the average carloads passing the cordon at different times. Similar information in regard to steam railroad and ferry traffic was obtained from the railroads. It was found that the total passengers carried on all service cars from 4 p. m. to 7 p. m. constituted 24 per cent of the passengers carried one way in twenty-four hours on the lines operating in the delivery district.

RUSH-HOUR PROBLEM

The report says: "The problem of determining the proper way of caring for this traffic involves the determination of a reasonable standard of car service for the rush hours, and the definition of practicable rules for car loading. The extreme limits of such service would be, on the one hand, to provide seats for all passengers, and on the other to continue the mid-day car service through this busy period. The maximum number of cars which can be operated is absolutely limited by track and crossing capacity, and the necessity of providing sufficient employment for the extra car men.

REASONABLE CAR LOADING

"From careful studies of car capacities, it has been found

that 4 sq. ft. of aisle and platform space per standing passenger allows comfortable standing space. This would mean, for the Philadelphia pay-within car, two rows of standing passengers with sufficient space for passage between, and a total capacity of seventy-six, of whom thirty-eight would be seated and thirty-eight standing. In other words, for a car with longitudinal or lengthwise seats, the standing capacity would equal the seating capacity. For a cross-seat car like those now operated in Philadelphia with seating capacity of forty, the standing capacity would be twenty-nine and the total sixty-nine. If the usual large prepayment platforms are used on the cross-seat car it would accommodate thirty-six standing passengers, or with the seated passengers a total of seventy-six. Therefore, applying this rule to the cross-seat car, the standing capacity would equal from 60 per cent to 90 per cent of the seating capacity. This standing load is practically within the limits used by other American street railway companies which have given attention to this subject, and as prescribed in some cases by governmental regulations abroad.

"This is believed to be a reasonable limit of car loading and has been used in the calculations and recommendations for rush-hour service."

LIMITS TO INDIVIDUAL CAR LOADS

To prevent or lessen periodical overcrowding caused by the bunching of cars or passengers, the report says that it is desirable to limit the loading of cars to the standard capacity determined. This under ordinary conditions of operation can be accomplished with platform doors or gates, which close the entrance and exit when the car is in motion, together with the use of the "car full" sign.

The reasonable use of the individual car limit and the "car full" sign has been found beneficial by the American companies that have adopted it. Efforts to restrict car loading to standards sometimes used abroad have met with objection because the limit has been placed at or near the seating capacity. This is impracticable under American conditions. During the non-rush hours, however, seats should be provided for all passengers. As the traffic increases at the beginning of the rush hours sufficient cars to furnish seats should be added until the maximum schedule is in operation. The report therefore recommends that rush-hour service in accordance with the standards outlined above should be furnished, and that individual car loads should be limited on a practicable plan with allowance for extraordinary conditions.

IMPROVED SERVICE PRACTICABLE IMMEDIATELY

The report continues: "As the present rush-hour service is considerably below the standard recommended, this plan cannot be put into effect until additional cars and power are secured. During the time of construction of additional equipment, it is recommended that the company operate a service, as far as the number of present cars and the capacity of its power system will permit, which will provide on each line during the busiest half-hour an average car loading equal to the recommended standard of maximum car capacity."

MAXIMUM CAR CAPACITY

In discussing this point the report says: "Experience in other cities has demonstrated that under ordinary conditions three single cars per minute per track can be passed over delivery district trackage. * * * The maximum number of cars passed over a crossing of single track with double track as observed in Philadelphia was at the rate of 390 cars per hour, or 108 on the single-track line and 141 on each track of the double-track line. In other cities as many as 180 cars per hour per track pass over intersections with equal vehicular congestion. The straight track capacity and not the crossings, therefore, would limit the track capacity in Philadelphia."

DEVICES FOR IMPROVING THE SERVICE

After as many cars as can be reasonably required for the rush-hour traffic, or as many as the track on delivery district streets will accommodate, have been put in use, the engineers suggest that the service can be reinforced by the following devices: (1) Careful timing of trippers to meet heavy loads.

(2) Trailers. (3) Turnbacks. (4) Special return routes for trippers. (5) Through routing.

TRAILERS

The report considers the relative advantages and disadvantages of trailers and discusses this point as follows:

"Trailers afford the greatest equipment resource for relieving rush-hour pressure. Track capacity can be increased by as much as 50 per cent, depending on the proportion of trailers used. More seats and standing capacity can be furnished for the same investment in equipment. The weight of equipment per passenger is less, so that the power and distribution requirements are less. For a given number of extra platform men a greater number of cars can be operated. Trailers should have a passenger capacity equal to or greater than the motor cars and should be provided with air brakes and proper safety appliances.

"The chief objections to trailers are that they are considered more liable to step accidents, and that they appear to obstruct the streets to a greater extent than individual cars. This greater liability to step accidents can be corrected with gates or doors which close the platforms while the cars are in motion. Collision accidents which vary with the car mileage should be largely reduced by the use of trailers. As to street incumbrance, it is clear that the same number of individual cars starting, moving and stopping require more room than if run in pairs. There are objections and limitations to the use of trailers from an operating standpoint, largely on account of track clearance conditions and coupling difficulties on curves at narrow street intersections. On some of the Philadelphia lines trailers can undoubtedly be used. Alterations in routes might be warranted in some cases in order to use trailers, or special trailer routes might be operated during the rush hour to avoid difficult curves. The solution of this problem might necessitate equipping the trailer with motors and designing a special type of car which would increase the passenger space per extra operative. It is best practice to use trailers with tripper cars only, as two-car tripper trains may thus be kept coupled while out of service. The use of trailers at the rush hours is especially desirable on long lines.

"The operating economy of trailers in tripper service is demonstrated by the following estimates of earnings and expenses. In the first column is shown the annual income account of a single motor car, and in the second column the corresponding result for a trailer. It is estimated that each tripper makes two round trips in the morning and two in the evening, carrying a full load one trip and a seated load one trip with allowance for the smaller volume of business at the morning rush.

TABLE V.—ESTIMATE OF COMPARATIVE ANNUAL INCOME ACCOUNT OF TRIPPER CARS.

	Motor Car.	Trailer.
Receipts	\$2,664	\$2,664
Operating expenses.....	1,884	1,375
Net earnings.....	\$780	\$1,289
Interest, taxes and depreciation (10 per cent. on cars, power plant, carhouses and shops)	1,500	920
Income (exclusive of return on investment in track and line).....	\$720 (Loss)	\$369 (Profit)

"It is thus seen that if motor cars alone are used only a few hours per day they would operate at a loss which must be made up in some other direction, while a small profit is indicated for trailers."

ROUTING

The report concludes with a chapter of twenty-eight pages illustrated with many maps on routing.

Matanzas Terminal Railroad has been incorporated at Kittery, Maine, to build and operate a steam or electric railroad at Matanzas, Cuba, and engage in any other transportation, agricultural, mining, manufacturing or mercantile business in Cuba. The authorized capital stock is \$50,000. Horace Mitchell, Kittery, is president and clerk of the company.

PROPOSED RELIEF FOR TRAFFIC CONGESTION IN NEWARK

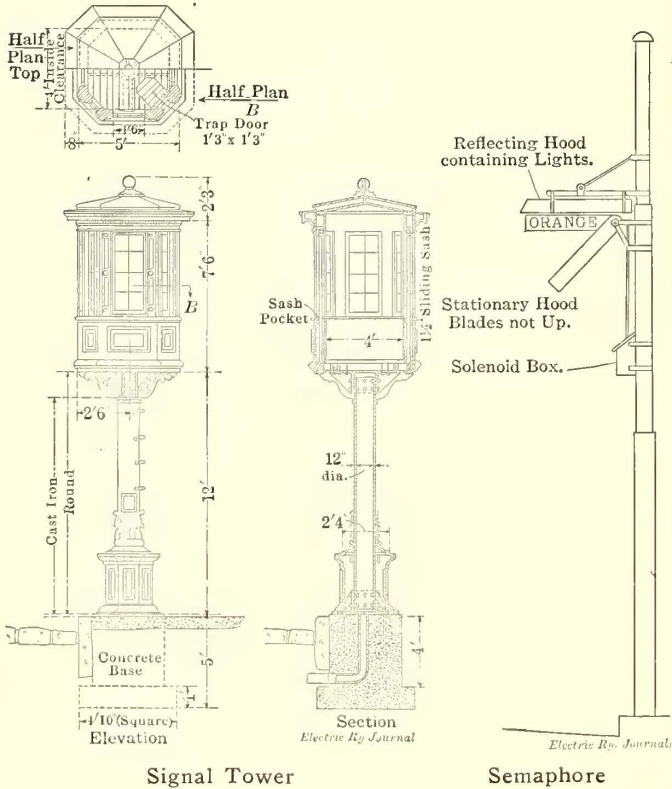
The corner of Broad and Market Streets, Newark, N. J., is the most congested portion of the system of the Public Service Railway. Here two double-track lines intersect and a traffic officer is on duty at that point at all times of the day to signal

should be employed to indicate positively the points at which those who wish to board the cars on the different routes should congregate. As a solution of this problem R. E. Danforth, general manager of the Public Service Railway, recently submitted to the authorities the plan outlined below. This plan is now under consideration by the city.

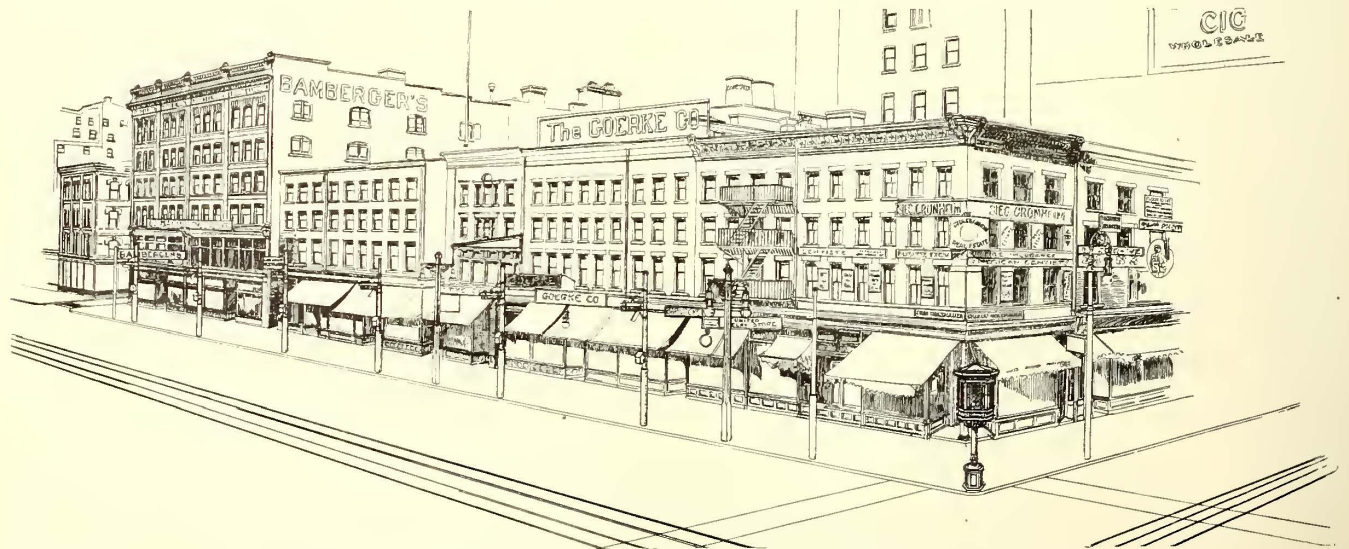
Mr. Danforth has suggested that the system described should be installed first on the block on Market Street west of Broad Street. Here at least six fixed stopping points are to be established, and each point is to be marked by a semaphore placed on a pole set at the curb line. Each semaphore will be provided with a number of signal arms and each signal arm will be marked with the name of one of the routes of the cars passing that place. There will be as many signal arms on each semaphore as there are routes to be indicated, and the signal arms will be suitably illuminated at night by means of lights placed in a reflecting hood. Three of these semaphores will be mounted on trolley poles now in place, the other three upon poles to be set in the proper position. The semaphores are to be controlled by an operator placed at the corner of Market Street, from which point he will have a clear view of the cars as they approach from the east. The type of semaphore suggested is illustrated in detail in one of the accompanying engravings.

The semaphores will be operated electrically from a switch tower at the corner of Market and Broad Streets. The proposal of the Public Service Railway suggests that the switch tower should be similar to that used for the control of switches and signals in front of the Union Station, Washington, D. C. This tower was illustrated in the *ELECTRIC RAILWAY JOURNAL* of April 17, 1909, and a line drawing of it, as designed for the Newark conditions, is published herewith.

The operation of the system would be as follows: After a group of cars on Market Street had crossed Broad Street, the traffic officer at that point would decide how many cars he would permit to cross in the next lot of cars to cross Broad Street and would signal this number to the operator in the tower. The latter would then notice the routes of the cars waiting to cross and, while traffic was being moved north and south on Broad Street, he would set the correct signals for this number of cars on the different semaphores. This would give a minute or more for those persons waiting to board the cars to assemble in the proper places. When these cars were



cars across the intersection. During the non-rush hours the cars are sent across the crossing singly or in pairs, but during the rush hours some time is saved by sending them across in groups of three or more. The only drawback to this plan is that people who board the cars at the farther crossing cannot



Proposed Car Signal System—View Showing Signal Tower and Six Semaphores

tell in advance the points at which particular cars will stop. For instance, after a group of four or more cars going west on Market Street have crossed Broad Street an intending passenger may find the car which he wishes to board at any point in the block beyond the intersection.

As the traffic at this point is increasing the Public Service Railway and the city authorities have realized that some method

ready to start the operator would drop the semaphore blades so as to be ready to re-set them for the next lot of cars. As will be seen, the system is very flexible. Any number of cars up to six could be allowed to pass the crossing at once. During those hours when cars crossed the intersection singly a semaphore would be displayed on the pole nearest the crossing, indicating that all cars stopped at that point.

The proposal of the company to the city said that, while it was desirable to use a signal tower to carry out this plan, the operating mechanism for the semaphores might be installed in a switch box which would be no larger than the United States letter box and that it might then be placed on a trolley or lighting pole near the corner. But if the mechanism was located in a tower the operator would be able to see the cars standing in Market Street east of Broad Street above the vehicle and other traffic. He would thus be able to see the names of the lines on the decks of the cars and to set the signals prior to the passage of the cars over Broad Street. If the operator was located on the street he would not be able to see over pedestrians and vehicle traffic in the street and would therefore not be able to set the semaphores before the cars started to cross the intersection. Hence the company strongly recommended the use of the tower.

ARNOLD REPORT ON PROVIDENCE

On June 1 B. J. Arnold transmitted to the joint special committee on railroad franchises of the City Council of Providence a report on service and transportation conditions in that city. This report was made at the request of the council, as expressed in its instructions dated Jan. 7, 1911. In his letter of transmissal, Mr. Arnold says that he has not attempted to investigate the corporate relations or the finances of the Rhode Island Company. His purpose has been simply to study the traction situation as it exists, to make recommendations for improvements and to give some idea of the magnitude of the problems of the future. He makes special acknowledgment of the courtesy and assistance rendered him in this study by the officials of the Rhode Island Company. The report submitted June 1 is of a preliminary character only. The complete report will be quite comprehensive and will contain some 200 pages, with numerous tables and some forty maps and diagrams. It will probably be submitted during the early part of July.

GENERAL CONDITIONS

The report says that the present service rendered by the Rhode Island Company of Providence is not constitutionally bad. In some respects it is better than in other cities and the present deficiencies can be largely and almost immediately overcome by carrying out a co-operative program in which both the city and company would participate for effective results.

The report then dwells on the inadequacy of the present streets, which, especially in the center of the city, are cramped. The city should create new or enlarged streets for double track operation and should co-operate with the company in re-routing the lines in the terminal district. There should be intelligent city planning in the suburbs and this should not be entrusted to accidental development or snap judgment. A special effort should be made to improve the approaches to the east side. In recent years Providence has grown rapidly and the traffic even more rapidly, but the increase in car equipment has not kept pace with this traffic. In 1910 the Rhode Island System as a whole earned about \$9.70 per capita.

TRAFFIC IN THE TERMINAL DISTRICT

A count was made during March at the maximum loading point of the nine outlet routes of travel from the terminal loading district. These counts showed 14,730 passengers and 11,036 seats outbound between 5:30 p. m. and 6:30 p. m. During the heaviest ten-minute period nearly one-quarter of the traffic occurred. In the heaviest twenty-minute interval the loading varied from 89 per cent to 164 per cent on individual lines and from 123.6 per cent to 141 per cent for the system. Monthly records show that the traffic during February and March is the minimum of the year.

SERVICE IMPROVEMENTS

Among important improvements of service needed is an increase in schedule speed, which approaches now only 7.96 m.p.h.; entirely too low for a city with radial thoroughfares. Some of the lines average a little more than 6 m.p.h., or less. The speed of the cars is limited by city ordinance for the

greater part of the city, outside of the business district, to 9 m.p.h. Automobiles are permitted to operate at 15 m.p.h. This condition should be changed, because cars operating on a fixed track with air brakes and fenders can obviously run with safety at least as fast as undirected vehicles.

In the city districts of Providence white posts approximately 250 ft. apart indicate stopping points. These should be spaced 500 ft. apart. Other means for increasing the speed are promptness in dispatching, installation of double tracks and electric track switches, and express service to certain suburbs.

Trolley freight should be excluded from the lines during rush hours, and separate routes should be reserved as far as possible for this service, with the ultimate establishment in mind of a central interurban freight terminal.

EQUIPMENT IMPROVEMENTS

The present rolling stock is about equally divided between summer and winter types. Of the winter equipment about 28 per cent are single truck cars, but these represent only 21 per cent of the seating capacity. After a suitable east side approach is determined upon, these cars should be retired for larger equipment.

Prepayment operation should be introduced. This can be done by increasing the present length of platforms, and the city ordinances which restrict the length of cars should be changed. A seating arrangement in which at least half of the seats are cross seats should be adopted for the city cars and all of the long-haul suburban cars should have cross seats. Convertible cars should be gradually put in service in place of the present open-bench open cars. Single-ended operation is recommended for routes with heavy traffic. The old carhouses should be remodeled for double-ended carhouse operation. New substations for maintenance of the voltage on the long lines should be built and more track should be laid.

Mr. Arnold also suggests the appointment of a supervising local engineer by the city in case a State public service commission is not authorized.

RE-ROUTING

The report also suggests re-routing a number of lines. In general the cars should be routed as directly through the business district as possible until a street of suitable width is reached. Long-haul suburban lines should be looped back if possible just outside the center of the city in order to save delay.

OTHER RECOMMENDATIONS

Among other recommendations Mr. Arnold makes the following for the city or company:

Regulation of transfer use.

Reorganization of destination sign system.

Amend speed ordinance permitting street cars the same running speed, subject to suitable precautions within the loading district, as automobiles.

Vehicle traffic ordinance regulating size of vehicles.

Right-of-way ordinance giving street cars a second right-of-way over all other vehicles except fire, police and ambulance vehicles.

Provide shelters at loading and transfer points.

He also submits the following suggestions to the public:

Cultivate prompt movement so that both public and company may benefit.

Have exact fare ready, if possible, before entering the car to facilitate a prepayment plan of fare collection.

Form the habit of moving forward in a car.

Investigate complaints and company's rules before criticising.

Render complaints to company first, newspapers second.

Assist in re-routing with arguments and data based on knowledge rather than assumption.

Forego the convenience of a private stop in front of home or office, if necessary, for the execution of effective re-routing plans.

Avoid round trip riding on a single fare by means of transfers.

Avoid boarding or leaving cars in motion.

NEW YORK SUBWAY REPORT SUBMITTED

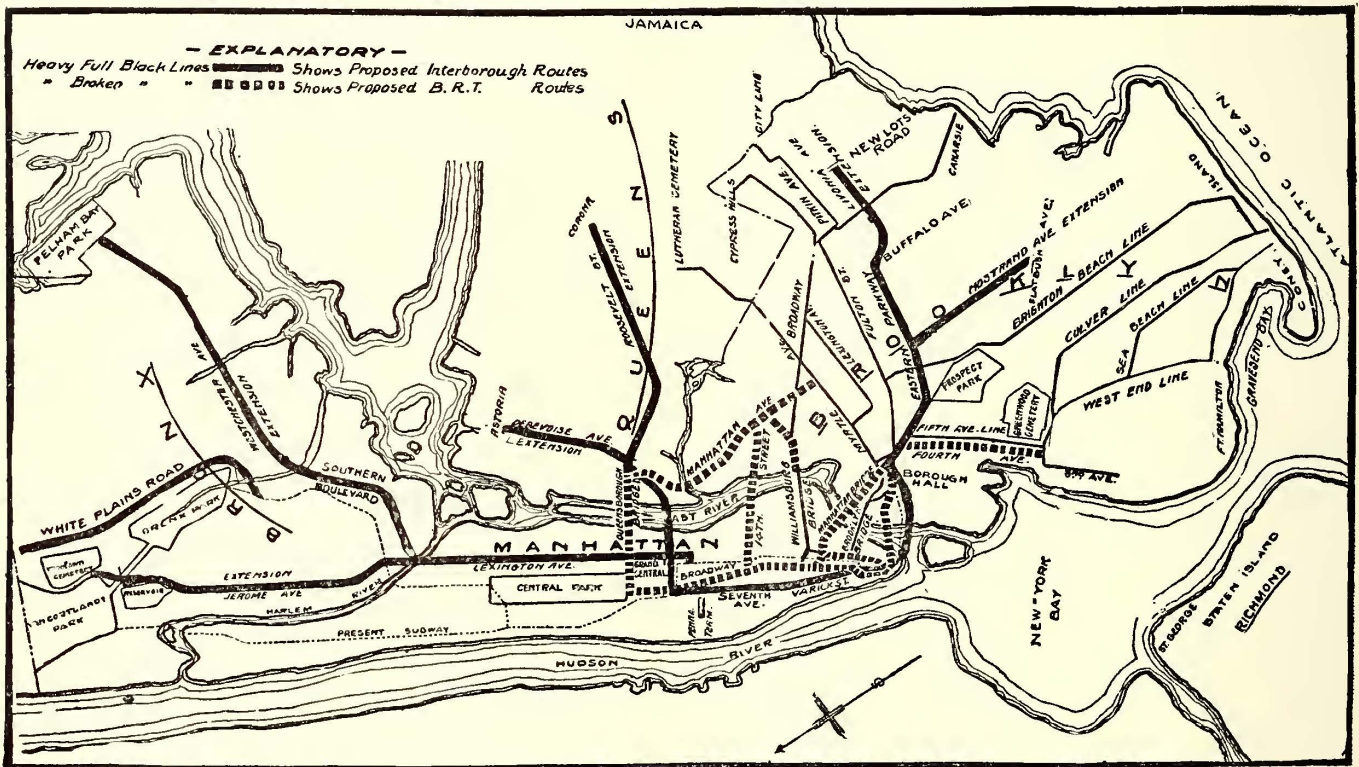
The special committee of the Board of Estimate and Apportionment of New York and of the Public Service Commission of the First District of New York presented to the Board of Estimate and Apportionment on June 13, 1911, its report with relation to the pending proposals submitted by the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company for the construction, equipment and operation of rapid transit lines in New York and upon the general transit situation in New York. The report contains eighty-nine printed pages. It includes the several proposals of the two companies, tables which show the cost of the projected lines under the adjustment proposed by the committee, cost of the lines under the proposal of the Brooklyn Rapid Transit Company, the cost under the proposal of the Interborough Rapid Transit Company, the comparative mileage and trackage to be operated at a 5-cent fare with universal transfers under the adjustment proposed, similar data under the pending proposals, tables

case both decline the city is to proceed to advertise for bids for the construction and operation of the triborough subway.

EXPENDITURES DEMANDED

The report estimates that the city will invest \$58,400,000 in the construction of lines offered to the Brooklyn Rapid Transit Company for operation, in addition to \$27,800,000 already contracted for or spent on the Fourth Avenue, Brooklyn, subway and the Centre Street Bridge loop. The Brooklyn Rapid Transit Company's contribution is \$26,400,000 for construction and \$24,000,000 for equipment, a total of \$50,400,000.

On the lines to be jointly constructed with the Interborough Rapid Transit Company the city proposes an outlay, including an allowance of \$3,000,000 for finishing the Steinway tunnel, of \$109,600,000. This is to be shared, half and half, by the city and the company, and in addition the Interborough Rapid Transit Company is to spend \$21,000,000 for equipment, making an aggregate expenditure for that company of \$75,800,000 and an aggregate expenditure by the city of \$123,200,000, or \$131,200,000 if \$8,000,000 additional allowance for the city's share of the



Map Showing Proposed Division of Rapid Transit Routes in New York

showing the probable period of construction, the population and density of areas tributary to the proposed routes, etc.

The report is unanimous. As had been predicted, it recommends a division of territory between the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company, and it is suggested that the city proceed with the construction of the proposed triborough rapid transit line laid out by the Public Service Commission if the companies fail to agree to the financial and operating conditions which are proposed in the report. In transmitting the report the conferees suggest that the time allowed for the reception of "definite answers from the companies be limited by resolution of the board, and that the final action of your board be taken at the earliest practicable date." The report will be considered by the Board of Estimate and Apportionment on June 21, 1911.

The report of the committee does not contain a map showing the lines allotted to the two companies, but from the printed schedules the New York Herald has prepared the accompanying map showing the proposed routes of each company.

The report provides the course to follow in case either or both companies decline to accept the routes offered. In general, these declined by one are to be offered the other, or in

real estate to be acquired be added in. The previous figure of \$123,000,000 included an allowance of \$10,000,000 for the proposed South Brooklyn lines.

The total outlay, exclusive of real estate, which cannot be estimated definitely, would be, if all lines are included:

	Construction.	Equipment.	Total.
By the city.....	\$131,200,000		\$131,200,000
By the Interborough.....	54,800,000	\$21,000,000	75,800,000
By the Brooklyn Rapid Transit..	26,400,000	24,000,000	50,400,000.
Total.....			\$257,400,000

Upon the basis of figures furnished by the officials of the city, the amount of available credit, above the constitutional margin of indebtedness of the city, during the next five years would be as follows:

Margin on June 30, 1911, general.....	\$15,000,000
Special credit for transit purposes on June 30, 1911, reserved under the recent constitutional amendment exempting self-supporting investments.....	60,000,000
Ten per cent of the additional assessed valuation of the city, becoming effective July 1, 1911.....	80,000,000
Ten per cent of the estimated increase of assessed valuation during the four years following.....	120,000,000
Proportion of the current city debt paid annually through taxation.....	50,000,000
Total.....	\$235,000,000

CONCLUSIONS OF THE COMMITTEE

The enumeration of the conclusions of the conferees follows in part:

"That the location of particular routes should be determined by the city, for the city's reasons, and not necessarily to conform to plans proposed by operating companies.

"That the occupation of lines in the hands of private operators should be kept within the city's control, and that the city should always have the power to retake the component parts of a system capable of independent operation at any time that it may deem such a measure necessary.

"That the city should have a full and fair share in all profits derived from the operation of new lines not only as a matter of the rightful enjoyment of the fruits of its own franchises, but as a means of hastening the release of its self-supporting investments from the constitutional debt limit and of the construction of additional transportation facilities.

"That the actual operation of the lines should continue under strict control and that the contracts for operation should embody not only the essential provisions of the Public Service act, but such other guarantees of the character of equipment furnished or the adequacy of operating service as the city may exact.

PROPOSED OPERATING TERMS

"That the rate of fare for one continuous ride over any part of the system operated by a single operator, including transfers, shall be 5 cents.

"That all contracts for the operation of lines title to which is vested in the city, whether such lines be constructed by the city or by the company, or upon a basis of division of cost between the city and the operator, shall fix the term of the lease at forty-nine years from the date of beginning of operation; except that the so-called bridge loop lines in Manhattan, if the contract for their operation is given to the Brooklyn Rapid Transit Company, may be leased for twenty years, with the privilege of renewal, upon an adjustment of terms, for twenty years in addition.

"That the city retain its right to take over, after ten years of operation, if it so elects, the line or lines covered by any forty-nine-year operating contract upon the payment by the city of the amount of the operator's money investment, if any, in construction, plus 15 per centum—which total sum shall decrease as the term continues and the investment is amortized—and the then reasonable value of the equipment attaching to the line or lines.

"That the city, in the event of any such recapture, may, upon its option, either pay from its own funds the amount required to reimburse the operator, or require a transfer of lines to a second operator upon the payment of the necessary amount directly by such other operator."

DIVISION OF PROFITS

"That the receipts and operating expenses of all lines operated under the new contracts shall be ascertained as follows: Receipts shall consist of the value of the tickets collected at stations, miscellaneous earnings from stations, a pro rata of advertising and other general receipts. The fixed cost of operation shall include: Station expenses, maintenance of way and structure, damages for accidents, and taxes, if any, attaching to the particular line.

"All other operating expenses, divided on a cost-per-passenger basis—or other basis equally acceptable to the city—to be determined according to unit costs on the entire system for a single fare, as follows: Transportation costs; maintenance of equipment, renewals and depreciation; cost of power; general and administration expenses, and general taxes, if any.

"That the net profits derived from the operation of all lines shall be divided equally between the city and the operator, after provision has been made for carrying charges in the following order:

"(1) The actual annual charges of the operator for carrying the cost of equipment; with provision for a sinking fund not to exceed three-fourths of 1 per centum per annum to meet obsolescence.

"(2) The actual annual charges of the operator for carrying any portion of the cost of construction not met from the funds of the city; with provision for a sinking fund thereon (including brokerage charges, not to exceed 3 per cent) of not more than 1 per centum per annum.

"(3) Interest on bonds issued by the city to defray costs of construction or costs of real estate or easements, which provision for a sinking fund is not to exceed 1 per centum per annum; provided,

"(4) That if the gross income in any year, after providing for operating charges, shall be insufficient to cover interest and sinking fund upon the operator's bonds, the deficit for such period shall be borne by the operator solely; and provided further,

"(5) That if the gross income in any year, after providing for all charges, including interest and sinking fund on the operator's bonds, shall be insufficient to meet the interest and sinking fund upon the city's bonds, the deficit sustained for any such period shall be treated as cumulative and be a charge in the city's favor against future profits, to be made good before any equal division of profit shall proceed between the city and the operator; and

"(6) All of the city's proportion of profits remaining after the payment of operating expenses and carrying charges, and all the operator's proportion of such profit, over and above an additional allowance of 3 per cent annually upon his total investment in construction and equipment, shall be applied to the reduction of deficits arising from the operation of extensions, so long as such deficits exist, before the further division of profit proceeds.

OPERATION OF EXTENSIONS

"That each contract shall contain a clause under which the operator agrees to operate additional lines as part of the single fare system, whether built now or hereafter, upon the following conditions:

"That such new line, whenever accepted as part of the general system by both the city and the operator, shall be governed by and included in all of the general provisions of the contract with relation to operation and the division of profit and loss;

"That where such new line is required by the city, but not accepted by the operator as an original line, it shall be operated as part of the general system, but carried on a separate financial basis, with separate accounting of receipts and operating expenses; and

"That the deficits on extensions operated separately shall be treated as cumulative and discharged, so far as practicable, from the surplus receipts of the general system, as heretofore provided."

TERMS APPLYING TO THE BROOKLYN COMPANY

In the case of the Brooklyn Rapid Transit Company it is provided,

"That, in lieu of all earnings on its existing lines, the company reserves to itself annually, before the payment of interest and sinking fund charges either upon its own or the city's bonds for new construction and equipment, a sum representing its net profits from operation of the existing lines included in the agreement during the year ending June 30, 1911, proper deductions having been made for current depreciation; all receipts of the existing lines above the sum so stipulated to be pooled with the receipts of the city-built lines, for distribution in accordance with the general terms agreed upon.

"That the company incorporate with its existing lines, in such manner as the Public Service Commission may approve, such subsidiary lines as it now holds under lease, and that no allowance be made under the head of operating expenses for further rental of any such leased lines."

The workmen's compensation department of the National Civic Federation has sent to the Governor of each State recommendations for improvement in State inspection of factories in the interest of prevention of accidents, and its committee on that subject is now working upon a "model safety act" for uniform legislation.

RAILINGS AT BOSTON ELEVATED STATIONS

A report has just been rendered by the Massachusetts Railroad Commission to the Legislature on the subject of the proposed installation of railings at stations of the Boston Elevated Railway. The commission was instructed on April 20 by the Legislature to investigate this subject. Its conclusions are that it is inadvisable at the present time to order the installation of such railings. The subject was given careful consideration and some of the conclusions are of general interest.

Among other things the board says: "Investigations here and elsewhere and a careful study of traffic conditions upon the platforms of elevated, subway and tunnel stations tend to show that the likelihood of injury sustained by falling or being pushed off the platforms into the pit is very remote. Experience of other cities as well as Boston confirms this view. On the other hand, it is of course possible that extreme and unusual conditions, arising from panic among passengers upon crowded platforms, might result in accidents by falling into the pit. The practical question, therefore, is whether all platforms should be protected by guard rails solely as an element of safety. The installation of guard rails would in itself introduce to some degree an element of danger, by reason of their proximity to the cars and also by tending to congest traffic in the spaces where the guard rail must of necessity be open to move traffic. This situation would be especially true with respect to open cars in the subway. From these facts the board concludes that guard rails have been installed as a traffic device more than as a safety device."

Testimony secured by the board shows that only fifteen people have received serious injury at these points in Boston since the opening of the subway and elevated systems in that city. Vice-president Sergeant estimates that the total number of persons using these stations during this time was 1,364,956,732, so that the proportion of those injured to the total number carried is 1 to 97,496,909. A list of serious accidents indicates that of the fifteen at least eight were suicides or attempted suicides.

Mr. Sergeant also included in his testimony a letter from H. A. Pasho, superintendent of the company, stating that in his tour of inspection of transportation systems abroad with General Bancroft in 1904 they found that railings were not used on the platforms of the European rapid transit lines inspected. Such railings are employed at a few of the elevated and subway stations in New York, but Mr. Pasho said he believed that the railings at the Forty-second Street subway station prolonged rather than decreased the length of the stops.

MEETING OF EXECUTIVE COMMITTEE OF MANUFACTURERS' ASSOCIATION

A special meeting of the executive committee of the American Electric Railway Manufacturers' Association was held at the Railroad Club in New York on June 9. At this meeting Henry C. Ebert, of the Cincinnati Car Company, was elected to fill the vacancy on the executive committee caused by the retirement of K. D. Hequembourg. Mr. Hequembourg also occupied the position of vice-president in charge of exhibits, but no appointment to this vacancy has yet been made.

Secretary Keegan presented a preliminary draft of the proposed exhibit space on the pier for the convention. The draft was approved and the secretary was instructed to issue notices to the member companies of the association in regard to applications for space. This notice will be issued from the office of the association soon. It was decided by the committee that applications should be requested by June 30.

The committee also authorized the president to appoint a committee on transportation to consist of five members. This committee was subsequently announced by President Castle and will consist of Messrs. Baker, Peirce, Martin, Sisson, Ebert and Blewett.

NEW COMMITTEES OF CENTRAL ELECTRIC RAILWAY ASSOCIATION

Secretary Neereamer, of the Central Electric Railway Association, has issued to the members of the association a list of the 1911 committees. The list is being sent in such form that it can easily be inserted in the "Brown Book" of the association. The personnel of the committees follows:

Standing Auditing.—Walter Shroyer (chairman), auditor Indiana Union Traction Company; L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company; E. L. Kasemeier, auditor Ohio Electric Railway.

Interchangeable Mileage Ticket.—F. D. Norviel (chairman), G. P. & F. A. Indiana Union Traction Company; W. S. Whitney, G. P. & F. A. Ohio Electric Railway; O. H. Murlin, G. P. A. Dayton & Troy Electric Railway.

Interline Baggage.—C. O. Sullivan (chairman), T. M. Western Ohio Railroad; R. W. Waite, treasurer Louisville & Northern Railway & Lighting Company; O. H. Murlin, G. P. A. Dayton & Troy Electric Railway.

Joint Passenger Tariffs.—W. S. Whitney (chairman), G. P. & F. A. Ohio Electric Railway; F. D. Norviel, G. P. & F. A. Indiana Union Traction Company; C. J. Laney, T. M. Toledo, Bowling Green & Southern Traction Company.

Joint Freight Tariffs.—L. D. Johnson (chairman), G. F. A. Dayton & Troy Electric Railway; A. A. Kartholl, G. P. & F. A. Ft. Wayne & Northern Indiana Traction Company; C. B. Kleinhans, auditor Toledo & Indiana Traction Company; S. Ridlen, G. P. & F. A. Indianapolis, Crawfordsville & Western Traction Company; C. A. Floyd, G. P. & F. A. Grand Rapids, Holland & Chicago Railway.

Insurance.—H. N. Staats (chairman), American Railway Insurance Company; F. W. Coen, G. M. Lake Shore Electric Railway; H. B. Clegg, president Dayton & Troy Electric Railway.

Lightning Arresters.—Edward Heydon (chairman), superintendent O. H. C. Terre Haute, Indianapolis & Eastern Traction Company; F. T. Bundy, M. M. Ohio Electric Railway; Fred Heckler, M. M. Lake Shore Electric Railway; C. E. Morgan, G. M. Indianapolis, Crawfordsville & Western Traction Company; H. D. Murdock, superintendent Indianapolis & Louisville Traction Company.

Compensation for Handling United States Mail.—A. W. Brady (chairman), president Indiana Union Traction Company; F. W. Brown, G. P. & F. A. Michigan United Railways; George Whysall, receiver Columbus, Marion & Bucyrus Railroad; W. A. Carson, G. M. Evansville Railways.

Publicity.—George S. Davis (chairman), *Electric Traction Weekly*; L. E. Gould, *ELECTRIC RAILWAY JOURNAL*; E. B. Grimes, vice-president Ohmer Fare Register Company.

Standardization.—H. H. Buckman (chairman), M. M. Louisville & Northern Railway & Lighting Company; Walter Silvas, superintendent equipment Michigan United Railways; W. H. Evans, S. M. P. Indiana Union Traction Company; F. J. Foote, M. M. Ohio Electric Railway; E. Youngs, M. M. Detroit, Monroe & Toledo Short Line Railway; F. R. Fox, M. M. Toledo & Indiana Traction Company; L. M. Clark, M. M. Terre Haute, Indianapolis & Eastern Traction Company; R. N. Hemming (secretary), G. M. Ohio & Southern Traction Company.

Subjects.—George Whysall (chairman), receiver Columbus, Marion & Bucyrus Railroad; H. A. Nicholl, G. M. Indiana Union Traction Company; C. D. Emmons, G. M. Chicago, South Bend & Northern Indiana Railway; J. Jordan, G. M. Cleveland, Painesville & Eastern Traction Company; G. W. Parker, G. F. A. Detroit, Monroe & Toledo Short Line Railway; C. O. Sullivan, T. M. Western Ohio Railroad; Will H. Bloss, Ohio Brass Company.

Official Interurban Map.—G. M. Patterson (chairman), T. M. Toledo & Chicago Interurban Railway; J. H. Crall, G. P. & F. A. Terre Haute, Indianapolis & Eastern Traction Company; O. H. Murlin, G. P. A. Dayton & Troy Electric Railway;

C. C. Trees, auditor Kokomo, Marion & Western Traction Company; W. S. Whitney, G. P. & F. A. Ohio Electric Railway.

Official Interurban Guide.—C. O. Sullivan (chairman), T. M. Western Ohio Railroad; W. S. Whitney, G. P. & F. A. Ohio Electric Railway; J. H. Crall, G. P. & F. A. Terre Haute, Indianapolis & Eastern Traction Company; F. D. Norviel, G. P. & F. A. Indiana Union Traction Company; R. J. Thompson, T. D. Indianapolis & Louisville Traction Company.

Booster.—F. D. Norviel (chairman), G. P. & F. A. Indiana Union Traction Company; C. O. Sullivan, T. M. Western Ohio Railroad; J. H. Crall, G. P. & F. A. Terre Haute, Indianapolis & Eastern Traction Company; O. H. Murlin, G. P. A. Dayton & Troy Electric Railway; J. H. Pound, G. P. & F. A. Benton Harbor-St. Joe Railway & Light Company.

APPOINTMENT OF INSURANCE EXPERT BY AMERICAN ELECTRIC RAILWAY ASSOCIATION

President Arthur W. Brady has issued the following announcement to member companies regarding the appointment of Henry N. Staats as insurance expert of the American Electric Railway Association:

"Your attention is called to the fact that Henry N. Staats, of Cleveland, has been appointed expert on fire insurance of the American Electric Railway Association. The duties of the expert will be to advise and assist such member companies as may desire to avail themselves of his services on all subjects relating to fire insurance, including forms of policies, appraisals of property, schedules of rates, the elimination of unnecessary commissions, the construction and improvement of properties with a view to the lessening of fire hazards, and the adjustment of losses, and to represent member companies, upon request, before inspection and rating bureaus. The expert will also, in connection with the committee on insurance, have in charge the gathering of insurance data and the distribution of such information in connection with fire insurance matters as may seem desirable. This work will, so far as possible, be done through the office of your secretary. No new expense to the treasury of the association, except for additional printing, postage and other incidental matters, will be entailed. This appointment represents a new departure on the part of the association, and has been made only after full discussion and deliberation. Recent movements in the insurance field have seemed to make it important that the association take immediate action in the direction stated. It is the hope and belief of your officers and executive committee that the appointment will bring about results of practical benefit to the member companies. Every member company has the right, at its option, to avail itself of the services of the expert upon all matters relating to the insurance and protection of its property against fire, the basis of compensation in such case to be as follows:

(a) In the case of companies having annual gross receipts of \$500,000, or less, a payment by the company of \$50 a year, payable quarterly, plus railway fare of expert and assistants.
(b) In the case of companies having annual gross receipts of more than \$500,000 a payment by the company of \$10 per year for each \$100,000 of gross receipts, payable quarterly, plus railway fare of expert and assistants.

"You are earnestly requested to co-operate by replying promptly to such requests for data as may be sent to you. No data will be requested that are not regarded as necessary for the accomplishment of the desired ends. The first essential to securing results in the way of reducing the cost of insurance and the losses by fire is accurate information on a broad scale. This information is already in the hands of the insurance companies with which we deal, and we must be at a decided disadvantage in our negotiations with them unless we also have it. There is good ground for the belief that there is no field of electric railway work where more valuable results may be produced by co-operation than in that of insurance and protection against fire."

A PROBLEM OF THE TROLLEY RETURN CIRCUIT

In a recent Franklin Institute paper Dr. C. P. Steinmetz said that the electric railway presents an unexplored phenomenon of every-day occurrence. Referring to the case of a 500-volt direct-current system, he said that while the car passes along the track the current flows from the wheels down into the rails, and then in the rails to the station. At the first contact point the current enters the rail from the wheel. To the left of this point it flows toward the left. To the right of the first contact point it is supposed to flow toward the right, and at this contact point the current in the rail thus is supposed to reverse. However, the current cannot instantly reverse in the entire rail section, but the same screening effect of the magnetic field in the conductor which causes unequal current distribution with an alternating current makes it impossible for the current inside of the conductor to reverse instantly; and in the first movement the reverse current thus flows only on the very top surface of the conductor, and only gradually penetrates deeper into the conductor, and before the current flows uniformly throughout the entire rail section in the new direction the car has moved hundreds or even thousands of feet. Thus the current distribution in the rail behind the moving car in the successive sections can be considered as flowing in an area parallel to the contour of the rail and gradually increasing in thickness. The obvious result is an increase of the effective resistance of the rail return, which immediately, behind a high-speed car, may be very considerable. Dr. Steinmetz remarks that this phenomenon, which occurs hourly all over the country, has never been investigated, and its existence has not even been recognized.

NEWSPAPER HANDLING ON THE DETROIT UNITED LINES

The freight and express department of the Detroit United Railway obtained revenue last year amounting to more than \$1,000 a month from handling newspapers on the suburban lines within a radius of 50 miles of Detroit. No newspapers are handled on city cars and they are carried only on express and local suburban cars. Effort is made to confine the newspaper handling to the express equipment, but at certain times of the day newspapers must be carried on local passenger cars because of the need for fast transportation. The newspaper publishers club together and on every Sunday morning charter four special cars to distribute their large Sunday editions over four separate branches of the Detroit United system. Within the city of Detroit newspapers are distributed by automobiles.

A few years ago the public entered a protest with the Michigan Railway Commission against motormen handling the newspapers, and so now the papers are carried only to stations where the company has a regular waiting room and an agent who can look after the unloading. If the newspaper publishers wish papers carried to other stops they put a messenger on the car and pay his fare. This newspaper service is given the year round.

The Manchester (Eng.) Tramways committee recently adopted the estimates for the coming year. In the year just closed 17,367,200 car miles were recorded, while 17,400,000 are estimated for the coming twelve months. Last year's traffic expenses were estimated at £228,375, and are now placed approximately at £227,741, while the revenue from traffic was estimated at £795,225, and is now expected to produce £807,265. The net income from parcels traffic is put down at £2,423. The expected cost of the department for the present year is estimated at £810,800, including the payment of £75,000 to the city fund in relief of the rates; this being a sum similar to that paid over last year. The capital account estimate for £78,000 in 1911-12, £56,000 of this being for permanent way, new lines, etc. Last year's estimate under this head was £24,550 and the expenditure £22,605.

INDICATING STEAM FLOW METER

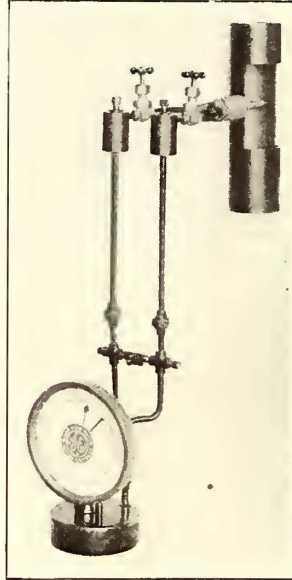
The new FS-2 steam flow meter developed by the General Electric Company provides a means for determining the efficiency in the method of stoking and for ascertaining the correct feed-water regulation. It also enables the equalization of load on individual boilers, the determination of the loss in efficiency of a boiler due to scale, and the discovery of internal leaks in boilers as shown by the difference in the water input and the steam output. The meter indicates the steam generated by the boiler plant in pounds per hour or in boiler horse-power. In the latter case the unit of calibration represents 30 lb. of steam per hour.

The complete apparatus consists of a nozzle plug of the type used with the other steam, air and water flow meters made by this company, the meter proper and the pipe connections between the nozzle plug and the meter. The nozzle plug is inserted in the steam pipe and the difference of pressure caused in the leading and trailing sets of orifices in the plug is communicated to the two legs of the U-tube in the meter, thereby causing the mercury in the well of the U-tube to rise in one of its legs to a height proportional to the difference of pressure. This leg of the U-tube contains a small float, which, resting upon top of the mercury, is carried up and down according to the fluctuations in velocity pressure communicated from the nozzle plug. The motion of the float is in turn transmitted by means of a silken cord to a pulley, the shaft of which carries a horseshoe magnet with its pole faces near and parallel to the inside of a copper plug screwed into the body of the meter. A similar magnet is attached to the pivoted end of the indicating needle with its pole faces near and parallel to the outside surface of the copper plug. Its axis is in line with the axis of the magnet on the pulley shaft, and the mutual attraction of the magnets compels them to move in unison, thus serving to transmit the motion of the mechanism inside the meter to the indicating needle on the outside without any mechanical contact between them. This method eliminates the troubles usually experienced with packed joints.

The meter can be calibrated for pressures ranging from 0 lb. to 250 lb. gage; for quality from 4 per cent moisture to 260 deg. Fahr. superheat and for pipe diameters of 2 in., 3 in., 4 in., 6 in., 8 in., 10 in., 12 in. and 14 in. Meters calibrated for pipes larger than 14 in. diameter are of special design and are made to order.

The meter can be installed without necessitating any changes in existing steam pipes. The nozzle plug is inserted in a small hole drilled and tapped in a straight vertical or horizontal run of pipe of at least twelve pipe diameters in length and connected with $\frac{3}{4}$ -in. iron piping to the meter. The latter may be located in any desired position, so long as it is kept below the nozzle plug, its distance from the nozzle plug being immaterial. The dial scale is 8 in. in diameter, marked on a white surface with heavy flow lines and large figures, for easy reading. A target of conspicuous size is provided for designating a certain flow on the scale. This target can be easily set from the outside.

The Washington Water Power Company, Spokane, Wash., has equipped its Hillyard line with pay-as-you-enter cars and proposes to establish service with cars of this type on its Broadway and Union Park lines in the near future.



Steam Flow Meter

ONE-SIDE CONVERTIBLE CARS FOR NORTHERN OHIO TRACTION & LIGHT COMPANY

The accompanying illustration shows one of the latest designs of one-side convertible cars built for the Northern Ohio Traction & Light Company, Akron, Ohio, by the G. C. Kuhlman Car Company. The new cars have a maximum seating capacity of sixty-five. The principal dimensions are as follows: Length over all, 44 ft. 6 in.; length of body, 35 ft. 6 in.; bolster centers, 23 ft. 6 in.; width over all, 8 ft. $5\frac{3}{4}$ in.; width over the sills, 7 ft. $11\frac{1}{4}$ in.; height from rail to sills, 2 ft. $8\frac{3}{4}$ in.; height from the sill to the trolley base, 9 ft. 8 in. The underframing and body are of wood, with artificial lumber



One-Side Convertible Car with One-Half of the Convertible Side Open

headlining and cherry interior trim. The bumpers are made up of angle irons. The sash fixtures are of the full convertible and drag sash types, with Forsythe Brothers cable fixtures and Pantasote curtain material. The seating is of rattan, and is composed of interchangeable stationary cushions and backs.

The bodies are carried on No. 27-F-1 trucks with 33-in. diameter wheels. These trucks are equipped with outside-hung Westinghouse No. 101-B motors. Other equipment on this car includes Peacock hand brakes, Ohio Brass Company's sanders, Eclipse fenders, Neal headlights, Mason safety treads and the Peter Smith hot-blast heaters.

LOCKING DEVICE FOR WIRE GRIP

The Western Electric Company has recently placed on the market an improved "Buffalo" wire grip with a special locking feature. In Fig. 1 the new grip is shown with the jaw held open by the locking device. A turn of the handle locks the jaw

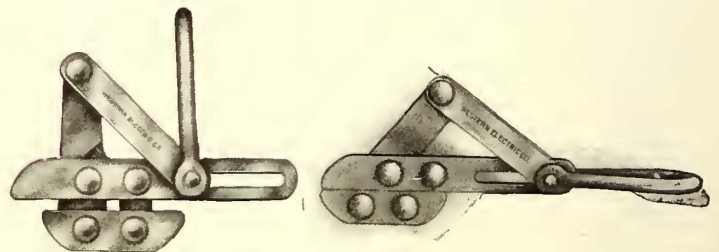


Fig. 1—Grip Jaw Held Open by Lock

Fig. 2—Grip Jaw Closed in Position

in any position and enables the lineman to insert the wire in the grip easily and quickly. When the handle is pushed down, as shown in Fig. 2, the wire is held in a tight grip. The grip is made in various sizes for handling both bare and insulated wire, and can be supplied both with and without pulleys for use as a "come-along."

A device which prevents a car from being started when a passenger is mounting or dismounting is being tested on the lines of the Portland Railway, Light & Power Company, Portland, Ore. It consists of a hinged step which depresses about $\frac{1}{2}$ in. when a weight of from 5 lb. to 10 lb. is placed upon it. This breaks an electric circuit connected with the contactor so that the contactor fails to close. The device is arranged, however, so that the motorman is able to reverse his car regardless of the condition of the step. The device has been patented by local inventors.

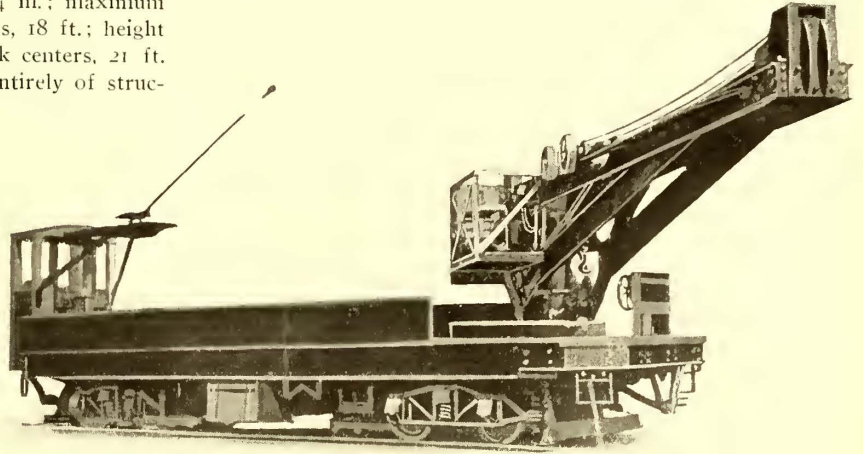
DERRICK CAR FOR THIRD AVENUE RAILROAD, NEW YORK

The accompanying illustrations show the 6-ton work and derrick car which the Third Avenue Railroad has just received from the McGuire-Cummings Manufacturing Company, Chicago. Eli T. Ryder, engineer maintenance of way, Third Avenue Railroad, was responsible for the general design of the car and crane.

The general dimensions of this car are as follows: Extreme height over highest part of derrick, 11 ft. 2¾ in.; maximum swing of derrick, 20 ft. 8½ in.; effective radius, 18 ft.; height over trolley board from rail, 10 ft. 9 in.; truck centers, 21 ft. 5 in. The underframe of the car is built up entirely of structural steel of commercial shapes. The side sills between the bolsters and the extension beyond the bolster on the derrick end are of two 15-in., 33-lb. riveted channels set back to back, having a 7-in. x ¾-in. cover plate on the top and bottom. The bolsters are two 15-in., 33-lb. channels set back to back with four 7-in. channel spacers between and a 15-in. x ¾-in. cover plate riveted on the top and bottom and connected to the side sills with angles. The end sills are 10-in., 15-lb. channels. The end cross beam which carries the 10-in., 15-lb. center sills, which extend from the bolster to the end sill to carry the cab, is a 10-in., 25-lb. I-beam. The floor beam carriers, four in number, are 6-in., 8-lb. channels which support the five 4-in. x 6-in. yellow pine floor stringers. The floor beams are secured to the side sills with angles. The end sills are riveted to the side sills with a 15-in. x ¾-in. splice plate on the inside and with a 7½-in. x ¾-in. splice plate on the outside. The center plates fastened to the bolster are of cast steel. The side bearings are of 4-in. x 1⅞-in. wrought iron, of a suitable radius to allow the car to round a 35-ft. radius curve. The flooring of the car is 2-in. yellow pine. The body is mounted on McGuire-Cummings M. C. B. trucks.

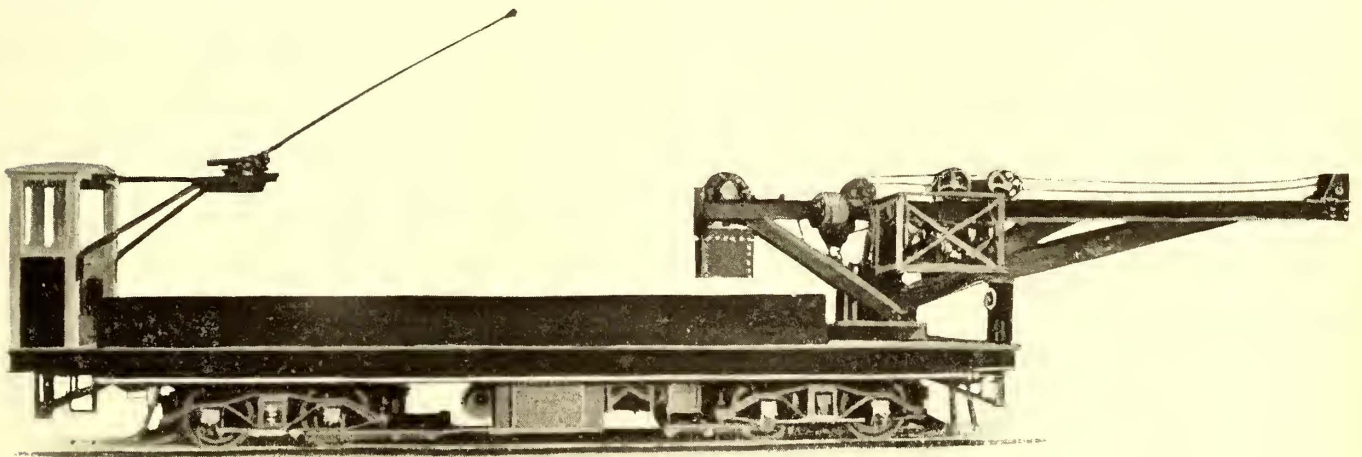
National Brake Company's hand brake, which is used in addition to the air-brake equipment. Two 20-ton standard locomotive jack screws, which are arranged to fold up under the car when not in use, are located on the end under the derrick.

The car is equipped with an incandescent headlight on each end of the car, gongs, steps, grab handles, sand boxes and wheel guards. A tool box 4 ft. long is placed under the car at the center. It runs the full width of the car and has a door and lock at each end.



Derrick Car for Third Avenue Railroad

The derrick is of the Whiting Foundry Equipment Company's standard make. It is of the three-motor electric pillar type, having a capacity of 6 tons, and an effective radius of 18 ft. The extreme radius of the boom is 20 ft. 8½ in. and the distance from the highest point of the hook when raised to the base of the pillar is 5 ft. 7 in. The crane is equipped with 500-600-volt d.c. motors and controllers. It is supplied with flat bar gear guards on all exposed gears. The worm gearing is covered with cast-iron gear cases. The operator's platform is near the counterweight box. An 11-hp motor is used for hoisting



Derrick Car for Third Avenue Railroad, New York, with the Derrick Down

The car is equipped with sideboards which are 24 in. high. The stakes on the side of these boards are arranged so that when the car is on a curve the maximum clearance is within the required width of 8 ft. 3½ in.

The cab for the electrical equipment on the end of the car opposite the derrick is of rectangular shape, having an opening in the back without a door. The front and side of the cab have drop sash. The cab posts are protected with 4-in. x 5/16-in. angles. There extends from the rear of this cab a running board braced by angle irons to carry the trolley board. A five-light lamp cluster is carried under the trolley board.

Each end of the car is equipped with a drawbar and the

and for the rack and swing a 3-hp motor, which will give the following speeds: For hoisting, 13 ft. per minute; rack, 40 ft. per minute; swing, 1½ r.p.m. The pillars of the crane are cast iron and the framework is of structural steel. The crane can rotate in a complete circle. A slip arrangement is provided to prevent breakage of parts through the sudden stopping of gearing.

The Supreme Court of the United States has upheld the constitutionality of the city ordinance passed by the Council of New York which prohibits the company which operates the buses on Fifth Avenue from carrying outside advertisements.

ELECTRIC RAILWAY LEGAL DECISIONS

CHARTERS, ORDINANCES AND FRANCHISES.

Indiana.—Eminent Domain—Right to Condemn Land.

A corporation organized under the Voluntary Associations Act of March 9, 1901 (Acts 1901, Ch. 127), as amended by act March 7, 1903 (Acts 1903, Ch. 93), providing for the organization of corporations generally, authorized to promote and operate a street and interurban railroad, and to promote plants for the creation and distribution of electric and other heat, light and power, was authorized to condemn land required for railroad purposes by Acts 1901, Ch. 207, providing that any street railroad company heretofore or hereafter organized under the laws of the State of Indiana desiring to construct or acquire any street railroad, or interurban street railroad, may condemn real estate, etc. (*F. W. Cook Inv. Co. v. Evansville Terminal Ry.* (No. 21,771), 93 N. E. Rep., 279.)

Indiana.—Franchises—Construction—Specific Performance—Indefinite Contracts.

An assignment of a franchise to operate a street railway within C., a city, recited as a consideration that the assignees would construct an electric line to, within and into contiguous territory beyond C., and also a line connecting T. and C. It further recited an "intention" of the assignees to construct another interurban line. Held, that the assignees are not required to build the line recited as "intended" to be built.

An obligation of assignees of a street railway franchise to build "into contiguous territory beyond" a city is too indefinite to be specifically performed. (*Morey et al. v. Terre Haute Traction & Light Co. et al.*, 93 N. E. Rep., 710.)

Michigan.—Jurisdiction of Federal Courts—Diversity of Citizenship—Suit by Mortgagee—Rights Acquired by Franchise—Power of City to Revoke.

A mortgagee of all of the property of a street railroad company as trustee for bondholders has a right of action in equity in its own right to enjoin a city from unlawfully depriving the company of its franchise and to compel the company to comply with all lawful ordinances and regulations of the city essential to preserve the franchise and, where it is a citizen of another State, may maintain a suit therefor in a federal court against both the city and company which are citizens of the State in which the suit is brought, its interest, while in some respects the same as that of the company, being separate and distinct therefrom, and such as it has the right to protect independently.

Under a franchise granted by a city to a street railway company which provided that, on default by the company, its rights should cease and be forfeited and the city might take possession of the streets and also of the tracks and cars of the company as security for the leaving of the streets in good condition, a forfeiture could not be declared *ex parte* by the city, but only judicially. (*Knickerbocker Trust Co. v. City of Kalamazoo et al.*, 182 Fed. Rep., 865.)

Missouri.—Ingress and Egress of Abutting Owners—Permitting Obstruction.

A city cannot authorize a street railroad so to use a street with its tracks and cars as materially to obstruct the right of ingress and egress of an abutting owner, thus constituting a private nuisance. (*Zimmerman v. Metropolitan St. Ry. Co.*, 134 S. W. Rep., 40.)

New York.—Regulation by Public Service Commission—Jurisdiction.

Laws 1907, Ch. 429, creating a public service commission to regulate the management and operation of carriers, does not confer authority on the commission to abate a nuisance affecting the health and comfort of the locality where a terminal freight yard of a railroad is located, since the power to abate such nuisance is conferred on the department of health, created by Greater New York Charter (Laws 1901, Ch. 466), with power to abate nuisances, defined to be whatever is dangerous to human life or detrimental to health or renders the air unwholesome, and providing that the powers shall be exclusively exercised by the department of health; for the commission cannot act concurrently on a subject within the jurisdiction of the department of health. (*People ex rel. New York, N. H. & H. R. Co. v. Willcox et al.*, Com'rs, 94 N. E. Rep., 212.)

Oklahoma.—Franchises in Streets—Exclusiveness.

An ordinance of a municipal corporation granting to a person or corporation authority to use the streets and highways of a city for the purpose of constructing and operating a street railway system confers privileges which are exclusive in their nature against all persons upon whom similar rights have not been conferred. Any person or corporation attempting to exercise such rights without legislative authority or sanction invades the private property of the person or corporation to whom such franchise has been granted and may be restrained at the instance of the owner of the franchise. (*Tulsa St. Ry. Co. v. Oklahoma Union Traction Co.*, 113 Pac. Rep., 180.)

Texas.—Contracts—Consideration—Consolidation—Liabilities.

Where the construction of a street car track over the tracks of a railroad company created a common danger, imposing an obligation of care on both the railroad and street railway companies, a contract between them that when the city required a watchman, extra guard, lights or gates the expense of maintaining them should be equally divided between the railroad company and the street car company was based on a sufficient consideration.

Where defendant street car company, on taking over all the property and franchises of a prior company except its right to be a corporation, undertook to assume all the debts of the company consolidated, it rendered itself liable under a contract of such company with the railroad company providing for the division of the cost of maintaining lights at a crossing of the street car tracks over the tracks of the railroad. (*Beaumont Traction Co. v. Texarkana & Ft. S. Ry. Co.*, 123 S. W. Rep., 124.)

Utah.—Regulation—Depots—Discrimination—Remedy.

Under ordinary circumstances no inherent power is vested in the courts to control a carrier in its determination of the number of depots or stopping places that it will establish or maintain, or in the selection of the places where it will establish and maintain them along its line of railroad, but the matter is for legislative regulation.

Where a carrier refuses permission to one person to enter or alight from its cars at a place where under similar circumstances it extends the privilege to others the carrier is guilty of discrimination against the former and the court may by mandamus prevent it. (*State ex rel. Skeen v. Ogden Rapid Transit Co.*, 112 Pac. Rep., 120.)

LIABILITY FOR NEGLIGENCE

California.—Negligence—Contributory Negligence—Jury Questions.

One in great peril, where immediate action is necessary to avoid it, is not required to exercise that carefulness required of a prudent man under ordinary circumstances, and the reasonableness of his effort to escape injury after discovering the danger is for the jury. (*Hoff et ux. v. Los Angeles-Pacific Co.*, 112 Pac. Rep., 53.)

Georgia.—Electricity—Companies Liable—Joint Liability.

Where the wires of an electric railway company and those of a telephone company are strung to the pole of the former, and the wire of the latter breaks and falls to the street below across the wire of the former, therefrom becoming charged with a high current of electricity, and a horse, while being driven along such highway with due care, is killed because of contact with such wire, both companies are jointly liable for such damage where it is the result of the concurring negligence of the two companies and would not occur in the absence of negligence on the part of either. (*Eining v. Georgia Ry. & Electric Co. et al.*, 66 S. E. Rep., 237.)

Illinois.—Negligence—Danger from Machinery—Attractive Nuisances.

The owner of unguarded premises which contain dangerous machinery attractive to children holds out an implied invitation to children so as to be liable for injuries to them therefrom, though they are technical trespassers. (*Strollery et al. v. Cicero & P. St. Ry. Co. et al.*, 90 N. E. Rep., 709.)

Illinois.—Passengers—Injuries—Contributory Negligence—Intoxication.

That a street car passenger was intoxicated would not

prevent a recovery for injuries caused by derailment, his intoxication not contributing thereto.

In a street car passenger's action for personal injuries caused by a derailment a request to charge that if plaintiff was negligent in riding upon the front platform of the car he could not recover was properly refused where plaintiff got upon the platform by the conductor's direction, which fact the instruction ignored. (*Coburn v. Moline, E. M. & W. Ry. Co. et al., 90 N. E. Rep., 741.*)

Illinois.—Right to Use of Streets.

Though street cars have a superior right of way to general travel on the streets at places other than crossings, the general public have the right to use and travel on the entire street, including that portion of it on which the car tracks are laid, and are in no sense to be treated as trespassers for so doing. (*90 N. E. Rep., 209.*)

Iowa.—Injury to Person Boarding Car—Duty of Conductor—Excessive Injuries—Personal Injuries.

If a street car conductor stood at the partly open gates while a person was attempting to open them so that he could enter, and saw his efforts, it was the conductor's duty, when the car started with the person's arm caught between the gates, to signal the motorman to stop the car, and if he knew that the car had been stopped for the purpose of permitting the person to enter it and that the gates were only partially open, it was his duty to see that they were released and opened so that the person could enter without danger, and a failure in that regard would be negligence.

Plaintiff, while attempting to board a street car, was injured, resulting in the loss of his left foot. At the time of the injury he was twenty-eight years old. Prior to his injury he was strong and healthy, able to work every day, and was earning \$15 a week at his trade as a furniture upholsterer. His injury did not totally disable him. Held, that a recovery of \$12,500 was excessive, and should be reduced to \$6,000. (*Blades v. Des Moines City Ry. Co., 123 N. W. Rep., 1057.*)

Kentucky.—Personal Injuries—Punitive Damages—Excessive Damages.

Where street car men knowingly operated on a steep incline a car with a useless brake, and relied entirely on reverse electric current, and a collision occurred because the current was cut off while the car was descending the incline, a verdict awarding \$1,000 as punitive damages was not excessive. (*Lexington Ry. Co. v. Johnson, 122 S. W., Rep., 830.*)

Massachusetts.—Admissibility of Accident Blank Evidence of Person Since Deceased.

Defendant wrote a letter to R., July 25, 1905, inclosing a blank to be filled up by him, containing his statement of the facts surrounding an accident. R. filled and returned the blank on the succeeding day. Plaintiff brought suit on March 7, 1906, and before trial R. died. At the trial defendant offered the statement signed by R., in which he stated the time and place of the accident, that he saw the same, the speed of the car alleged to have caused it, and how it occurred. Held, that the paper, taken in connection with the manner of obtaining it, showed that the answers were made on R.'s personal knowledge, and that it was admissible, under Rev. Laws, Ch. 175, Sec. 66, providing that the declaration of a deceased person shall not be objectionable as hearsay if the court find that it was made in good faith, before the commencement of the action, on the declarant's personal knowledge. (*White v. Boston Elevated Ry. Co., 94 N. E. Rep., 278.*)

Massachusetts.—Running Board—Contributory Negligence—Injury to Licensee—Regulations—Waiver.

That plaintiff was riding on the running board of a street car when negligently injured does not necessarily preclude recovery by him.

A municipal fireman, permitted to ride free on the platforms of street cars, while riding on the running board of a car in violation of a known rule, was at most a licensee, to whom the company owed no duty except to refrain from intentionally injuring him.

A street car conductor cannot waive a rule prohibiting persons from riding on a running board. (*Twiss v. Boston Elevated Ry. Co., 94 N. E. Rep., 253.*)

Massachusetts.—Injury to Passenger—Negligence—Evidence.

Evidence in an action by a passenger for injuries received by slipping on the muddy step of the car while alighting held sufficient to sustain a finding that it was the duty of the conductor under the carrier's rules to clean the step and put sand or sawdust on it, whenever necessary, so as to render the company liable for injuries due to his failure so to do. (*Kingston v. Boston Elevated Ry. Co., 93 N. E. Rep., 573.*)

Massachusetts.—Master and Servant—Assumption of Risk—Latent Danger.

An experienced telegraph lineman does not assume the risk of injury from a splice negligently made by his employer in one of its cables, where nothing on the outside of the cable indicates any defect in the splice. (*Greene v. Boston Elevated Ry. Co., 93 N. E. Rep., 837.*)

Massachusetts.—Injuries to Passengers—Negligence—Evidence.

The constant starting and stopping of a car to avoid collisions with carriages crossing ahead of the car, or because of cars ahead of it, does not show negligence of the motorman in the operation of the car. (*Craig v. Boston Elevated Ry. Co., 93 N. E. Rep., 575.*)

Massachusetts.—Electricity—Care Required.

Electricity being a highly dangerous servant, those employing it are held to a correspondingly high degree of care in its use. (*O'Donnell v. Boston Elevated Ry. Co. Ford v. Same. Reid v. Same. 90 N. E. Rep., 977.*)

Massachusetts.—Standing on Front Platform—Contracts—Validity.

In an action under St. 1907, Ch. 392, for death of a street car passenger, evidence that plaintiff's intestate had ridden almost every day on defendant's car for twelve years, that he always stood on the front platform, even when there was plenty of room inside, and that he had knowledge of the signs erected and maintained in the front of the cars for more than a year prior to the accident, stating that passengers riding on the front platform did so at their own risk, was not admissible on the question of the due care of the intestate, since, the statute being penal in its nature, the lack of due care on his part was not material.

A street railroad cannot, by contract made in advance, exempt itself from the penalties provided by St. 1907, Ch. 392, for the death of a passenger. (*Jones v. Boston & N. St. Ry. Co., 90 N. E. Rep., 1152.*)

Massachusetts.—Concurrent Negligence of Carrier and Third Person.

Where an injury to a street car passenger resulted from the concurrent negligence of the motorman and the driver of a wagon, the passenger could recover from the street railway company. (*Doherty v. Boston & N. St. Ry. Co., 92 N. E. Rep., 1026.*)

Missouri.—Appeal and Error—Presentation of Questions in Lower Court—Physical Examination—Damages—Amount of Judgment—Excessiveness.

Where the court of its own motion selected a competent physician to make a physical examination of plaintiff, but refused to appoint the one suggested by defendant, if defendant desired to preserve a tangible objection, it should have presented its reasons and evidence showing the impropriety of the appointment made, and where it abandoned its attempt to procure an examination there was nothing left for the Court of Appeals to review.

In an action against a street railroad company for personal injuries, where plaintiff, aged thirty-eight, had suffered severely, but it was doubtful whether her kneecap had been fractured, and it was probable that her injuries would be limited to some stiffening of the knee and some lameness, a judgment for \$5,500 was excessive and should be reduced to \$3,500. (*Dent v. Springfield Traction Co., 129 N. W. Rep., 1044.*)

Missouri.—Injuries to Passenger Alighting from Car.

When plaintiff, a passenger on defendant street railroad's car, was promised by the conductor that the car would stop at a usual stopping place and on the car's slowing down stood on the step holding to the handrail, but through a sudden jerk of the car resulting from acceleration of speed was

thrown to the ground and injured, defendant was liable, plaintiff being entitled to rely on the conductor's invitation to be prepared to alight. (*Chalmers v. United Rys. Co. of St. Louis, 131 S. W. Rep., 903.*)

New York.—Elevated Roads—Personal Injuries—Question for Jury.

Plaintiff, a girl aged twenty, was seated with other girls at a window trimming hats. Defendant operated its elevated trains directly in front of the premises, with the tracks three or four feet from the window. While thus seated, plaintiff heard three loud reports and saw flame and smoke coming from under a train. The building shook, and the flame and smoke entered the room. All the operatives, including plaintiff, ran toward the stairs at the rear of the room, and in the confusion and panic plaintiff was thrown down the stairs, trampled upon and injured. The evidence showed that there was a defect in the electrical apparatus or in the handling thereof. Held, that the questions whether defendant's negligence was the proximate cause of the injury and whether plaintiff was guilty of contributory negligence were for the jury. (*Schachter v. Interborough Rapid Transit Co., 127 N. Y. Sup., 308.*)

Virginia.—Passengers—Carrier's Duty—Alighting Passengers.

A carrier owes to actual and constructive passengers a higher degree of care than to travelers at highway crossings.

That while crossing double tracks to a station shed in the night time an alighting electric railway passenger was struck by a train running in the opposite direction without headlight displayed or giving warning does not show contributory negligence on his part, as a matter of law, though he failed to look and listen after alighting from his train. (*Washington, A. & Mt. V. Ry. Co. v. Vaughan, 69 S. E. Rep., 1035.*)

Washington.—Crossing Accident—Contributory Negligence.

Plaintiff endeavored to drive over certain street car tracks at a crossing in front of an approaching car, and was struck before he got across. The track approaching the crossing was on a heavy down grade, and the car which struck him was from 100 ft. to a block away when he got on the track, and was approaching at the rate of 60 m. p. h., in violation of a city ordinance limiting the speed to 12 m. p. h. Held, that plaintiff had the right to assume that the car was under control, and when it was that far away that he would be in no danger, and was therefore not negligent as a matter of law. (*Nappli v. Seattle, R. & S. Ry. Co., 112 Pac. Rep., 89.*)

Washington.—Ejection of Passenger—Instructions.

In an action for the death of an intoxicated passenger because of his having been put off at a dangerous place, it appeared that he was permitted to alight upon a trestle along the shore of a lake, on a dark night where there were no guards or barriers, and that subsequently his body was found in the lake, and the court instructed that a common carrier of passengers is required under the law to exercise toward its passengers the highest degree of care and prudence practically consistent with the operation of its road in the carrying of persons and in letting them on and off its cars. Held, that the instruction was not erroneous as inapplicable to the issues. (*Bennett et al. v. Seattle Electric Co., 105 Pac. Rep., 825.*)

Washington.—Self-Serving Declaration—Conductor's Report of Accident.

In an action against a railroad for personal injuries from falling over a projection above the floor of a car, the report of the accident made in writing by the conductor of the car immediately after the accident and very soon thereafter given to defendant in compliance with its rules was inadmissible for defendant as being self-serving, being made for the very purpose of facilitating the defense to any action for injuries caused thereby. (*Conner v. Seattle R. & S. Ry. Co., 105 Pac. Rep., 634.*)

Washington.—Master and Servant—Liability of Master—Assumption of Risk.

A master is not answerable for dangerous situations of which he has no knowledge, or of which he cannot acquire knowledge by ordinary diligence, nor is he answerable for a failure to avoid peril that could not be foreseen by one in like circumstances by reasonable care.

A servant of ordinary intelligence and of experience in

sawmills and steel roller mills and of six years' experience as a lineman on electric current wires is chargeable with knowledge that sawing iron lugs creates iron dust, which will fly with the wind or will be thrown by the movement of the saw, and that such flying dust will enter the eyes when sufficiently near, and that such dust, entering the eyes, may result in serious injury, and he assumes the risk of any injury to the eyes caused by such dust flying into them when sawing the lugs on insulators carrying a trolley wire. (*Nordstrom v. Spokane & Inland Empire R. Co., 104 Pac. Rep., 809.*)

West Virginia.—Master and Servant—Who Are Fellow Servants?—"Passenger."

A servant employed to labor by the day in the power house of a railway company and who is furnished with a free pass under a rule of the company which entitles him to ride on any of the company's cars at any time and about his own business, during the continuance of his employment, is a "passenger" when riding either to or from his place of labor and not a fellow servant of the motorman in charge of the car, and is entitled to the same rights as a passenger for hire. (*Harris v. City & E. G. R. Co., 70 S. E. Rep., 859.*)

MISCELLANEOUS

Alabama.—Release—Disaffirmance—Grounds.

One cannot disaffirm a release of a claim for injury in an accident without returning money received thereunder, though asserting that the release covered a claim for money lost in the accident and not for the personal injury sued on.

A release binds, in the absence of fraud or misrepresentation inducing it, though given under an honest mistake as to its terms. (*Birmingham Ry., Light & Power Co. v. Jordan, 54 So. Rep., 280.*)

Indiana.—Witnesses—Privileged Communication.

The result of the personal examination of one injured in a street car accident by the company's physician in the performance of his duties was privileged, so that he could not testify as to the result of such examination in an action for such injuries. (*Louisville & S. I. Traction Co. v. Snead, 93 N. E. Rep., 177.*)

Massachusetts.—Passengers—Misconduct of Agents—Joint Torts—Discharge of One Tortfeasor—Effect.

One entering the subway station of an elevated railway company and paying his fare, with the intention of becoming a passenger, is lawfully on the premises; and if, while passing through the turnstile to take a car, its servants unlawfully molest him by physical restraint the company is liable for the injury.

Where a tort is joint and the person injured discharges one of the wrongdoers he may not hold the other.

Where the servant of a carrier, acting as a special police officer under St. 1898, Ch. 282, is not liable to one for false imprisonment or for assault and battery, or he has been released from liability, the carrier is exonerated from liability. (*Horgan v. Boston Elevated Ry. Co., 94 N. E. Rep., 386.*)

North Dakota.—Relation of Carrier and Passenger.

The relation of carrier and passenger may exist while the passenger is entering the car or vehicle and before he is seated therein. The fact that no ticket has been purchased does not necessarily prevent such relation arising. An implied acceptance may arise without the purchase of a ticket or other acceptance in express terms. (*Messenger v. Valley City Street & Interurban Ry. Co., 128 N. W. Rep., 1023.*)

Washington.—Refusal to Pay Fare—Breach of Contract—Excuse.

Though passengers on an electric railway were entitled to be carried to their destination for a 5-cent fare, and the company refused to carry them beyond a certain point, when they voluntarily left the car in which they were riding they ceased to be passengers and could only become such on another car by the payment of another fare.

That a number of persons boarded a car on which plaintiff was a passenger and demanded free transportation, which the railroad company was under no obligation to give them, and that the company's employees were unable to eject them because of their number, did not excuse a breach of the contract of carriage between the company and plaintiff. (*Leclair v. Tacoma Ry. & Power Co., 113 Pac. Rep., 268.*)

News of Electric Railways

Program of Annual Meeting of Street Railway Association of the State of New York

The following program of papers has been announced for the twenty-ninth annual convention of the Street Railway Association of the State of New York, which is to be held at the Hotel Otesaga, Cooperstown, N. Y., on June 27 and 28, 1911:

JUNE 27, 1911.

FORENOON SESSION—10.00 A. M.

Reading of minutes of previous meeting. President's address. Report of executive committee. Report of treasurer. Report of secretary. Reports of committees: (a) Interurban rules, (b) Amending Section 192 Railroad Law, (c) Joint use of poles, (d) Standard franchises.

Paper, "The Edison-Beach Storage Battery Car," by R. H. Beach, president of the Federal Storage Battery Car Company, New York.

Paper, "The General Electric Gas-Electric Car," by W. B. Potter, railway and traction department, General Electric Company, Schenectady, N. Y.

Miscellaneous business.

AFTERNOON SESSION—2:30 P. M.

Reading of communications.

Paper, "Automatic and Electro-Pneumatic Brakes," by W. V. Turner, chief engineer of the Westinghouse Air Brake Company, New York.

Paper, "Tariffs," by Robert M. Colt, general passenger agent of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.

Paper, "Reduction of Car Failures," by J. P. Barnes, electrical engineer of the Syracuse Rapid Transit Railway, Syracuse, N. Y.

Miscellaneous business.

Appointment of nominating committee.

JUNE 28, 1911.

FORENOON SESSION—10:00 A. M.

Reading of communications.

Paper, "Single End vs. Double End Car Operation," by Herman Hicks, supervisor of schedules of the New York State Railways, Rochester, N. Y.

Paper, "Maintenance of Way Matters," by C. A. Alderman, chief engineer of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y.

The following program of entertainment has been announced for the convention:

June 26—10:30 a. m. Golf and swimming at country club. Clock golf at hotel.

3:30 p. m. Informal reception in hotel rotunda.

8:00 p. m. Evening trip on Otesaga Lake.

10:30 p. m. Informal dance in hotel ballroom.

June 27—10:30 a. m. Clock golf for ladies and gentlemen on hotel lawn.

2:00 p. m. Ladies' bridge whist, hotel parlor.

4:00 p. m. Annual baseball game, managers vs. manufacturers.

8:00 p. m. Annual banquet.

11:00 p. m. Dance in ballroom in hotel.

June 28—10:30 a. m. Automobile ride for visiting ladies.

2:00 p. m. Luncheon at golf club.

The speakers at the banquet, which will be held Tuesday evening at 8 p. m., will be Frank W. Stevens, chairman of the Public Service Commission of the Second District of New York; F. W. Whitridge, receiver of the Third Avenue Railroad, New York; Oscar T. Crosby, president of the Wilmington & Philadelphia Traction Company, Wilmington, Del.; Rev. Ralph Birdsall, Cooperstown, N. Y., and others.

Honorable, active and associate members of the association, their guests and ladies will be provided with banquet tickets. Each allied member will receive one ticket. Extra tickets will be sold at \$5 each. Members are requested not to forget to bring their badges, otherwise a charge of \$1 each for badges will be made. Extra bars to the badges will be provided without charge by H. M.

Beardsley. Applications for hotel accommodations at the Hotel Otesaga should be sent to Joseph K. Choate, Hartwick, N. Y. The hotel will be opened on June 24. No general provision has been made for an exhibit of appliances and apparatus by allied members, but arrangements for any such exhibits can be made direct with the manager of the Hotel Otesaga.

J. K. Choate and Bertram Berry, of the transportation committee, have arranged for special transportation to the convention. A special sleeping and buffet car will leave New York over the New York Central & Hudson River Railroad at 12:25 on Sunday night, June 25, for Herkimer, where a special car on the Otsego & Herkimer Railroad will be waiting to convey the party to Cooperstown, arriving there about 10:30 a. m. Monday. A buffet breakfast will be provided in the sleeping car up to 8:33 a. m., which is arriving time at Herkimer. Those who desire reservation in this special sleeping car should notify Bertram Berry, 516 West Thirty-fourth street, New York, N. Y., at once.

Program of Meeting of Central Electric Railway Association.

The following program has been announced for the meeting of the Central Electric Railway Association, which is to be held at the Edgewater Club, St. Joseph, Mich., on June 22, 1911:

Business session and reports of special committees.

Report of standardization committee.

Discussion and final disposition.

Paper, "The Advantages to Electric Traction Companies of the Use of Treated Timber," by C. P. Winslow, of the Forest Service Department, United States Department of Agriculture, Madison, Wis.

Illustrated talk, "The Application of Low and Mixed Pressure Turbines to Existing Electric Power Plants," by M. B. Carroll, representing the General Electric Company, Cincinnati, Ohio.

Paper, "Overhead Construction," by Edward Heydon, superintendent of overhead construction of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

Entertainment for the members of the association will be provided by various transportation interests at St. Joseph as follows:

Excursion on Lake Michigan by Graham & Morton Transportation Company, 3:30 p. m. June 21.

Excursion to Eden Park Springs, House of David, via lines of Benton Harbor-St. Joe Railway & Light Company, 8 p. m. June 21.

Excursion to Paw Paw Lake for the ladies, via lines of Benton Harbor-St. Joe Railway & Light Company, 9 a. m. June 22.

Luncheon for the ladies at the Edgewater Club, 1 p. m. June 22.

Two special cars will be run to the meeting. The Indianapolis, Crawfordsville & Western Traction Company will run a special car from Indianapolis at 7 a. m. on June 21, running over the line of the Indiana Union Traction Company to Peru, over the Winona Interurban Railway to Goshen, the Chicago, South Bend & Northern Indiana Railway to South Bend and the Southern Michigan Railway to St. Joseph, arriving at 2:45 p. m. The Louisville & Northern Railway & Lighting Company will run a car from Louisville, Ky., at 6:45 a. m. over the Louisville lines and thence over the same route as the other car, arriving at St. Joseph at 7 p. m.

Program of Meeting of Central Electric Accounting Conference.

The following program has been announced for the meeting of the Central Electric Accounting Conference at the St. Nicholas Hotel, Springfield, Ill., on June 24, 1911, to which reference was made in the *ELECTRIC RAILWAY JOURNAL* of June 10, 1911, page 1031:

MORNING SESSION.

9 A. M.—Meeting of the executive committee, St. Nicholas Hotel.

9:30 A. M.—Regular business session and reports of committees.

11 A. M.—Address, "Legislation Affecting Electric Railway Accountants," by Henry J. Davies, secretary and treasurer of the Cleveland Railway.

Discussion.

12 Noon—Adjournment for luncheon—guests of the Illinois Traction System at the St. Nicholas Hotel.

AFTERNOON.

There will be no session of the conference in the afternoon, as the members and guests will be given a trip by special train over the Illinois Traction System to St. Louis, returning to Springfield with as many of the members as wish to begin their return journey from that point.

Walter Shroyer, secretary-treasurer of the conference, in a letter to the members urging them to attend the meeting, says:

"Each member of the conference is earnestly requested to attend this meeting, as some very important matters will be brought up for consideration, one of the most important being the matter of merging the conference with the Central Electric Railway Association.

"While the program of this meeting is not lengthy, it will no doubt prove to be an interesting one. Not a single one of us can afford to miss hearing the address to be given by Henry J. Davies, secretary and treasurer of the Cleveland Railway, on the subject of 'Legislation Affecting Electric Railway Accountants,' and the discussion that will follow.

"As stated in the program, members will be guests of the Illinois Traction System upon adjournment of the meeting. After luncheon at the St. Nicholas Hotel, a special train will be furnished for a trip to St. Louis, thus affording an opportunity to see a portion of one of the largest electric railway systems in the world."

Kansas City Receivers Qualify

Ford F. Harvey, who, with R. J. Dunham, has been appointed receiver of the Metropolitan Street Railway, Kansas City, Mo., as noted in the *ELECTRIC RAILWAY JOURNAL* of June 10, 1911, page 1024, was not in Kansas City when the appointment was made, and did not return for several days. It was not until June 7, 1911, that he and Mr. Dunham qualified as receivers. Each of them is bonded for \$50,000. Mr. Harvey made public the following statement:

"After careful consideration, I have decided to accept the receivership of the Metropolitan Street Railway. I appreciate fully the responsibility of the position, the high honor conferred by the appointment, and the exact nature of the duties required. The court, without my knowledge or solicitation, selected me as its representative. I shall do my best to be faithful to that trust, but am not and must not be considered as the representative of any interest."

As soon as Mr. Harvey had qualified and had made public the statement mentioned previously he conferred with Mr. Dunham, John M. Egan, general manager under the receivers; Frank Hagerman, counsel for the receivers, and Charles W. Armour, resident representative in Kansas City of the Armour interests. Subsequently Mr. Harvey and Mr. Dunham conferred with Mayor Brown and other representatives of the city administration. As a result of the conference the receivers and the Mayor decided to join at once in asking Judge W. C. Hook of the United States Circuit Court at Kansas City to permit the company to pay the city \$150,000, which is approximately the amount due the city as 8 per cent of the company's gross annual revenue for the year ended May 31, 1911. It was also decided by the receivers and the Mayor to urge the City Council at its meeting on June 12, 1911, to pass an ordinance to authorize the receivers to build a part of the crosstown north and south line on Prospect Avenue north of Fifteenth Street to Independence, where it would connect with Chestnut Avenue.

Mr. Dunham and Mr. Harvey on June 7, 1911, issued the

following statement outlining their immediate purpose:

"1. The purpose of the appointment of the receivers at the present time was to prevent a dismemberment of the system because of (a) the inability to obtain money with which to make the many additions and improvements which the phenomenal growth of the city required; and (b), the claim of the holders of \$13,000,000 of early maturing underlying bonds that they are not bound by the provisions of the peace agreement as to transfers, payment of 8 per cent of the earnings, and the making of extensions. To this end, until otherwise directed by the court, the street railways will be operated as one system, without any change in the method of transfers. Whether the system shall be dismembered, and if so, when, or what are the separate franchise rights of each dismembered part, are questions for the court's future determination.

"2. Until such questions are determined the receivers will operate the property to the best of their ability, and render to the public the best service that can be given consistent with the various obligations which it will be necessary to meet from the earnings.

"3. The receivers will join with the city in asking the court to order the payment of the 8 per cent and any other sums about to become due under the franchise from the two cities.

"4. Doubt has been expressed as to whether an old franchise authorizes the construction of the Chestnut Avenue line partly upon Prospect Avenue. For the convenience of the public, as well as for economy in operation, the change from Chestnut to Prospect south of Independence Avenue should be made. Work has been commenced upon the line, and it will be finished, provided the city passes an ordinance authorizing the change of the line to Prospect Avenue, so as to remove that doubt.

"Materials are here and work has been commenced (in many instances nearing completion) upon the Eleventh Street loop between Wyandotte Street and Broadway, Fifteenth Street from Grand Avenue to Main Street, and Woodland Avenue from Missouri Avenue to Fifteenth Street, in Kansas City, Mo.; the loop around the public square in Independence; Eighteenth Street from Minnesota Avenue to Central Avenue, and the extension of the Chelsea Park line from Twenty-fifth Street to the city limits in Kansas City, Kan. In view of the action of the company in starting these improvements, the receivers feel that they are morally bound to complete them. This will be done.

"5. What, if any, other extensions or additions to the property shall from time to time be made, or how the payment thereof shall be met, will be matters for the court's future determination.

"6. The receivers have selected Frank Hagerman as their counsel. John M. Egan will act as general manager, in charge of the operation. The other employees will continue to perform their present duties."

Paul Shoup on Pacific Electric Railway Development

Paul Shoup, vice-president of the Pacific Electric Railway, Los Angeles, Cal., and affiliated companies, is quoted in part as follows in an interview in the *Los Angeles Examiner*:

"We will start work immediately on the cut-off between the Pacific Electric Railway's four-track Long Beach line and the Los Angeles & Redondo Railway. If further right-of-way difficulties do not intervene, we will have a standard gage short line to Redondo in about sixty days, with a marked reduction in time between Los Angeles and that resort. The Burbank extension from Glendale is well under way; I should think in about sixty days the Burbank people could begin planning trolley rides. In the 10-mile San Fernando Valley extension the cars should be in Van Nuys by midsummer. The reconstruction of the Hollywood line and the short line west of the city limits to Venice is nearly completed. The line to Venice from the city limits west has been practically rebuilt, while the Hollywood line has been rebuilt and paved.

"Our new route to Venice and Santa Monica from the Pacific Electric Railway terminal via University is ready for operation. We have applied to the city for the necessary permit. In Santa Monica we are about to begin a new city line of which the first mile will be built at once; over

in Pasadena we have some projects under consideration, and in Riverside we are planning considerable new work. The improvements actually under way will cost the electric railways more than \$1,750,000. In addition we are spending \$500,000 for power improvements.

"The city must have good interurban service if it is to prosper; it cannot shut its gates against interurban cars nor choke their passage, with any more fortune than could a city of old shut its gates against the caravans. I have seen no strong disposition here to dispute this idea. The next step is to provide separate tracks for interurban and city traffic. I am sure the Main Street traffic problem can be solved. The subject has been studied, but I do not care to comment on it now. If it be necessary for the electric railways in time to invest some millions of dollars in overhead or subway construction, or both, to give this separate interurban service and to give greater momentum to the growth of this wonderful city, do not overlook the position of the man whose dollar is to be spent in such work, who is to spell his faith in the community with his cash. He is as worthy of protection as any other investor.

"Where great passenger terminals have been built I think you will find perpetual rights or very long-time franchises have been granted; it is an easy matter to ascertain what has been done elsewhere. Certainly the city and its environs have much to gain through such an expenditure.

"I believe the public is just, when it knows the facts; otherwise there would be no civilization. Feeling that the public will be fair in dealing with us if it thoroughly understands the question at issue makes it incumbent upon us to aid by giving fully our reasons for a position taken. It is our policy to do this. Always there will be some impetuous persons not inclined to consider our viewpoint at all; but this is not true in my experience with the public as a whole. But the people are, as a rule, pretty well engrossed in their own affairs; most of us are busy in that direction and have too little time to study public questions. Therein we feel lies the greatest danger: a possibly incomplete knowledge of the subject under discussion and a tendency to hasty judgment. Notwithstanding the occasional publication of some confiscatory doctrine, this community, I am sure, has no desire to give less than a square deal to the electric railways; has no desire to frighten away any dollars rolling in this direction for investment."

Detroit Rental Suit Argued

The argument in the case of the city of Detroit against the Detroit United Railway to determine the right of the city to collect \$200 additional rental for the use of the streets occupied by the Fort Street line consumed the first four days of the week commencing on June 4, 1911. The full court, consisting of Judges Manning, Hosmer and Murphy, sat during the hearing. Fred A. Baker, attorney for the company, contended that a local court should not try a case of the kind in question and that the court should delay its decision until the United States Court has rendered a decision on the case involving what is known as the Hally ordinance, inasmuch as similar questions are involved. Mr. Baker called attention to the predicament of the city if the court should order the company to cease operation. Corporation Counsel Hally said that the Council asked the court to do exactly what was stated in the bill and that the people must expect to be inconvenienced if they are to gain their contention.

On June 5 the attorneys for the company questioned Mr. Hally's authority under the resolution adopted by the Council to go so far as to ask that the company be compelled to cease operation on the route in case it does not pay the rental asked. On the evening of June 5 a resolution was introduced in the Council to authorize Mr. Hally to conduct the case as he saw fit. This was referred to the committees on franchises and public utilities jointly.

Attorney Hinton E. Spalding argued that the only jurisdiction the court has is to determine whether the \$200 asked is just and reasonable, and, if not, then to order the company to pay a sum which it deems proper. He said that the City Council did not contemplate that the company should be ordered to remove its tracks from the streets. Mr. Hally replied that the money spent to put the system

in good repair and keep it up to date had no bearing on the case and that the company was an outlaw in the streets. He repeated that the Council intended that the company should pay the rental demanded or abandon the line.

On the closing day Mr. Hally said that the city was not in possession of the streets, as the Detroit United Railway has its tracks in the streets and is operating cars over them. The court asked the attorneys to present briefs on June 15, 1911.

Attorney Baker closed the argument by insisting that the grants under which the Fort Street lines were built and operated were made under the Constitution of 1850 and the Railway Act of 1855 and that the State franchise to maintain and operate street railways upon the streets named became a part of the physical property and that whoever owns the physical property is entitled to exercise the State franchise regardless of whether there is any further local consent or agreement, such owner being obligated, in the absence of an agreement fixing rates of fare, to charge a reasonable rate of fare. The action of the Council in imposing an unreasonable and confiscatory rental was in violation of Section 10, Article 1 of the Constitution of the United States and in conflict with the due-process-of-law clause of the Fourteenth Amendment of the Constitution of the United States.

Transit Affairs in New York

The Public Service Commission has approved the abandonment by the Second Avenue Railroad of unused franchises and tracks for street railways in the Borough of Manhattan, which aggregate 4.126 miles in length. The amended declaration of abandonment filed by the company has been approved by the commission, and wherever tracks are laid on the routes abandoned they will be torn up and forthwith removed from the streets. This action is the result of a promise made to the commission by the receiver for the company, George W. Linch, in July, 1910, in connection with the application then pending for the commission's approval of a change of motive power on the Worth Street line from horses to underground electricity.

The Manhattan Bridge Three-Cent Line has applied to the Public Service Commission for authority to issue capital stock to the amount of \$50,000, which will be paid up, and the commission has ordered a hearing to be held June 22, 1911. The company received a certificate of public convenience and necessity from the commission and a franchise from the Board of Estimate some time ago for an electric railway between the Long Island Railroad Station at Flatbush Avenue, Brooklyn, and West Street, Manhattan, via the Manhattan Bridge and Canal Street. The Brooklyn Rapid Transit Company and the Coney Island & Brooklyn Railroad, however, have secured from the Supreme Court a writ of certiorari to review the action of the commission in granting the certificate. The company has not heretofore issued any stock.

J. Sergeant Cram has reiterated his opinion on the urgent need for prompt subway action by the commission and the city authorities. He said: "I have very pronounced ideas on subway matters, but the present reports, which I understand are now ready to be laid before the Board of Estimate, will receive my sanction, if that be necessary. I will not do anything to delay for one day the granting of the contracts and commencement of construction work on the proposed new subway. I have perfect confidence in the judgment of my colleagues on this matter, and the conclusions which they have already arrived at in regard to routes, etc., will receive my approval."

The Board of Estimate has refused to grant the City Island Railroad, which operates a monorail line to City Island, a further extension of time to complete its line. It has had two extensions, the last expiring on June 16, 1911.

Edward M. Bassett, who has been succeeded as a member of the Public Service Commission of the First District of New York by J. Sergeant Cram, chairman of the general committee of Tammany Hall, in a brief farewell statement, said to his colleagues: "I am glad to return to my regular vocation, although the four years spent as a commissioner has been a time of keen interest to me. It has been a formative period of public regulation in this State, and it

is a great privilege to have had a hand in the shaping of new things in which one believes. I leave my colleagues with regret, and consider that I have been most fortunate in being in close contact with these men for four years. We have sometimes differed in our opinions, but wrong motives have never been ascribed to any one."

Recommendation of Commission to Syracuse Rapid Transit Company

As a result of the inquiry which it conducted recently in regard to the condition of the physical property of the Syracuse (N. Y.) Rapid Transit Company, the Public Service Commission of the Second District of New York has made public its recommendations to the company. The important improvements in extensions, equipment and service will require the expenditure of upward of \$1,000,000. The financial condition of the company is such that the commission states it will not expect all of these improvements to be made in one or two years. It is, however, of the opinion that all should be completed within five years. A full proportionate part of the amount of these expenditures should be made each year.

The requirements of the commission are for two additional transfer stations to cost \$158,090; thirty-four new double-truck cars to cost \$6,000 each, \$204,000; change in location of present East Syracuse line, including double tracking from James Street and Hawley Avenue to James Street and city line, \$188,964; East Syracuse extension, Burnett Avenue, double tracks, \$260,371; double tracking Seneca Turnpike from Salina Street to the Valley, \$60,300; double tracking in the village of Solvay, \$37,100; double tracks through Willow Street from Townsend Street to Lodi Street, \$29,984.

The company is directed and required to purchase and put in operation by Nov. 1, 1911, twelve large modern type double-truck cars suitable for winter service; to replace all the single-truck cars now in use on the East Syracuse line by double-truck cars on or before Nov. 1, 1911, and after that date to use no single-truck cars on that line except in cases of emergency; to equip with straps for the use of standing passengers all closed cars on the East Syracuse line which are not so equipped; to change the route of the East Syracuse cars in Syracuse so that they will run direct through and to the common center by use of a curve to be installed connecting the south-bound track in Warren Street with the west-bound track in East Fayette Street. The present side-aisle cars on the Park Summit line must be discontinued on or before Nov. 1, 1911, and after that date only such single-truck cars are to be used as shall have been reconstructed to afford the maximum seating capacity and standing space, or larger cars if the service on that line shall so require.

The company is also required to provide additional cars on the Valley end of the Oak Valley line between 5:30 p. m. and 6:30 p. m.; to construct at least one of the two additional transformer stations in the commission's plan on or before Nov. 1, 1911, and to put in service a wrecking or repair truck convenient to the common center on or before Jan. 1, 1912.

The Syracuse Rapid Transit Railway has already signified its willingness to accept the recommendations and conditions which have been made, and work has already been commenced to carry out the requirements of the commission.

The Question of Fare in Suburban Cleveland

Thomas P. Schmidt, a director of the Cleveland Railway who represents stockholders who became interested in the company during the Johnson management, has stated that he will ask for a referendum vote and that he will oppose the adoption of the proposed amendments to the Tayler grant if they are drawn to embody a clause to empower the City Council to extend 3-cent fare to the suburban towns when they are annexed to the city. He says he will also vote against the acceptance of the amendments by the company. Mr. Schmidt claims that the clause will endanger the success of 3-cent fare. He says that the late Mayor Johnson felt that the zone system of fares was the ideal method, but that Mr. Johnson realized that this was not practical at the time and supported the idea of having

a 3-cent fare within the city limits, with an increased fare for the suburbs.

Mr. Schmidt's idea is opposed to that of G. M. Dahl, street railway commissioner, who says that he is following Judge Tayler's plan of securing service at cost, whether the fare is 3 cents or more. He believes that the fare should be the same all over the city and wants the fare which is now charged in the city extended to the suburban towns as they become part of the city.

The South Cleveland Improvement Association has proposed to Director of Public Service Lea that the Cleveland Railway establish a belt line about the city, as suggested some months ago. Mr. Lea referred the committee which represents the association to Mr. Dahl.

By agreement of attorneys, the libel suit to recover \$500,000 which was brought by the late Mayor Tom L. Johnson against the Cleveland Electric Railway in November, 1906, has been dismissed by Judge Estep. The petition related to matter published in bulletins issued by the company.

Court Reverses Finding of New York Commission in Third Avenue Railroad Reorganization Case.

The Appellate Division of the Supreme Court of New York has reversed the decision of the Public Service Commission of the First District of New York in rejecting the reorganization plan of the Third Avenue Railroad. This will make the bondholders' plan effective. The plan was submitted to the commission by the bondholders' committee on Dec. 3, 1909. Justice Ingraham in his opinion says:

"Upon the facts as they appeared before the commission it would seem that it was bound to approve the issue of the stocks and bonds by the new corporation in accordance with the plan of reorganization, and the power of the commission was confined to a determination of the question as to whether the proposed issue was authorized by Sections 8 and 9 of the stock corporation law and the agreement for the purchase and sale and adjustment of foreclosure."

The Public Service Commission has announced that it will appeal to the Court of Appeals from the decision of the Appellate Division overruling its decision against the reorganization plan of the Third Avenue Railroad. The decision of the Appellate Division is considered by the commission as raising fundamental questions concerning the Public Service Commission's act, and if the Appellate Court is upheld the powers of the commission regarding securities issues in reorganizations will be so reduced as to make them purely nominal.

No Perpetual Easements in Los Angeles.—On recommendation of the Board of Public Utilities of Los Angeles, Cal., the Council has denied the application of the Los Angeles Railway for a franchise for the proposed Hoover Street extension. In return for certain rights of way which might be condemned the company asked for a perpetual easement in the street. The board recommended that no perpetual easements should be given by the city.

Progress of Toledo Negotiations.—Albion E. Lang, president of the Toledo Railways & Light Company, Toledo, Ohio, returned to Toledo from New York on June 10, 1911, after consulting with some of the bondholders, and it is expected that the directors will meet within a short time to consider the selection of Judge J. M. Killits of the United States Court as arbitrator to act with the experts who have been selected by the city and the company to appraise the property.

Strike at Newburg, N. Y.—The motormen and conductors in the employ of the Orange County Traction Company, Newburg, N. Y., went on strike on June 9, 1911, to force the company to modify terms of service governing them which they deemed too severe. The question of wages was not involved. On the afternoon of June 10, 1911, the men returned to work on the assurance of the officials of the company that the alleged grievance would be adjusted satisfactorily.

Earthquake Damage at Mexico City.—The property of the public service corporations operating in Mexico City, Mex., was damaged considerably by the violent earthquake which shook nearly all Mexico early on the morning of June 7, 1911. Several persons are reported to have been

killed and a score injured at the power station and repair shops of the Mexico Tramways Company at Indianalla. While considerable damage was done to the tracks of the company, operation had to be suspended on only one line.

State Assessment of Indiana Interurban Railways.—The Indiana State Tax Commission has fixed the total assessments of interurban railways in Indiana at \$23,566,823, as compared with \$22,376,628 for 1910, an increase in valuation of \$1,190,585. The total value of the rolling stock on all the roads is fixed at \$1,812,806. There was very little change in rate per mile, the increases including additional mileage and improvements. The largest increase was in the tax of the Indiana Traction & Terminal Company, which was raised \$166,920.

Terms Submitted for Investigation in San Francisco.—Bion J. Arnold has outlined the terms under which he would be willing to undertake to report to the Supervisors of San Francisco, Cal., in regard to street railway conditions in that city in accordance with the resolution to retain him as expert introduced before the board by Supervisor Murdock of San Francisco, as noted in the *ELECTRIC RAILWAY JOURNAL* of May 27, 1911, page 933. It was expected that the letter from Mr. Arnold in which his terms were embodied would come before the board at its next meeting.

Public Utility Commission Proposed for District of Columbia.—A public utilities commission for the District of Columbia, consisting of the District Commissioners, is provided for in a bill introduced in the United States Senate by Senator Gallinger, chairman of the committee of the Senate on the District of Columbia, and has been referred to that committee. The bill as drawn would give the commission full power to supervise and regulate all public utilities in the District of Columbia, including the street railways, telephone companies and electric light and power companies.

Hearing in Chicago on Subway Plans.—City Engineer Ericson of Chicago discussed the plans proposed by him for the construction of subways in Chicago before the transportation committee of the City Council of Chicago, Ill., on June 5, 1911. Mr. Ericson has proposed north and south lines and east and west lines. His estimates of cost for the north and south subway follows: Four tracks from Chicago Avenue to Twenty-second Street, complete, \$13,125,000; four tracks from Chicago Avenue to Twelfth Street, \$9,375,000. No estimates were made of the cost of constructing the east and west subways.

Strike in Dallas.—A strike of the employees of the Dallas Electric Corporation resulted recently on account of a misunderstanding in regard to orders issued by the company. The differences were settled at a conference held a few hours after the employees went on strike and the men returned to work at once. The men issued a statement to the public following the settlement in which they said: "We, the undersigned conductors and motormen in the employ of the Dallas Street Railways—many of us having been in the service many years and having families and homes—wish to say that our relations with our employers are entirely satisfactory and we hope the present disturbance will soon pass away in order that we may continue our service without fear of violence and outside interference."

National Civic Federation to Consider Uniform Utility Legislation.—Seth Low, president of the National Civic Federation, New York, N. Y., has called a meeting of the national committee on the regulation of railroads and public utilities of the federation to be held in New York on June 23, 1911, to consider the question of uniform public utility legislation. Mr. Low said: "The federation takes it for granted that there should be such regulation on the part of the public, the vital question being to what extent such regulation can go and be effective without interfering unduly with management. With so many different States legislating upon the subject, there is evidently great danger that each State will legislate in practical disregard of what is done by the other States. It is hoped that the committee to be appointed may consider the question so fully and so fairly as to be able to agree to prepare the draft of something like a model law, which would be useful in bringing about reasonable uniformity by the different States."

LEGISLATION AFFECTING ELECTRIC RAILWAYS

CONNECTICUT

On June 6, 1911, the Senate voted to adopt the minority report of the judiciary committee on the public utility bills. In a separate act the overissuance of capital and securities, which must be paid for in cash or its equivalent, is made a criminal offense with a penalty of \$10,000 fine and five years' imprisonment. The public utility bill as passed by the Senate creates one committee of three members, with annual salaries of \$5,000, to supervise all public service corporations and abolishes the present Railroad Commission.

MASSACHUSETTS

In the House on June 5, 1911, the committees on railroads and metropolitan affairs, acting jointly, reported a bill to provide for the electrification of all standard gage railroads in greater Boston. The bill would require the railroads to submit plans for electrification to the Railroad Commissioners within a year and would give the commission authority to compel electrification within a 10-mile radius of the city at its discretion. The special committee on public utilities voted recently to report no legislation necessary upon the recommendation of Governor Foss for a public utility commission to succeed the Railroad Commission, the Gas & Electric Light Commission, the Boston Transit Commission and the Massachusetts Highway Commission. A bill reported in the House would give the Railroad Commission the right to fix rates of fare and determine the quality of service and facilities afforded by railroads. The measure provides for a fifty-year extension of the Boston Elevated Railway-West End Street Railway lease, for a Boylston Street subway, the repeal of the Riverbank subway act, a subway from Park Street to the South Station and Dorchester, an extension of the East Boston tunnel to Bowdoin Square and extensions of the leases of the existing subways and tunnels.

The committee on street railways has reported a bill favoring the extension of the lease of the West End Street Railway, the construction of a tunnel to Dorchester and a subway under Boylston Street, and uniform extensions of the present tunnel and subway leases by the Boston Elevated Railway. The proposed act will fail unless accepted by the railway company, unless the Mayor and City Council of Boston agree to the section providing for new construction and new contracts for the use of the various subways and tunnels, so that the Boston Elevated Railway shall have exclusive use of them for an indeterminate period, ranging from forty-two years to fifty years, and unless a majority of the stockholders of the West End Street Railway agrees to a fifty-year extension of the present lease with 7½ per cent dividends.

NEW YORK

The Senate has confirmed the appointment of J. Sergeant Cram by Governor Dix as a member of the Public Service Commission of the First District of New York. The appointment was carried by a vote of 26 to 20. On June 6, 1911, the Assembly passed the McClelland-Walker bill, which gives the city authorities of New York power to enter into an agreement with the New York Central & Hudson River Railroad to remove its tracks from Eleventh Avenue, New York, by placing them on an elevated structure, in a subway, or both. This measure is favored by Mayor Gaynor and Dock Commissioner Tomkins of New York. On June 6, 1911, Senator O'Brien, Brooklyn, reintroduced, slightly modified, the bill to require the Long Island Railroad to extend the 5-cent zone on its electrified line between Flatbush Avenue, Brooklyn, and Jamaica, from Warwick Street to Railroad Avenue, Brooklyn. The Governor vetoed the original bill, contending that the measure tended to usurp the power of the Public Service Commission.

A bill to provide for the creation of a State Department of Electricity was reported favorably by the Senate finance committee on June 8, 1911. The measure would provide a single-headed commission, the commissioner to be appointed by the Governor and removable at his pleasure, at a salary of \$5,000, and for the appointment of a chief electrical engineer and chief inspector at salaries not exceeding \$3,000 and \$2,500 respectively.

Financial and Corporate

New York Stock and Money Markets

June 13, 1911.

Transactions in Wall Street continue to be largely professional in character. Trading to-day was somewhat irregular, the market closing firm, with a general advance throughout the list. The increase in bank clearings in the past week, the excellent crop reports and the activity of the bond market are regarded as signs of improvement. In the money market while rates have not changed appreciably there is less eagerness than heretofore to loan at existing rates. Quotations to-day were: Call, 2@2½ per cent; ninety days, 2½@2¾ per cent.

Other Markets

Traction issues were in fair demand in Philadelphia in the early part of the week and prices rose to a somewhat higher level. To-day's market was firm and showed signs of manipulative strength.

Chicago prices show mild improvement. Trading in the elevated shares was slightly better in to-day's market, with gains in Metropolitan West Side and Northwestern common.

The Boston market has been strong and its activity general throughout the week.

The feature of the Baltimore market to-day was the advance of 6 points in Fairmont & Clarksburg Traction preferred.

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

	June 6	June 13.
American Light & Traction Company (common).....	a295	a295
American Light & Traction Company (preferred).....	a107	a107
American Railways Company.....	a44	a44
Aurora, Elgin & Chicago Railroad (common).....	a41½	a43
Aurora, Elgin & Chicago Railroad (preferred).....	a86	a86
Boston Elevated Railway.....	128	129½
Boston Suburban Electric Companies (common).....	a14½	a15½
Boston Suburban Electric Companies (preferred).....	a75	a75
Boston & Worcester Electric Companies (common).....	a8½	9
Boston & Worcester Electric Companies (preferred).....	a51	a51
Brooklyn Rapid Transit Company.....	81¾	81½
Brooklyn Rapid Transit Company, 1st ref. conv. 4s.....	86	86
Capital Traction Company, Washington.....	130	a129
Chicago City Railway.....	a190	a195
Chicago & Oak Park Elevated Railroad (common).....	2	2
Chicago & Oak Park Elevated Railroad (preferred).....	5	6
Chicago Railways, ptcptg., ctf. 1.....	a82	a84
Chicago Railways, ptcptg., ctf. 2.....	a23	a22
Chicago Railways, ptcptg., ctf. 3.....	a10	a10
Chicago Railways, ptcptg., ctf. 4.....	a6	a6
Cincinnati Street Railway.....	a131	a133
Cleveland Railway.....	a97½	a97½
Columbus Railway (common).....	a96	a96
Columbus Railway (preferred).....	a101	a101
Consolidated Traction of New Jersey.....	a76	a76
Consolidated Traction of N. J., 5 per cent bonds.....	a105½	a105½
Dayton Street Railway (common).....	a30	a30
Dayton Street Railway (preferred).....	a100	a100
Detroit United Railway.....	a74	74
General Electric Company.....	163¾	164
Georgia Railway & Electric Company (common).....	141	150
Georgia Railway & Electric Company (preferred).....	92	92
Interborough Metropolitan Company (common).....	19¾	19¾
Interborough Metropolitan Company (preferred).....	54	52
Interborough Metropolitan Company (4½s).....	79¾	79¾
Kansas City Railway & Light Company (common).....	a19	a19
Kansas City Railway & Light Company (preferred).....	a49	a44
Manhattan Railway.....	a140	a139¾
Massachusetts Electric Companies (common).....	a23¾	a23½
Massachusetts Electric Companies (preferred).....	a91	a90¾
Metropolitan West Side, Chicago (common).....	a26	a26
Metropolitan West Side, Chicago (preferred).....	a72½	a72½
Metropolitan Street Railway, New York.....	*15	15
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	76¾	75½
Northern Ohio Light & Traction Company.....	46	48
Northwestern Elevated Railroad (common).....	a28½	a27½
Northwestern Elevated Railroad (preferred).....	a69	a69
Philadelphia Company, Pittsburgh (common).....	58¾	56½
Philadelphia Company, Pittsburgh (preferred).....	44	43¾
Philadelphia Rapid Transit Company.....	19¾	19¾
Philadelphia Traction Company.....	84	86¾
Public Service Corporation, 5% col. notes (1913).....	101	101
Public Service Corporation, ctf. s.....	a107	a107
Seattle Electric Company (common).....	a110	a111
Seattle Electric Company (preferred).....	a103¾	a103
South Side Elevated Railroad (Chicago).....	a77½	a77
Third Avenue Railroad, New York.....	11¾	10¾
Toledo Railways & Light Company.....	a8	8
Twin City Rapid Transit, Minneapolis (common).....	110	a109½
Union Traction Company, Philadelphia.....	49¾	49¼
United Rys. & Electric Company, Baltimore.....	18¼	*18¼
United Rys. Inv. Co. (common).....	42	41
United Rys. Inv. Co. (preferred).....	71½	71
Washington Ry. & Electric Company (common).....	34	35
Washington Ry. & Electric Company (preferred).....	89¾	88¾
West End Street Railway, Boston (common).....	a90¾	a91½
West End Street Railway, Boston (preferred).....	a103½	a104½
Westinghouse Elec. & Mfg. Co.....	77	76½
Westinghouse Elec. & Mfg. Co. (1st pref).....	118¾	118¾

a. Asked. *Last sale.

Report of the Westinghouse Company

The report of the Westinghouse Electric & Manufacturing Company for the year ended March 31, 1911, was made public on June 12, 1911. It showed that while the manufacturing business of the company was in a very prosperous condition some of the investments, particularly in foreign branches, had been unprofitable.

The income account for the year, which includes the operations of all the subsidiary companies—sales between companies, however, being eliminated—is as follows:

Gross earnings:	
Shipments billed.....	\$38,119,312
Cost of shipments:	
Factory costs, including all expenditures for patterns, dies, new small tools and other betterments and extensions; also inventory adjustments and all selling, administration, general and development expenses.....	32,510,546
Net manufacturing profits.....	\$5,608,765
Other income:	
Interest and discount.....	\$272,055
Dividends and interest on sundry stocks and bonds owned.....	615,299
Miscellaneous—royalties, etc.....	628,177
	1,515,531
Total income.....	\$7,124,296
Deductions from income:	
Interest on bonds and debentures.....	\$1,076,553
Interest on collateral notes.....	416,000
Miscellaneous interest.....	92,933
Property and plant depreciations charged against income.....	371,668
Proportion of expenses incidental to bond and note issues.....	76,666
Miscellaneous.....	209,369
	2,243,190
Net income—surplus for the year.....	\$4,881,105

Robert Mather, chairman of the board, says in part: "The year's business, both in gross earnings and net income, was the largest in the history of the company. The gross earnings exceeded those of the preceding fiscal year by \$8,870,630 and were greater by \$5,093,072 than the earnings of the best previous year in the company's existence.

"Your directors feel that the satisfactory results of the past year, reached as they were during a period of somewhat less than normal activity in other lines of industry, afford sound basis for continued hope in the future of the electrical manufacturing industry and in the maintenance by your company of its position in that field. It is, on the other hand, a fact that the volume of business now offering is on a diminishing scale, and the results of the last year, therefore, are no certain indication of a continuance for the future of gross earnings and net profits such as the past twelve months have produced. The business taken by the company during February and March, 1911—the last two months of the fiscal year covered by this report—was somewhat less than that taken during the same months of 1910, and the value of the orders booked since the close of the fiscal year does not compare favorably with that of the corresponding period of a year ago.

"The value of unfilled orders as of March 31, 1910, was \$11,256,196; as of March 31, 1911, this value stood at \$7,616,058.

"Certain other conditions affect the estimate for the immediate future of the earning power of your company. On March 31, 1896, your company entered into an agreement with the General Electric Company whereby for a period of fifteen years thereafter each company licensed the other under the patents controlled by it during the term of the agreement, with provision for the payment of royalties by each on the basis of its use of the patents of the other. For the past few years under the operation of this agreement your company has received substantial sums by way of royalties. This agreement expired by limitation of time on April 30, 1911. No renewal of it is contemplated. This source of revenue, therefore, cannot now be counted upon.

"Other patent license agreements with manufacturers of mining locomotives, small motors, fuses, switches and sockets, under which your company has been working for some years, have recently been canceled on the suggestion that they might be questioned as being in violation of the federal anti-trust laws, notwithstanding they were originally made and have been maintained under advice of counsel that assured your company of their validity.

"Your directors have had steadily in mind the purpose of strengthening your company's position in every possible direction. To that end they have authorized considerable increase in the expenditures of the selling organization, for

increasing the number of salesmen in the field, for remuneration to its representatives adequate to secure the best effort on their part, for the extension of advertising, and to provide for proper warehouse facilities for carrying stocks at distributing points. This has added considerably to the aggregate selling expense; but the results, we believe, have been justified in the increased volume of business obtained. It is a matter of simple computation, on the basis of the operations of the past two years, to ascertain the point at which the volume of gross business fails to provide a surplus over operating expenses and fixed charges. It is vital that your business should not drop to that point.

"With the same purpose in view fairly large expenditures have been authorized for the work of new development and for improvement in current types of apparatus. This work has been particularly marked with respect to the redesigning of direct-current motors, alternating-current and direct-current mill and crane motors, small power motors, high speed turbo-generators, circuit breakers, railway equipment and heating and cooking apparatus. Your directors feel that this is an item of expenditure which, owing to the position of your company, it would be unwise at any time to curtail. It must be borne in mind that your company must keep pace in technical skill and inventive ingenuity with its competitors even though their combined capital and manufacturing facilities are greatly in excess of yours. The cost of all new development and redesigning is charged monthly as a part of the current costs.

"The surplus as of March 31, 1910, was \$5,668,948. This has been increased during the year by various items of profit detailed in the statement of profit and loss to \$6,349,255. Adding the net income for the year, \$4,881,105, there resulted a surplus with which your directors had to deal as of the end of the fiscal year, of \$11,230,361.

"Against this surplus have been charged dividends on the preferred stock for the year at the rate of 7 per cent per annum and a balance of 8¾ per cent accumulated but unpaid in previous years, together aggregating \$629,795.25. In the adjustment of the account property and plant (hereinafter referred to) and in establishing a direct liability for bonds of the Walker company guaranteed by your company (hereinafter explained), there resulted charges against surplus aggregating \$1,193,207, the items comprising which are shown separately in the statement of profit and loss. Charges against surplus in connection with reserve for notes and accounts receivable were made during the year aggregating \$589,774. Miscellaneous charges against profit and loss amounted to \$355. The total of the charge enumerated is \$2,413,222. There were also written off as depreciations of investments, the following:

Stocks:	
Westinghouse Electric Company, Ltd., London.....	\$500,000
Société Anonyme Westinghouse (French company).....	218,974
The Westinghouse Machine Company.....	93,538
Bonds:	
Lackawanna & Wyoming Valley Rapid Transit Company.....	2,000,000
Miscellaneous stocks and bonds.....	40,402
Total	\$2,852,914

"As a result of these depreciations the surplus as of March 31, 1911, shown in the balance sheet, is \$5,964,224."

Among the foreign companies those which have been unprofitable have been the British, French, Italian and Russian companies. On the other hand the Austrian and Canadian companies have been successful.

After a full statement and analysis of the several items in the balance sheet Mr. Mather says that after a careful consideration of all the circumstances and the need for cash in extending the manufacturing facilities of the company the directors do not consider it wise to pay dividends upon the company's assenting stock.

Portland (Ore.) Railway, Light & Power Company

The results of operations of the Portland (Ore.) Railway, Light & Power Company in 1909 and 1910 follow:

	1909.	1910.
Gross receipts.....	\$4,818,022	\$5,638,895
Operating expenses.....	2,196,496	2,444,178
Net earnings.....	\$2,621,526	\$3,194,717
Fixed charges.....	1,493,039	1,678,228
Surplus	\$1,128,487	\$1,516,489
Per cent. of operating expenses.....	45.6	43.3

B. S. Josselyn, the president, says in his statement, in part:

"The increase in gross earnings in 1910 over 1909 was \$820,873, or 17 per cent. The increase in net earnings was \$573,191, or 21.9 per cent.

"Thirteen and one-half miles of single track were constructed and 22½ miles reconstructed, the reconstruction being caused mainly by the paving of streets occupied by tracks. The total cost of track construction and reconstruction was \$1,006,710, of which \$785,069 was charged to capital account. There are 250.93 miles of single track in the system.

"Eighty-two new passenger cars, thirty-four freight and work cars were purchased, and six passenger cars, one mail and express car and three locomotives were built in the company's shops, at a total cost of \$642,663. The present equipment consists of 568 passenger cars, 352 freight and work cars and eight electric locomotives. Three car barns with storage capacity for 115 cars were completed.

"The nine-story office building in Portland was completed.

"According to the census of 1910 the population of Portland was 207,214, compared with 90,426 in 1900, an increase of 116,788, or 129.2 per cent. This is the population within the city limits. A conservative estimate of the population served by your company is 300,000."

Aurora, Elgin & Chicago Railroad, Chicago, Ill.—The Aurora, Elgin & Chicago Railroad has sold \$500,000 of first and refunding mortgage 5 per cent bonds to Hayden, Miller & Company, Cleveland, Ohio, the proceeds to be used to purchase additional equipment. This makes the total amount of bonds outstanding \$2,879,000.

Chicago (Ill.) Elevated Railways.—An advance offering of the new issue of \$30,000,000 of three-year 5 per cent notes of the Chicago Elevated Railways, which were taken by the National City Bank, New York, N. Y., to provide funds to carry through the merger of the elevated railways of Chicago, is being made at 98½ to yield more than 5½ per cent. The notes will be secured by \$25,000,000 of what are now first-mortgage thirty-year 5 per cent bonds of the Northwestern Elevated Railroad and by the stocks of the various properties to be merged under the plan at a total cost of \$21,000,000.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—It is stated unofficially that a tentative agreement has been reached which provides for carrying out the long-deferred reorganization of the Chicago & Milwaukee Electric Railroad. A new corporation will be formed to take over both the Illinois and the Wisconsin properties of the company. It is said that the holders of the second-mortgage bonds of the Illinois division have been successful in their contention to receive bonds of the new corporation instead of stock, although the bonds which they are to receive will be only income obligations, bearing 4 per cent interest if earned. The new bonds are to be exchanged for the old ones at par. The holders of the bonds of the Wisconsin division are to receive second income 4 per cent bonds for one-half of their claims and the balance in stock of the new company. The income bonds will be subject to an issue of first-mortgage bonds amounting to \$3,000,000 or more, which will be used to refund the \$1,080,000 first-mortgage 5 per cent bonds of the Chicago & Milwaukee Electric Railway at par, take up \$1,000,000 of receivers' obligations, pay reorganization expenses and furnish new capital. Interest has been paid on the first-mortgage 5 per cent bonds during the receivership, and the principal is due July 1, 1919. The receivers' certificates mature this year. According to the tentative plan, the holders of the \$4,000,000 of outstanding bonds of the Illinois division will receive \$4,000,000 first-income bonds and the holders of the \$10,000,000 bonds of the Wisconsin division will receive \$5,000,000 in second-income bonds and \$5,000,000 in stock. The stock of the new corporation will be all one class.

Citizens' Railway Company, Waco, Tex.—H. H. Shear has confirmed the statement that he has exercised the option obtained by him on the property of the Citizens' Railway Company. It is understood that Mr. Shear represents the J. F. Strickland Company, Dallas, Tex., which operates the

Texas Traction Company and is extending the lines of that company through Waxahachie and Hillsboro to Waco.

Columbia Power, Light & Railways Company, Bloomsburg, Pa.—The Columbia & Montour Electric Railway and the Danville & Bloomsburg Electric Railway, both of which are controlled by the Columbia Power, Light & Railways Company, have been merged as the Columbia & Montour Electric Railway with a capital stock of \$520,000.

Janesville (Wis.) Traction Company.—The Wisconsin Railroad Commission has authorized the Janesville Traction Company, which succeeded the Janesville Street Railway at foreclosure, to issue \$125,000 of stock of a par value of \$100 a share and \$50,000 of 5 per cent thirty-year first mortgage bonds of the denomination of \$100,000.

Joliet & Southern Traction Company, Joliet, Ill.—The following committee of bondholders of the Joliet & Southern Traction Company has been appointed by George M. Reynolds, of the Continental National Bank, Chicago, Ill., to consider the question of reorganizing the company: Joy Morton, E. L. Stuart and J. R. Chapman, Chicago, Ill.; C. E. Wilson, R. T. Kelly, Frank Kohlhagen and T. B. Stewart. The appointment of this committee was made in accordance with conclusions reached at a recent meeting of the stockholders and creditors of the company, referred to in the ELECTRIC RAILWAY JOURNAL of June 10, 1911, page 1036. The newly appointed committee of bondholders was to meet in Chicago on June 12, 1911.

Lynchburg Traction & Light Company, Lynchburg, Va.—The Lynchburg Traction & Light Company has filed a mortgage to the Real Estate, Title, Insurance & Trust Company, Philadelphia, Pa., as trustee, to secure an issue of \$1,750,000 of twenty-year 5 per cent bonds to retire outstanding bonds and for extensions and improvements. As noted in the ELECTRIC RAILWAY JOURNAL of May 13, 1911, page 853, the company called for redemption on June 1, 1911, its \$250,000 of 6 per cent general mortgage convertible ten-year gold bonds of 1907.

Manhattan Bridge Three-Cent Line.—The Manhattan Bridge Three-Cent Line has applied to the Public Service Commission of the First District of New York for permission to issue \$50,000 of capital stock, which has already been authorized. The company stated that the entire amount has been fully subscribed and that the money has been paid in.

Metropolitan Street Railway, New York, N. Y.—Judge Lacombe, in the United States Circuit Court, has approved the plan of Adrian H. Joline and Douglas Robinson, receivers for the Metropolitan Street Railway; Frederick W. Whitridge, receiver for the Third Avenue Railroad, and William W. Ladd, receiver for the New York City Railway, whereby the payment of \$200,000 by the Metropolitan Street Railway to the receiver of the Third Avenue Railroad will settle claims aggregating \$73,000,000. The plan provides that on the payment of \$200,000 the Third Avenue Railroad will cancel a claim of \$36,915,867 held against the Metropolitan Street Railway for rental and use of track, and a claim of \$36,475,097 against the New York City Railway for breach of contract. The agreement is not binding as to the validity of notes for almost \$6,000,000 in possession of the New York City Railway.

Ocean Shore Railway, San Francisco, Cal.—F. S. Stratton, receiver of the Ocean Shore Railway, which was sold under foreclosure recently to representatives of the bondholders of the company, has filed his final report with the court. During his administration Mr. Stratton collected \$440,791 and expended \$397,865, and has a cash balance on hand of \$42,925, against which there are claims by various creditors. There are also claims against the receiver to the amount of \$12,956. The receipts from the sale of the road were \$1,935,000, against which is the bonded indebtedness of \$4,995,500. He suggests that the balance on hand should be turned over to the Mercantile Trust Company. The receiver asks that he be allowed additional compensation at the rate of \$500 per month from March 6, 1911, the date first set for the close of the receivership. He asks also for an appropriation of \$2,500 for Walter W. Kaufman as attorney and additional compensation of \$1,000 per month from March 6, 1911. The court set June 26, 1911, as the date for a hearing.

Orange County Traction Company, Newburg, N. Y.—The Orange County Traction Company has applied to the Public Service Commission of the Second District of New York for permission to issue \$83,500 of 5 per cent fifty-year first and refunding mortgage bonds.

Parkersburg & Ohio Valley Electric Railroad, Parkersburg, W. Va.—Judge Dayton in the Federal Court at Sistersville, W. Va., has authorized C. L. Williams, the receiver of the Parkersburg & Ohio Valley Electric Railroad, to issue \$30,000 of receivers' certificates to complete the road between Sistersville and Friendly and to pay the accrued interest on the first-mortgage bonds.

Philadelphia (Pa.) Rapid Transit Company.—The Philadelphia Rapid Transit Company has arranged with Drexel & Company, Philadelphia, Pa., to purchase at 102½ on and after June 15, 1911, the issue of \$285,000 of second mortgage 5 per cent bonds which mature on July 15, 1911, with July coupons attached.

Texas Traction Company, Dallas, Tex.—An initial dividend of 1½ per cent has been declared on the \$1,000,000 of 6 per cent cumulative preferred stock of the Texas Traction Company, payable July 1, 1911, to holders of record on July 1, 1911.

United Railways, St. Louis, Mo.—On Aug. 1, 1911, \$1,500,000 of the 5 per cent bonds of the Lindell Railway mature, and the United Railways proposes to care for the maturing issue by an issue of 4½ per cent ten-year bonds. This refunding will reduce the indebtedness of the underlying companies from \$18,811,000 to \$17,211,000. The United Railways has outstanding \$30,769,000 of first general mortgage 4 per cent bonds and \$10,000,000 of 5 per cent bonds of the St. Louis Transit Company.

Dividends Declared.

Chattanooga Railway & Light Company, Chattanooga, Tenn., quarterly, 1¼ per cent, preferred.

Duluth-Superior Traction Company, Duluth, Minn., quarterly, 1 per cent, preferred; quarterly, 1¼ per cent, common.

Indianapolis (Ind.) Street Railway, 3 per cent.

Lake Shore Electric Railway, Cleveland, Ohio, quarterly, 1½ per cent, first preferred.

Manila Electric Railroad & Light Corporation, Manila, P. I., quarterly, 1¼ per cent.

St. Joseph Railway, Light, Heat & Power Company, quarterly, 1¼ per cent, preferred.

Texas Traction Company, Dallas, Tex., quarterly, 1½ per cent, preferred.

Toronto (Ont.) Railway, quarterly, 1¾ per cent.

Union Passenger Railway, Philadelphia, Pa., \$4.75.

Union Traction Company, Philadelphia, Pa., \$1.50.

United Traction & Electric Company, Providence, R. I., quarterly, 1¼ per cent.

West Philadelphia Passenger Railway, Philadelphia, Pa., \$5.

MONTHLY ELECTRIC RAILWAY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY.						
Period.		Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1m.,	April '11	\$43,097	*\$20,633	\$22,464	\$12,479	\$9,985
1 "	" '10	41,705	*20,780	20,925	11,713	9,212
10 "	" '11	483,650	*224,081	259,569	121,563	138,006
10 "	" '10	467,355	*214,622	252,733	117,328	135,405
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY.						
1m.,	April '11	\$421,924	*\$246,197	\$175,727	\$105,081	\$70,646
1 "	" '10	389,314	*222,721	166,593	100,349	66,244
4 "	" '11	1,773,761	*1,000,572	773,189	408,214	364,975
4 "	" '10	1,610,472	*915,106	695,366	406,305	289,061
DETROIT UNITED RAILWAYS.						
1m.,	April '11	\$815,056	\$518,596	\$296,454	\$176,380	\$120,074
1 "	" '10	737,609	486,898	250,712	161,490	89,222
4 "	" '11	3,040,641	1,922,029	1,118,612	703,951	414,662
4 "	" '10	2,766,650	1,781,488	985,163	641,159	344,004
EAST ST. LOUIS & SUBURBAN RAILWAY.						
1m.,	April '11	\$178,507	\$99,784	\$78,723	.....	.....
1 "	" '10	171,640	95,823	75,818	.....	.....
4 "	" '11	712,803	387,936	324,867	.....	.....
4 "	" '10	785,321	390,451	344,871	.....	.....
NORFOLK & PORTSMOUTH TRACTION COMPANY.						
10m.,	April '11	\$1,734,461	\$986,409	\$748,052	\$624,631	\$123,422
10 "	" '10	1,593,526	908,036	685,490	643,842	41,648
UNION RAILWAY, GAS & ELECTRIC COMPANY.						
1m.,	April '11	\$242,968	*\$145,742	\$97,226	\$60,686	\$36,540
1 "	" '10	230,323	*139,218	91,105	57,959	33,146
4 "	" '11	1,024,475	*604,183	420,292	239,286	181,006
4 "	" '10	982,928	*591,370	391,558	232,181	159,377

*Including taxes.

Traffic and Transportation

Transportation and the San Francisco Exposition

Thornwell Mullally, assistant to the president of the United Railroads, San Francisco, Cal., has prepared for submission to the executive committee which has in charge the selection of a site for the San Francisco exposition a report in which he has summarized the problem before the company to meet the requirements for transportation to Golden Gate Park and to Harbor View, both of which are being considered as a site for the exposition. He says that the cost of construction to Harbor View is absolutely prohibitive for temporary purposes and that the company would have to be assured a twenty-five-year franchise if this site should be selected. He says in part:

"The men who are charged with the responsibility for the success of the exposition, which depends among other things upon transportation facilities, are not justified in selecting a site where new franchises and tunnels are an absolute requisite, when they do not know whether these franchises will be granted nor whether the people will vote the money necessary for the tunnels. Since the site must be selected immediately, it seems to be conclusive that Harbor View ought not to be selected when there is another site available with good transportation facilities and not dependent upon the people voting for and building tunnels.

"The new track that would have to be constructed at Harbor View by the street railroad company amounts to 12½ miles. In this connection it should be remembered that there are certain charter amendments which make it prohibitive for any street railway company to construct and operate new tracks under their provisions. No one can say with authority that these charter amendments will be revoked. These facts are stated to show that the Harbor View site would be impossible under present conditions, and that the necessary improvements in transportation facilities at that site are contingent upon things being done that may never be done.

"At Golden Gate Park none of these complications is present. There are there twelve lines spreading out in fan shape, which are capable of carrying 101,250 persons an hour; or, with the addition of only four blocks of new track, 116,250 passengers in an hour, and 500,000 in 4.2 hours. In this estimate I have not included the Geary Street line. If it were to be equipped for electric service it might carry 15,000 persons an hour to the Park, thus making a total of 131,250 passengers per hour, or 500,000 in 3.8 hours.

"Another difficulty in connection with Harbor View is that the crowds going to and coming from the grounds would move in the same direction and at the same hours as the regular city rush crowds. If the Golden Gate Park site is selected for this exposition the people of the city, instead of finding themselves forced to travel on the same cars with the exposition crowds, will get a better service than they could possibly have under ordinary conditions.

"In the morning the people coming to their work and business will travel on the large numbers of empty cars coming downtown to take the crowds out to the exposition; and in the afternoon they will return to their homes on the cars which are going out to the Park to bring the exposition crowds home."

"With the exposition at Golden Gate Park the exposition crowds not only will not impede the ordinary city travel, but will result in a better and more frequent service than could possibly be given under ordinary conditions."

Attention of School Teachers Called to Portland Accident Prevention Campaign

The Portland Railway, Light & Power Company, Portland, Ore., is sending the following letter, signed by B. F. Boynton, claim adjuster, to all of the large cities throughout the United States to interest school directors, principals and teachers in the subject of protecting the lives and limbs of school children:

"We started in Portland some two years ago a campaign against accidents, and we find that while all school children are receiving education on all lines of learning, one thing

sadly overlooked which causes more deaths and permanent injury than any other condition is the lack of education of the children in regard to the preservation of their lives and limbs.

"The statistics of this country show that there are hundreds and thousands of little ones each year whose lives are wiped out or whose limbs are severed and they are made permanent cripples simply because they have not been taught to avoid accidents in connection with street cars and other vehicles. Isn't it about time that our rising generation were taught what to do to avoid these accidents, and wouldn't it be time well spent if all the teachers throughout our land were to devote a few moments each day in instructing the children along this line?"

"We have had a special lecturer go from school to school in Portland and talk to our children, and the results that we have obtained have been wonderful—in fact, accidents pertaining to children of a school age have been practically eliminated.

"As I know that every man has at heart the welfare of the children of our land, kindly give this a little consideration and see if you do not think that it would be time well spent to allow your teachers to instruct the little ones in the prevention of accidents, say, for at least five minutes each day.

"In doing this we are not only educating the children in the prevention of accidents, but through them practically all of the citizens of our various cities, for we all know that the school children do carry into their homes anything of a special nature that is brought up in their school work.

"We thank you in advance for any consideration that you may give this, and will further state that we shall be glad to render any assistance to you so far as ideas go on what we have done in Portland.

"P. S.—If you will kindly communicate with Frank Rigler, superintendent of schools of Portland, I know he will gladly vouch for the results which we have obtained in Portland."

Increase in Wages in Hazleton.—The Lehigh Traction Company, Hazleton, Pa., has granted an increase in wages to its employees which averages 8 cents a day. The minimum rate per hour is 22 cents and the maximum 24 cents. The agreement dates back to June 1, 1911, and is to be effective until Jan. 1, 1914.

Cleveland-Detroit Through Service.—The Lake Shore Electric Railway and the Detroit United Railway are planning to place through cars in service between Cleveland and Detroit on June 22, 1911. Through tickets have been sold for some time. The length of the run is 179 miles. The limited trains are scheduled to make the trip in 6 hours and 25 minutes.

Bulletins of Interest to Employees.—The Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., has adopted a plan of issuing bulletins regularly on subjects of interest to the employees. The first bulletin included instructions to motormen and conductors. Motormen were warned in particular about speeding around curves and over bridges.

From Louisville to St. Joseph.—R. J. Thompson, manager of the traffic department of the Indianapolis & Louisville Traction Company, Louisville, Ky., has announced that delegates from Louisville to the meeting of the Central Electric Railway Association in St. Joseph, Mich., on June 22 will be carried to and from the convention in a special car to be furnished by the Indianapolis & Louisville Traction Company.

Increase in Wages in Easton.—The Easton (Pa.) Transit Company has granted an increase in wages to all its motormen and conductors, effective June 1, 1911. They will receive 1 cent an hour more than previously, making the rate 21 to 24 cents, according to length of service. First-year men will receive 21 cents an hour; second-year men 22 cents; third-year men 23 cents, and those in the company's employ four years or more 24 cents.

Park Attractions at Worcester.—The Worcester (Mass.) Consolidated Street Railway has arranged to have J. J. Gorman, Boston, Mass., present at the Lincoln Park Theater, Worcester, between June 19 and Labor Day the at-

tractions offered by him to the public at Worumbega Park, operated by the Massachusetts Electric Companies. W. C. Fleming, Chicago, Ill., has been retained as advertising manager of Lincoln Park by the company.

Complaint Made in Regard to Accident in Indiana.—The Indiana Railroad Commission has entered a complaint against the officials of the Indiana Union Traction Company, Indianapolis, Ind., for not having sent a report by telegraph of the accident on the company's line near Bluffton on May 27, 1911, as required by the law. The report was received by the commission on May 29, 1911. The commission is investigating the accident.

Fare Complaint in New Jersey.—The city of Gloucester, N. J., has filed a complaint with the Board of Public Utility Commissioners regarding the rates charged by the Public Service Railway between Gloucester and Woodbury. The complaint states that the distance from Camden through Gloucester to Woodbury is 8 miles; that the fare between Camden and Woodbury is 10 cents. The fare limit in either direction is King Street and Jersey Avenue, in Gloucester, so that a person boarding a car in the northern section of Gloucester and wishing to ride to the southern section of Woodbury is required to pay 10 cents. The board is asked to issue an order directing the Public Service Railway to charge one 5-cent fare from any part of Gloucester to Woodbury and vice versa.

Prepayment Cars in Brooklyn.—The two pay-as-you-enter cars and the two pay-within cars which have been operated for some time by the Brooklyn (N. Y.) Rapid Transit Company on lines in Brooklyn which do not operate over either of the two bridges into Manhattan have been placed in service on the Ralph Avenue line of the company, which is routed through the eastern district of Brooklyn into Manhattan via the Williamsburg Bridge. Instructions have been issued to the inspectors stationed on the loops at the terminal in Manhattan to allow passengers to board the pay-as-you-enter and pay-within cars at both ends. Fares of passengers crossing the bridge in these cars are collected by the conductors in the old way. The cars become prepayment cars, however, as soon as they leave the bridge at the Plaza in Brooklyn.

Terms of Service in Trenton.—In the ELECTRIC RAILWAY JOURNAL of June 3, 1911, page 994, mention was made of the first conference between the officers of the Trenton (N. J.) Street Railway and the employees of the company in regard to terms of service. At that conference the subject of wages was considered only in a cursory way. At a meeting in Trenton on June 8, 1911, however, a proposal was made by the company which is said to embrace an increase of 1 cent an hour in wages, making a wage of 24 cents an hour; also for the payment of wages weekly, instead of bi-monthly; for a "closed shop" rule; payment for time lost by the men through unjust suspension; a nine-hour working day, and the settlement of grievances by an arbitration board. The company offers these conditions on a two-year agreement, and a further conference between the company and the men will be held at which it is expected the agreement will be formally signed. The increase in wages is to become effective on July 1, 1911.

Protecting Grade Crossings in Los Angeles.—The Los Angeles County Grand Jury has addressed to Hiram W. Johnson, Governor of California, an appeal for his co-operation in the work which is being done to minimize the danger of collisions at grade crossings between steam trains and electric cars. The subject of grade crossings has recently been considered by the Board of Public Utilities of Los Angeles and the Pacific Electric Railway, and the company proposes to issue a general order to its employees instructing them under no circumstances to exceed a speed of 20 m.p.h. at any street crossing in Los Angeles, and at the board's request the bells on the automatic flagmen will be discontinued. In regard to the discontinuance of the bells the board says: "This will make conditions along the line of the Pacific Electric Railway in the city the same as exist on every railway, local or interurban, in this city outside of the congested district, except that the crossings over streets on the private right-of-way on the Pacific Electric Railway will have the additional protection of the automatic flagmen without the ringing of the bell."

Detroit United Railway Handling Construction Material.—The traffic department of the Detroit (Mich.) United Railway is handling construction materials for the large new waterworks plant in Gladwin Park, Detroit, at a considerable saving to the city. The company has installed curves which connect with the Detroit Terminal Railroad where the steam road intersects the Jefferson Avenue track of the Detroit United Railway. Delivery tracks have also been laid at the water-works location on Jefferson Avenue. The heavy freight-car deliveries are made between midnight and 4 a. m. and are handled over three-fourths of a mile of the Jefferson Avenue tracks. A minimum rate of \$5 per car, or 35 cents per ton, is obtained for this traffic. The extent of the shipments is indicated by the following figures: Structural steel, 900 tons; cement, 1000 tons; stone, 60,000 cu. ft.; bricks, 2,000,000; miscellaneous, 2000 tons, and machinery for reconstruction of old plant, 35 cars. The estimate for the amount of machinery that will be hauled into the new plant is not yet available because, on account of the extent of the work, it is expected that three years will be required for its completion. All of this heavy traffic is being handled by electric work locomotives as originally loaded.

The Omaha-Council Bluffs Fare Case.—Adjournment until the fall term was taken by the Commerce Court after the arguments in the case of the Omaha & Council Bluffs Street Railway, Omaha, Neb., had been finished. In this case the commission and the government ask for the dissolution of an injunction granted by the Circuit Court because, in the opinion of the court, Congress did not intend to include within the scope of the regulating power of the commission street railways whose lines happen to cross State boundaries. C. W. Needham, on behalf of the Interstate Commerce Commission, claimed that because Congress granted a charter for the bridge used by the company to cross the Missouri River and said it might be used by any railroad, and because the electric railway serves several villages and not merely a city and its suburbs, the road is not a street railway within the meaning of the decisions by the court on that point. Therefore, the reduction of the rate from any point in Council Bluffs to any point in Omaha from 15 cents to 10 cents is within the power of the commission. John L. Webster, for the complainants, referred to the many court decisions that seem to lie against the contention of the commission and which were adopted, when arguments were begun, by the United States, the intervener in the case.

School Fares in New Jersey.—The question of the interpretation of the section of the New Jersey public utility law which prohibits discrimination in fares came before the Supreme Court of New Jersey on June 8, 1911, on a writ of certiorari secured by the Public Service Corporation of New Jersey, Newark, to test the authority of the Board of Public Utility Commissioners to suspend the order issued by the company on May 1, 1911, which requires school children and school teachers to pay full fare on the lines of the Public Service Railway. The commission was represented before the court by Frank H. Sommer, general counsel, and the company was represented by Frank Bergen. Mr. Sommer said that the law prohibited "undue or unreasonable" discrimination. He declared that the Legislature intended to give the board full authority to say what discrimination was "reasonable" and what "unreasonable." Mr. Bergen filed a brief which contained five clauses to support the contention of the company. In short, he contended for the company that the discrimination clause of the new public utilities act had been copied almost word for word from the Interstate Commerce Act of 1887; that that act has been construed by the Interstate Commerce Commission as prohibiting the granting of reduced school fare privileges, unless all children of the same ages are included, and that this fact required an interpretation of the New Jersey law which would also preclude the granting of reduced school fares. On June 10, 1911, Justice Minturn, of the Supreme Court at Newark, before whom the case was heard, affirmed the order of the board directing the company to maintain 3-cent fares for school children and teachers. The court held that the contention of the company that the law prohibited the 3-cent fares "does not accord with the spirit and intent of the act."

Personal Mention

Mr. F. I. Hardy has resigned as superintendent of transportation of the Ft. Wayne & Wabash Valley Traction Company, Ft. Wayne, Ind.

Mr. John A. Buggy has been appointed chief engineer of the various power stations of the Wilmington & Philadelphia Traction Company, Wilmington, Del.

Mr. E. Dysterod has severed his connection as local manager with the Monterey Railway, Light & Power Company, Limited, Monterey, Nueva Leon, Mexico.

Mr. C. C. Moyer, night dispatcher of the Columbus, Delaware & Marion Railroad, has been appointed chief dispatcher of the company to succeed Mr. J. H. Lahrmer, who has been appointed superintendent of the company.

Mr. E. S. Hughes has been appointed traffic manager of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont., to succeed Mr. P. H. Scott, resigned. Mr. Hughes was connected with the Michigan Central Railway for twenty years in various capacities.

Mr. J. H. Lahrmer, chief train dispatcher of the Columbus, Delaware & Marion Railroad, Marion, Ohio, has been appointed superintendent of the company. Mr. Lahrmer has been acting superintendent of the company since the resignation of Mr. James R. Harrigan.

Mr. H. F. Dunwody, attorney for the Mutual Light & Water Company and the City & Suburban Railway, Brunswick, Ga., has been appointed general manager of both companies to succeed Mr. F. D. Aiken, who has been vice-president, general manager and purchasing agent of the company.

Mr. C. P. Cooper has been appointed chief dispatcher of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont., to succeed Mr. J. L. Mauder, resigned. Mr. Cooper has been connected with the Windsor, Essex & Lake Shore Rapid Railway in various capacities since the road was built, in 1907.

Mr. Frank G. Kelley, who resigned as secretary-treasurer of the Topeka (Kan.) Railway, in May, 1910, after serving with the company for eight years, has been elected secretary of the Kansas-Colorado Railroad, Pueblo, Col., which has awarded contracts for the construction of an electric railway from Canon City to Dodge City, Kan.

Mr. J. Doyle, who has been general superintendent of the Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md., has been made acting general manager of the company to succeed Mr. J. N. Shannahan, whose appointment as railway manager of the operating department of J. G. White & Company, Inc., New York, N. Y., was noted in the ELECTRIC RAILWAY JOURNAL of May 27, 1911, page 935.

Mr. M. J. Kehoe has resigned as superintendent of the light and power department of the Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind., to become connected with the Ft. Wayne Oil & Supply Company, Ft. Wayne, Ind. Mr. Kehoe has been superintendent of the light and power department of the company since July, 1910. Before that he was superintendent of power of the company.

Mr. A. W. Westman has been appointed superintendent of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont., in charge of operation, in addition to track, overhead and equipment. Mr. Westman was employed by the London Street Railway, London, Ont., until 1908, when he accepted a position with the Windsor, Essex & Lake Shore Rapid Railway in the shops. Later he was placed in charge of the equipment, track and overhead departments.

Mr. J. J. Campbell has been appointed superintendent of the St. Paul lines of the Twin City Rapid Transit Company, Minneapolis, Minn., to succeed Mr. J. S. Pevear, who has been appointed general superintendent of the Buffalo & Lake Erie Traction Company, Jamestown, Chautauqua & Lake Erie Railway and the Chautauqua Steamboat Company, Buffalo, N. Y. Mr. Campbell has been assistant to Mr. W. J. Hield, vice-president and general manager of the Twin City Rapid Transit Company, for several years.

Mr. J. S. Pevear has resigned as superintendent of the St. Paul lines of the Twin City Rapid Transit Com-

pany, Minneapolis, Minn., to become general superintendent of the Buffalo & Lake Erie Traction Company, Jamestown, Chautauqua & Lake Erie Railway and the Chautauqua Steamboat Company, Buffalo, N. Y., to succeed Mr. R. R. Smith, resigned. Mr. Pevear was connected with the Twin City Rapid Transit Company for more than three years, and prior to entering the employ of that company he was connected with the office of the General Electric Company in Chicago, Ill.

Mr. D. F. Sherman, president of the Providence & Danielson Railway, Providence, R. I., and the Sea View Railway, Wickford, R. I., which have been leased by the Rhode Island Company, Providence, R. I., has been elected a vice-president of the Rhode Island Company. Mr. Sherman was born near Indianapolis, Ind., but lived in Illinois until he was about thirty years old. During his early career he was employed for ten years as a teller in a national bank in Illinois. In 1882 he was made cashier of a national bank in what was then the territory of Montana. A few years later he was made cashier of a national bank in Portland, Ore. Mr. Sherman lived in Portland for about sixteen years. His total period of service with national banks covered about twenty-three years, and through his business connections in the West he assisted in financing and developing railroad and other enterprises. Mr. Sherman was an officer and a director of one of the subsidiary companies of the Southern Pacific Railroad for a long time and in 1888 was one of the officers of a company organized to build an electric railway in Portland. While on the Pacific Coast, in 1900, Mr. Sherman financed the Providence & Danielson Railway and later took up his residence in Providence. He was made president of the Sea View Railroad in February, 1911, when that company was taken over by the interests which controlled the Providence & Danielson Railway. The Narragansett Pier Railroad has also been leased to the Rhode Island Company, and the Providence & Danielson Railway, Sea View Railroad and Narragansett Pier Railroad will all be taken over by the Rhode Island Company under lease on July 1, 1911. On that date Mr. Sherman's appointment as vice-president of the company in full charge of all of the company's operations becomes effective. He will report direct to Mr. C. S. Mellen, president of the Rhode Island Company, New York, New Haven & Hartford Railroad and the Connecticut Company, New Haven, Conn.

Mr. Henry N. Staats, vice-president and general manager American Railway Insurance Company, Cleveland, Ohio, has been appointed insurance expert of the American Electric Railway Association.



H. N. Staats

Mr. Staats was born in Danube, Herkimer County, N. Y., and received his education at Wilbraham University, Wilbraham, Mass. After leaving college he engaged in fire insurance and for ten years was employed by the old-line stock fire insurance companies. He then became identified with the factory mutual fire insurance companies of New England and was in their employ for twenty-one years, serving as manager in the Ohio department. In 1904 Mr. Staats originated plans and specifications for fire protection of car-storage houses with a system of automatic sprinklers. These plans were approved by the National Fire Protection Association. In 1906 he organized the American Railway Insurance Company and established a bureau of inspection and survey for the protection of railway and lighting properties. In 1906 he was appointed chairman of the committee on insurance and protection of the Central Electric Railway Association and has continued to serve in this capacity. In 1910 he was appointed insurance expert of the Street Railway Association of the State of New York, during which year he perfected plans and specifications for the fire protection of cars stored in yards.

Construction News

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

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

RECENT INCORPORATIONS

***East Calgary Corporation Company, Calgary, Alta.**—Application for a charter will be made in Canada by this company to build an 8-mile electric railway to the south-east of Calgary, and connect with the municipal service at the eastern terminus of the city service. Among those interested are P. Burns and Col. Walker.

Citrus Southern Electric Railway, Orlando, Fla.—Application for a charter has been made by this company in Florida to build a 45-mile electric railway to connect Sanford, Orlando, Kissimmee and St. Cloud. Capital stock, \$500,000. Officers: T. K. Miller, president; J. J. Brophy, vice-president, and Moore Kelly, secretary and treasurer. [E. R. J., Jun. 10, '11.]

***Wapakoneta & Kenton Traction Company, Kenton, Ohio.**—Application for a charter has been made in Ohio by this company to build an electric railway from Wapakoneta to Kenton. The route has been decided upon and right-of-way has been secured. Capital stock, \$50,000. Incorporators: Alenzo S. Roberts, Charles K. Knowlton, George W. Welding, Thomas J. Cornell and Burr Finnell.

***Burbank Reinforced Concrete Railway, Enid, Okla.**—Chartered to build a 1-mile street railway in Enid. Capital stock, \$10,000. Directors: Charles Burbank, Roy W. Thomas, James W. Steen, William R. Russell and Joseph J. Klein, all of Enid, Okla.

Imperial Traction Company, Ottawa, Ont.—Chartered in Ontario to build an electric railway from Hamilton to Stratford and London, with extensions to Sarnia and Niagara Falls. L. B. Howland, Toronto, is interested. [E. R. J., Apr. 8, '11.]

New Castle & Beaver Valley Street Railway, Beaver Falls, Pa.—Application will be made in Pennsylvania on June 23 by this company for a charter to build a 22-mile electric railway to connect Beaver Falls and New Castle. Incorporators: J. S. Herron, J. S. Hayes, I. J. Lobert, E. A. Morton and Charles Pederson. [E. R. J., June 3, '11.]

***Conewago & Southern Railroad, Biglertown, Pa.**—Chartered in Pennsylvania to build an electric or steam railway between Biglerville, Arendtsville and Cashtown. Capital stock, \$150,000. Directors: H. W. Hamblin, Harrisburg, president; M. A. Garvin and J. J. Garvin, Gettysburg; Mark E. Johnson, Fillersburg; Paul Voorhees and J. H. Freeland, Harrisburg; D. M. Sheeley and J. A. Deardorf, Cashtown, and J. A. Kane, Arendtsville.

Kittitas Railway & Power Company, Cle Elum, Wash.—Incorporated in Washington to build an electric railway between Roslyn and Cle Elum, via Ronald and Janesville. Paul L. Richards, Tacoma, president; Andrew Norris, Roslyn, vice-president, and H. N. DeWolf, Tacoma, secretary. [E. R. J., June 3, '11.]

FRANCHISES

Fresno, Cal.—The Fresno, Coalinga & Tidewater Company, Fresno, will ask the Council for a franchise in Fresno. This line will connect Fresno, Coalinga, Hollister, Salinas and Monterey. T. C. White, Fresno, president. [E. R. J., Feb. 18, '11.]

Sacramento, Cal.—The Sacramento-Folsom Electric Railway has asked the City Council for a franchise in Sacramento. This line will connect Sacramento, Folsom and Fair Oaks. [E. R. J., May 20, '11.]

Galesburg, Ill.—The Galesburg & Rock Island Traction has asked the City Council for a fifty-year extension of time on its franchise in which to build its 41-mile electric railway between Galesburg and Rock Island.

East Lee, Mass.—The Berkshire Street Railway, Pittsfield, has received a franchise from the Board of Selectmen for an extension to East Lee.

Swansea, Mass.—The Providence & Fall River Street Railway has received a franchise from the Selectmen of Swansea to extend its tracks from North Swansea to the

Warren-Swansea State line. This will be part of the proposed railway line from Providence to Newport.

Hanover, N. J.—The Public Service Railway, Newark, has asked the Council for a fifty-year franchise in Hanover.

Brooklyn, N. Y.—The Jay Street Connecting Railroad has received a franchise from the Board of Estimate to extend its tracks on Jay, John, Pearl and Plymouth Streets in Brooklyn.

Cairo, N. Y.—The Catskill Traction Company has received a franchise from the Town Board to extend its tracks to Cairo.

New York, N. Y.—The Richmond Light & Railroad Company, New Brighton, has received a franchise from the Board of Estimate to extend its line from New York Avenue near Wadsworth Avenue to Ocean Avenue, and there connect with existing tracks of the company on Staten Island.

New York, N. Y.—The New York City & Interborough Railway has asked the Board of Estimate for a franchise for four extensions of its tracks in the boroughs of Manhattan and the Bronx.

Niagara-on-the-Lake, Ont.—The Frontier Electric Railway has got a twenty-five-year franchise from the Council on condition that it will operate four cars each way daily between Niagara-on-the-Lake and Queenstown or Niagara Falls. T. S. Ramsdell, president. [E. R. J., May 20, '11.]

***Klamath Falls, Ore.**—A representative of an Eastern syndicate has asked the City Council for a franchise in Klamath Falls.

Marshfield, Ore.—The Union Traction & Terminal Company, Marshfield, has received a franchise from the Council over certain streets in Marshfield.

Salem, Ore.—The Oregon Electric Railway, Portland, has received a franchise from the Council to build on certain streets within the city limits of Salem.

Irwin, Pa.—The Pittsburgh, McKeesport & Westmoreland Railway, McKeesport, has asked the Borough Council for a franchise on Main Street to Oak Street. It agrees to build a \$20,000 viaduct over the Pennsylvania Railroad to North Irwin if granted the franchise.

Prospect Park, Pa.—The Philadelphia Rapid Transit Company, Philadelphia, has received a franchise from the Borough Council to build its tracks on Lincoln Avenue in Prospect Park.

***Saskatoon, Sask.**—H. M. E. Evans, of Edmonton, Alta., representing British capitalists, has bid for power rights on the Saskatchewan River, and also for a twenty-year franchise for an electric railway in Saskatoon.

Columbia, S. C.—The Columbia Electric Street Railway, Light & Power Company, Columbia, has asked the City Council for a franchise for three new lines in Columbia.

Salt Lake City, Utah.—The Salt Lake & Los Angeles Railway has asked the City Council for a franchise to build a double track electric line over various streets in the western part of Salt Lake City. This is part of a plan to electrify the entire line.

Bremerton, Wash.—L. H. Gray, representing the Puget Sound Southern Railway, has asked the Council for a franchise in Bremerton. He has received a fifty-year franchise to build this line in Seattle. This interurban line will be extended to Aberdeen.

Wausau, Wis.—The Wausau Street Railway has received a franchise from the City Council to double-track its Forest Street line in Wausau.

TRACK AND ROADWAY

***Nanaimo, B. C.**—Messrs. Stewart and Rogers, Victoria, have offered to install a tramway system in Nanaimo without a bonus from the Council. A similar proposition has also been submitted by another syndicate.

Pacific Electric Railway, Los Angeles, Cal.—Work is being rushed by this company on its double-track 4½-mile extension from Glendale to Burbank.

Northern Electric Railway, San Francisco, Cal.—Grading has been begun by this company for the extension from Factoryville to Nicholson. It will ultimately be extended to Binghamton, N. Y., via Montrose or New Milford.

Chicago, Waukegan & Woodstock Traction Company, Chicago, Ill.—This company advises that it will begin construction as soon as it has secured right-of-way for its 38-mile interurban railway to connect Waukegan, Fox Lake, McHenry and Woodstock. The motive power will be gasoline. Capital stock, authorized, \$50,000. Capital stock, issued, \$10,000. Officers: W. P. McCracken, Chicago; president; Peter B. Olesen, Chicago, vice-president; Charles A. Spenny, 312 Tacoma Building, Chicago, secretary and general manager; J. D. Stevens, treasurer, and J. E. Hicks, 312 Tacoma Building, Chicago, chief engineer. [E. R. J., May 20, '11.]

Southern Traction Company of Illinois, East St. Louis, Ill.—This company is reported to have purchased the Wabash, Chester & Western Railroad, which extends from Chester to Mount Vernon, Ill., a distance of 64.4 miles, and is said to contemplate converting the line into an electric railway. The company proposed to build from the east end of the East Side free bridge approach to Pinckneyville to connect with the Wabash, Chester & Western Railway.

***Hampshire, Ill.**—T. E. Getzelman, Hiram Gilkerson, J. F. Reid, A. A. Baker and others are considering plans to build an electric railway in Hampshire.

Woodstock & Sycamore Traction Company, Sycamore, Ill.—This company has completed its extension to Marengo and has begun surveys on a route from Marengo to Woodstock.

Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind.—Work will be begun at once by this company on improvements to its entire line.

Indianapolis, Nashville & Southern Traction Company, Indianapolis, Ind.—Bids for the construction of this railway between Indianapolis, Tralfalgar, Nashville, Bloomington, Bedford, Mitchell, Orleans and French Lick will soon be asked for by this company. Thomas F. Wakeland, secretary. [E. R. J., June 3, '11.]

Vincennes North & South Traction Company, Vincennes, Ind.—This company will build an electric railway from Decker to Sullivan. B. M. Willoughby, Vincennes, president. [E. R. J., April 29, '11.]

Davenport-Muscatine Railway, Davenport, Ia.—Contracts will be awarded shortly for the construction of this line from Blue Grass to Muscatine. The contract from Blue Grass to Muscatine will be awarded later. Preliminary work has been completed. J. F. Porter, president, and K. C. Weedon, chief engineer. [E. R. J., Feb. 19, '10.]

Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.—This company is considering the construction of interurban lines to LaPorte and other towns in the vicinity.

***Hutchinson, Kan.**—F. Corp. Hutchinson, and associates have organized a company to build a 40-mile electric railway from Meade south through Miles, Kan., and Hatten, Okla., to Beaver, Okla.

***Bowling Green, Ky.**—A conference is to be held shortly at Bowling Green, Ky., between business men of that city and Franklin, Ky., and H. H. Mayberry, of Nashville, Tenn., with reference to the construction of a line between Bowling Green and Franklin. Commercial interests of the cities named have indicated that there will be no difficulty in securing sufficient financial support to make the venture.

Cumberland & Westernport Electric Railway, Cumberland, Md.—Preliminary arrangements are being made by this company to build an extension from Westernport to Piedmont and Keyser, W. Va., a distance of about 6 miles.

Athol & Orange Street Railway, Athol, Mass.—Preliminary surveys are being made by this company to build an extension from Athol to Winchendon, via Baldwinville. Improvements are being made by the company along the line and over 8000 new ties will be laid between Orange and Athol Center.

Michigan United Railways, Lansing, Mich.—The Lansing-Owosso extension of this company has been completed and will be placed in operation by July 1. It is proposed to build another extension to Durand and Flint.

Minneapolis Northern Suburban Railway, Minneapolis, Minn.—The contract for the construction of this line has been awarded and work will begin at once to connect Minneapolis, Amoka, Onaway and Little. W. J. Whitcomb,

Minneapolis, is the road's president. [E. R. J., May 27, '11.]

North Missouri Central Railway, Mexico, Mo.—It is reported that plans are being prepared by this company to build its 63-mile electric railway between Jefferson City and Mexico, via Columbia, and a branch will be built from Columbia to Moberly, a distance of 39 miles. M. M. Stephens, East St. Louis, president. [E. R. J., Aug. 27, '11.]

Council Bluffs, Tabor & Southern Electric Railway, Omaha, Neb.—This company, whose project has been dormant for the past four years, is being revived. W. J. Dobbs, Omaha, Neb., is president.

Atlantic & Suburban Railway, Pleasantville, N. J.—This company has begun paving the Shore Boulevard from Absecon to Somers Point, a distance of 9½ miles.

Coney Island & Brooklyn Railroad, Brooklyn, N. Y.—This company has ordered 1300 tons of rails to be used in parking Coney Island Avenue between Prospect Park and Coney Island.

Buffalo (N. Y.) Southern Railway.—Plans are being considered by this company for building an extension to East Aurora.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—It is reported that this company has decided to electrify the Jamestown, Chautauqua & Lake Erie Railroad. The line extends from Westfield to Jamestown.

Liberty & Jeffersonville Electric Railway, Liberty, N. Y.—During the next few weeks this company will award contracts to construct 12 miles of new track. William Craig, East Orange, N. J., president.

Syracuse (N. Y.) Rapid Transit Company.—This company will soon build a mile extension of its Court Street line in Syracuse.

North Carolina-Virginia Railway, Ridgeway, N. C.—This company has secured supplemental articles of incorporation from the State Corporation Commission to build a line between the North Carolina border and Ridgeway, a distance of 6 miles. It has been authorized to increase its capital stock from \$5,000 to \$100,000 as the minimum and \$500,000 as the maximum. The principal office was moved from Ridgeway to Roanoke, Va. [E. R. J., Dec. 31, '10.]

Lancaster & Buckeye Lake Traction Company, Lancaster, Ohio.—Dodge, May & Zimmerman, Philadelphia, Pa., engineers, are completing their report on the proposed 30-mile railway to connect Lancaster and Newark. [E. R. J., Mar. 11, '11.]

Brantford & Port Dover Railway, Brantford, Ont.—Bids are being asked by this company for the construction and equipment of its 30¼-mile railway; steel towers, 6600-volt, single-phase; and five large bridges. Surveys have been made. W. P. Kellett.

Lane County Asset Company, Eugene, Ore.—This company has been authorized to begin work at once on its proposed 12-mile electric railway between Eugene and Elmira. S. P. Ness, F. A. Anderson and John Baird are in charge of the work. [E. R. J., Mar. 4, '11.]

Oregon Electric Railway, Portland, Ore.—Terminal facilities for this line have been secured in McMinnville, to which place a branch line from the main road, running south from Portland, will be built.

***Allentown, Pa.**—Preliminaries are being considered for the organization of a company to build an electric railway from Schnecksville, where connection will be made with the Slatington line of the Lehigh Valley Transit Company, in a northerly course through North Whitehall, Heidelberg and Lynn, to the valley of the Ontalannee, and thence to Reading.

Hattiesburg (Pa.) Traction Company.—Plans are being considered by this company to construct several extensions in Hattiesburg.

Wilkes-Barre & Hazleton Railway, Hazleton, Pa.—This company proposes to extend its line in Wyoming Valley, and in Carbon County.

Irwin-Herminie Traction Company, Irwin, Pa.—This company will soon build a 15-mile extension from Herminie to Madison and Arona, ending with a connection in North Irwin. It will make a complete loop with Irwin as the center.

Johnstown (Pa.) Traction Company.—Right-of-way has been secured and construction will soon be begun by this company on its extension from Walnut Grove to Giestown.

Ephrata & Lebanon Street Railway, Lebanon, Pa.—The directors of this company have voted to begin the construction of this line at once. The necessary stock has been subscribed. It will be a gasoline motor line and will extend from Ephrata to Lebanon via Lincoln, Clay, Hopeland and Schafferstown. M. H. Shirk, Lincoln, secretary. [E. R. J., May 13, '11.]

Northwestern Pennsylvania Railway, Meadville, Pa.—During the next two weeks this company will place contracts for the reconstruction of about 16 miles of track.

Mahoning & Shenango Railway & Light Company, New Castle, Pa.—This company and city officials are considering plans to build an extension out Washington Street to Cascade Park in New Castle.

Phoenixville, Valley Forge & Stratford Street Railway, Phoenixville, Pa.—Work has been resumed by this company and grading has been completed between Phoenixville and Valley Forge. Contracts will be awarded at once for the iron bridge work. Two bridges are to be built, one over Pickering Creek, which will have a span of 170 ft., and the other will be over Valley Creek.

Pittsburgh (Pa.) Railways.—Work has been begun by this company to construct the connecting link between Donora and Monongahela. Grading has been completed.

Titusville Electric Traction Company, Titusville, Pa.—This company has purchased from the Erie & Central Pennsylvania Railroad its right-of-way, grade, trackage and other property between Erie and Punxsutawney.

Waynesburg & Blacksville Street Railway, Waynesburg, Pa.—This company is advertising for bids for the construction of its 15-mile electric railway between Waynesburg and Blacksville. The contract calls for grading, masonry and bridge work, and also the boring of a tunnel 500 ft. long. Samuel Eakin, Wadestown, W. Va., president. [E. R. J., Apr. 29, '11.]

West Chester (Pa.) Street Railway.—It is reported that construction will be begun soon by this company on a line from Pequea to Mt. Nebo, which will connect with the old line to Rawlinsville. Surveys have been completed and most of the right-of-way secured.

Tennessee Traction Company, Memphis, Tenn.—This company is preparing to begin the construction of a line from Memphis to Brownsville, and later extending to Jackson, Tenn. The proposed line will parallel the route of the Louisville & Nashville Railroad. W. K. Burton, president. [E. R. J., Jan. 7, '11.]

***Austin, Tex.**—W. D. Shelly and associates plan to construct a 2-mile electric railway from the western part of Austin to the business section.

Dallas (Tex.) Street Railway.—This company advises that it has completed and placed in operation its 1½-mile electric railway in Dallas. Capital stock, \$20,000. Officers: R. Vickey, Ft. Worth, president; A. C. Maser, Dallas, vice-president, and George W. Works, Dallas, secretary, general manager and purchasing agent. Headquarters, 506 Guaranty Bank Building, Dallas. [E. R. J., April 22, '11.]

Dallas-Waxahachie Interurban Railway, Dallas, Tex.—Satisfactory progress is being made on the preliminary work for this railway which Stone & Webster are to build between Dallas and Waxahachie. Surveys are now being made and right-of-way will soon be secured. [E. R. J., April 1, '11.]

***Saltair Beach Railroad, Salt Lake City, Utah.**—It is reported that this company is considering plans to double track and electrify its entire line. Joseph Nelson, Salt Lake City, president.

***Staunton, Va.**—Plans are under consideration to build an electric railway from Staunton to Waynesboro, 10 miles. J. M. Spotts, president of the Blue Ridge Light & Power Company, Staunton, is quoted as saying that J. F. Cassell, engineer of his company, is preparing estimates of the cost of construction.

Clarksburg & Weston Electric Railway, Clarksburg, W. Va.—Work has been begun by this company on its line between Clarksburg and Byron.

***Fairmont, W. Va.**—John T. McGraw, George L. Potter, L. G. Race and associates are considering plans for an electric railway to connect Grafton, and Pittsburg via Morgantown, Blacksville, Waynesburg and Fairmont. From Grafton the line will be extended to Bridgeport and Clarksburg.

SHOPS AND BUILDINGS

Illinois Traction System, Champaign, Ill.—The Illinois Construction Company, Joliet, has been awarded the contract by this company to remodel a building in Peoria to be used as a freight house. The building will be one-story, 63 ft. x 130 ft., and of brick construction. The cost is estimated to be about \$10,000.

Indiana Union Traction Company, Anderson, Ind.—This company has bought a plot 85 ft. x 140 ft. upon which to build a union station for traction companies running into Bluffton. The building when completed will be used jointly by the Indiana Union Traction Company and the Ft. Wayne & Northern Indiana Traction Company.

Boston (Mass.) Elevated Railway.—This company has purchased a location at Main, Center and Middlesex Streets in Malden to be used for its new terminal station.

Hull (Que.) Electric Railway.—This company will place contracts during the next three weeks for building a new carhouse in Hull. The structure will be 40 ft. x 288 ft. and will be located near the Hull Junction. The cost is estimated to about \$25,000.

Moose Jaw Electric Railway, Moose Jaw, Sask.—The Navi Brothers has been awarded the contract by this company to erect a brick and concrete carhouse in Moose Jaw. The cost is estimated to be about \$60,000.

Greenville, Spartanburg & Anderson Railway, Anderson, S. C.—This company has purchased a site for its freight and passenger terminal station on North Main Street in Anderson. It has awarded the contract to John W. Warehime, Waynesboro, for building its new passenger station at the terminal at Pen-Mar.

Aberdeen (S. D.) Street Railway.—This company will reconstruct and materially enlarge its carhouse and terminals.

Everett Railway, Light & Water Company, Everett, Wash.—This company has awarded the contract to Kelley & Son, Everett, to build its new interurban passenger station on the corner of Colby Avenue and Pacific Avenue in Everett.

POWER HOUSES AND SUBSTATIONS

Fresno, Hanford & Summit Lake Interurban Railway, Fresno, Cal.—Plans have been completed for building the power station to be erected by this company at the Mattei winery, in Fresno.

Bristol & Plainville Tramway Company, Bristol, Conn.—This company has purchased and will install within the next four months two 750-kw Curtis turbines, condensers, three 300-kw rotary converters, pumps, etc., for its power house in Bristol. G. E. Cockings, general manager.

Portland Railway, Light & Power Company, Portland, Ore.—This company's local emergency power plant located on Eighth Street in Vancouver was destroyed by fire on June 4. The loss is estimated to be about \$65,000, with insurance of \$35,000. The company contemplates replacing the wooden building with a brick structure and plans for this improvement are being drawn. The new plant will cost from \$25,000 to \$35,000.

Lehigh Valley Transit Company, Allentown, Pa.—This company is installing a new 6000-hp turbine at its power house in Allentown. With this turbine the power house will have a total capacity of 23,000-kw.

Central Pennsylvania Traction Company, Harrisburg, Pa.—This company will install 1600-kw in generators and 2500-hp in engines by November. The present generators are 600-kw, driven by 1000-hp engines.

Northwestern Pennsylvania Railway, Meadville, Pa.—This company will purchase during the next two weeks one 300-kw rotary for its substation and one 300-kw motor generator set for its main station. C. L. Murray, Meadville, general manager.

Manufactures & Supplies

ROLLING STOCK

Texarkana Gas & Electric Company, Texarkana, Ark., has ordered three Brill 21-E trucks from the American Car Company.

Sheridan Railway & Light Company, Sheridan, Wyo., has ordered four Brill 27-MCB-1 trucks from the American Car Company.

Hutchinson (Kan.) Interurban Railway has ordered one 21-ft. closed pay-as-you-enter carbody from the Danville Car Company.

Parkersburg & Ohio Valley Electric Railway, Parkersburg, Va., is considering the purchase of several gasoline motor or storage battery cars.

Reading (Pa.) Transit Company has ordered six 30-ft. 8-in. semi-convertible pay-as-you-enter cars mounted on Brill 39-E trucks from The J. G. Brill Company.

Boise (Idaho) Railway has ordered two double equipments of No. 101-B motors with K-36 control from the Westinghouse Electric & Manufacturing Company.

Morris County Traction Company, Morristown, N. J., has ordered ten 30-ft. 8-in. semi-convertible cars mounted on Brill 27-G-1 trucks from The J. G. Brill Company.

New York & North Shore Traction Co., Roslyn, N. Y., has ordered one 30-ft. 8-in. semi-convertible car mounted on Brill 27 F-1 trucks from the G. C. Kuhlman Car Company.

Erie & Suburban Railway, Erie, Pa., has ordered twenty double-truck city cars from the Cincinnati Car Company. The cars will be equipped with Brill 39-E trucks and GE-80 motors.

Union Street Railway, New Bedford, Mass., has purchased two double equipments of No. 101-B motors with K-35 control from the Westinghouse Electric & Manufacturing Company.

Louisville (Ky.) Railway has ordered thirty double-truck city cars from the Cincinnati Car Company. These cars are duplicates of the thirty-three built for the same company during 1910.

Boston (Mass.) Elevated Railway has ordered twenty equipments of No. 301 interpole railway motors with multiple-unit control from the Westinghouse Electric & Manufacturing Company.

Cincinnati (Ohio) Traction Company has ordered a quadruple equipment of No. 303 railway motors with type HL non-automatic, unit-switch control from the Westinghouse Electric & Manufacturing Company.

Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, has purchased eight No. 304 motors from the Westinghouse Electric & Manufacturing Company and eight trucks from the Curtis Motor Truck Company.

North Jersey Rapid Transit Company, Paterson, N. J., has ordered two quadruple equipments of No. 306 interpole railway motors with type HL non-automatic, unit-switch control from the Westinghouse Electric & Manufacturing Company.

Parkersburg, Marietta & Interurban Railway, Parkersburg, W. Va., has ordered two quadruple equipments of No. 306 split-frame interpole motors with type K-35 control and a Westinghouse line switch from the Westinghouse Electric & Manufacturing Company.

Lehigh Valley Traction Company, Allentown, Pa., has purchased four quadruple equipments of No. 304 interpole railway motors with type HL non-automatic, unit-switch control from the Westinghouse Electric & Manufacturing Company.

Alton, Jacksonville & Peoria Railroad, Alton, Ill., has purchased five quadruple equipments of No. 304 interpole railway motors with type HL non-automatic, unit-switch control from the Westinghouse Electric & Manufacturing Company.

Columbia Electric Street Railway, Light & Power Company, Columbia, S. C., has specified that the six semi-convertible cars ordered from The J. G. Brill Company as

noted in the *ELECTRIC RAILWAY JOURNAL* of June 10, 1911, shall be of the pay-as-you-enter type, 30 ft. 8. in long and mounted on Brill 27-G-1 trucks.

TRADE NOTES

A. T. Herr Supply Company, Denver, Col., has removed its office from the Ideal Building to 412 First National Bank Building, Denver.

Ralston Steel Car Company, Columbus, Ohio, has recently opened an office in the Henry W. Oliver Building, Pittsburgh, Pa., in charge of C. S. Rea.

McIntosh, Seymour & Company, New York, N. Y., have opened a branch office at 1218 Chestnut Street, Philadelphia, Pa., which will be in charge of J. R. O'Neill.

Eynon-Evans Manufacturing Company, Philadelphia, Pa., engineer, brass founder and machinist, has purchased the entire plant of the H. P. White Company, Philadelphia.

Page & Hill Company, Minneapolis, Minn., has installed an electric lighting system at its Minnesota transfer yard and put on a night shift so as to operate the plant day and night.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., announce that the Denver offices have been removed to 1052 Gas & Electric Building, Fifteenth and Champa Streets.

Perry Ventilator Corporation, New Bedford, Mass., has received an order for ventilators for ten cars now being built for the Wilmington & Philadelphia Traction Company by The J. G. Brill Company.

W. J. Jeandron, New York, N. Y., exclusive agent for Le Carbone brushes in the United States, has returned from a trip to Paris, where he spent several weeks at the factory of Le Carbone Brush Company.

Mid-Western Car Supply Company, Chicago, Ill., has been incorporated to manufacture and deal in railway material, supplies, etc. The incorporators are George A. Chritton, J. G. Anderson and R. A. Raymond. Capital, \$25,000.

McKeen Motor Car Company, Omaha, Neb., has shipped a second 70-ft. gasoline motor car to the Sand Springs Interurban Railway, Tulsa, Okla., also a 70-ft. motor car to the Oregon-Washington Railroad & Navigation Company, Attalia, Wash.

Fairbanks, Morse & Company, Chicago, have delivered a passenger motor car to the Alaska Northern, Seward, Alaska, and have received an order from that company for another car. The car has a capacity of thirty-five passengers, with separate compartments for express and baggage. The motive power is a four-cycle gasoline engine mounted on the truck.

W. H. Stevenson, formerly with the McGuire-Cummings Manufacturing Company, and lately with the Indian Refining Company, has been appointed sales manager of the American Oil Company, which has headquarters at Jackson, Mich. This company is prepared to supply all kinds of lubricating oil and will specialize on rolling-stock and power-plant lubrication in the electric railway field.

Consolidated Car Heating Company, Albany, N. Y., at a meeting of the stockholders on June 12 elected Cornell S. Hawley president and treasurer. Mr. Hawley was formerly vice-president, general manager and treasurer of the company. C. C. Nuckols, formerly superintendent and purchasing agent, was made general manager. The sales for the year ended May 31, 1910, were the largest in the history of the company.

Terry Steam Turbine Company, Hartford, Conn., will build a large addition to its shop at Hartford in order to meet the increasing demand for the Terry turbine. The extension will more than double the capacity of the present plant and will be added to the eastern end of the shop, which was completed two and a half years ago. The plans are completed and bids have been called for, so that the construction may be begun as soon as possible.

American Ship Windlass Company, Providence, R. I., reports the purchase of an aggregate of 22,700 hp Taylor stokers by the following companies: Havana Electric Railway, Havana, Cuba, 2000 hp; Dayton Citizens' Electric Light Company, Dayton, Ohio, two stokers, 2,400 hp;

New York, New Haven & Hartford Railroad. Cos Cob power station, 7500 hp; Northern Ohio Traction & Light Company, Akron, Ohio, 6000 hp; Philadelphia Electric Company, Christian Street Station, 4800 hp.

Wiener Machinery Company, New York, N. Y., has elected E. G. Schmeisser second vice-president of the company. Mr. Schmeisser is a graduate of the Massachusetts Institute of Technology in electrical engineering and was formerly assistant engineer in the electric traction department of the Pennsylvania Railroad. The Wiener Machinery Company, which is selling agent for the United States and Canada for German manufacturers of various types of machinery, has recently increased its capital to \$25,000 and has opened branch offices in Pittsburgh and Boston.

H. W. Johns-Manville Company, New York, N. Y., has recently placed on the market a new solder called "Solder-all." It is in the form of a paste in a collapsible tube. All that is necessary for its effective use is to scrape with a knife the surface of the part to be soldered, squeeze some of the soldering paste on and apply a match, candle or torch. When the paste becomes hot it fuses and solders in the same manner as the old style soldering stick. It is stated that while this article has been in use only a short time it has met with approval because of its convenience, cleanliness, economy and other advantages.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., reports the receipt of orders for power plant equipment from the following companies: Cosmopolitan Construction Company, Chicago, Ill., for two 1500-kw synchronous motor-generator sets; San Francisco Gas & Electric Company, San Francisco, Cal., for two 1000-kw synchronous motor-generator sets; Edison Electric Illuminating Company, Boston, Mass., for one 1000-kw motor-generator set; Doherty Operating Company, New York, N. Y., for one 300-kw synchronous motor-generator set and switchboard for Montgomery Light & Water Power Company; Alleghany County Light Company, Pittsburgh, Pa., for ten 250-kva and two 200-kva transformers of the oil-insulated, self-cooling type; Desert Power & Water Company, Kingman, Ariz., for four 600-kva oil-insulated, water-cooled transformers; New York Edison Company, New York, N. Y., for a 1000-kva oil-insulated, self-cooling transformer of the tubular type; Great Western Power Company, San Francisco, Cal., for six 300-kva oil insulated, self-cooling transformers.

Western Electric Company, New York, N. Y., will have a large exhibit at the convention of railway superintendents of telegraph to be held in Boston, Mass., June 26-30, 1911. The exhibit will be made in the Hotel Brunswick and will include several types of selector equipment as well as practically every kind of railway telephone apparatus. A new semaphore which has recently been developed by the Western Electric Company will be in operation. This device combines a signal and telephone system and should prove of interest to all electric-railway men. The new Western Electric group selector will be shown for the first time. The Western Electric Company announces that to expedite the handling of trains in and about its Jersey City yards the Lehigh Valley Railroad has applied to terminal operation the telephone methods already employed in dispatching scheduled trains. A telephone system under the supervision of the general yardmaster, with telephone lines extending to every point with which he is required to keep in touch, has been installed. Western Electric selectors and telephones, with which the rest of the Lehigh Valley Railroad's dispatching system has been equipped, are being used throughout. The company has also received an order from the Columbia & Puget Sound Railroad for selectors and associated telephone apparatus for a circuit about 30 miles in length.

ADVERTISING LITERATURE

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has issued Circular 1194, which describes and illustrates type Q Westinghouse engine-driven direct-current interpole generators.

Pittsburgh Reinforcing Pole Company, Pittsburgh, Pa., has issued a 16-page booklet in which the method of reinforcing decayed wood pole with Orr reinforcement is described and illustrated.

Lindsley Brothers Company, Spokane, Wash., has issued a booklet describing its cedar poles and its facilities for delivery. The publication also contains specifications and other useful data on poles.

Chain Belt Company, Milwaukee, Wis., has issued general catalog No. 40, covering its complete line of elevating and conveying machinery. The catalog is profusely illustrated and contains 280 pages.

Crocker-Wheeler Company, Ampere, N. J., is mailing to all master mechanics a calendar card which contains a handy reference map of Atlantic City, for use in connection with American Railway Master Mechanics' convention being held in Atlantic City.

National Tube Company, Pittsburgh, Pa., has printed a booklet containing a general description and plan of its National works, located at McKeesport, in honor of the visit to its plant of delegates attending the spring meeting of the American Society of Mechanical Engineers, which was held in Pittsburgh on May 30 and June 1.

The J. G. Brill Company, Philadelphia, Pa., in *Brill Magazine* for May, 1911, presents an illustrated biography of Charles N. Black, vice-president and general manager United Railroads of San Francisco, and an article on rolling stock conditions in San Francisco in addition to descriptions of new rolling stock for several other cities.

Babcock & Wilcox Company, New York, has prepared an illustrated cloth-bound book describing the Rust water-tube boiler, including the record of elaborate test made by William Kent, professor of mechanical engineering, Syracuse University. The book also contains many views of manufacturing processes and of Rust boiler installations.

Matthews-Davis Tool Company, St. Louis, Mo., is sending out circulars in connection with the forthcoming convention of the railroad master mechanics and master car builders, from which it appears that Davis expansion boring tools are now used in about 1200 shops. Among the electric railway users are the Third Avenue Railroad, New York; Toronto Railway, and the York Railways.

United States Electric Company, New York, N. Y., has issued Bulletin 702, "Absolute Safety by Selective Signaling." This is a description of its dispatcher-controlled semaphores or train-order signals. This system was described and illustrated in the *ELECTRIC RAILWAY JOURNAL* of May 20, in which also the inspection by the Indiana Railroad Commission of these signals in operation on an interurban electric railway was noted.

Allis-Chalmers Company, Milwaukee, Wis., has issued Bulletin No. 1523, entitled, "Portable and Stationary Air Compressors for Industrial Purposes." The bulletin gives a general description and photographs of this type of apparatus, together with tables containing data relative to sizes, capacities, weights, etc. The company has also issued Bulletin No. 1081, which describes and illustrates both of its types AN and ANY polyphase induction motors. A list of ratings is also included.

NEW PUBLICATION

The Supply Department. By H. C. Pearce, general storekeeper Southern Pacific Company. New York: *Railway Age Gazette*. 112 pages, illustrated. Price, \$2.

Mr. Pearce analyzes in this book the organization and operation of the supply department of a steam railroad. It is true that the supply department practices of steam and electric railways differ in many particulars, but they have enough in common to make many parts of Mr. Pearce's book of value to the electric railway executive, purchasing agent, accountant and storekeeper. The author's first premise is that the financial importance of the supply department demands that its head should be more than a transmitting medium for orders from the several departments. He should report to and be supported by the chief executive officer. Among the subjects discussed by Mr. Pearce are the building up of the supply department; the duties of subordinates, such as the purchasing agent, engineer of tests, and the several classes of storekeepers; stores and facilities, subjects which relate more particularly to steam railroad conditions; forms of requisitions and orders; receipt and inspection of material; filling requisitions and pricing; assembling, marking and loading; home manufacturing, repair work and delivery; accounting.