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Of this issue of the ELECTRIC RAILWAY JOURNAL 9000 copies are printed.

The Gyroscope in Transportation

Considerable space has been given in the popular and semi-technical press during the past few weeks to the experiments conducted by Louis Brennan, of England, with his gyroscope car. In these tests a full-size flat car, operated by two gasoline-electric engines, was maintained in equilibrium on the upper surface of a single rail by means of the gyroscopic effect of two flywheels, each 42 in. in diameter. The flywheels weighed $\frac{3}{4}$ ton each and turned in vacuum at a speed of 3000 r.p.m. The car ran around

a circular track of 35 ft. radius and then over a short section of straight track at a speed of 7 m.p.h., carrying a load of people. The trial was certainly interesting both mechanically and scientifically, as demonstrating the application on a large scale of a well-known principle in physics, but we believe the car is of no more practical value in the transportation field than the smaller gyroscope which can be purchased for a few cents at any toy store or than the smaller car constructed by Mr. Brennan in 1907 and described in the ELECTRIC RAILWAY JOURNAL at that time. We have never enthused greatly over any of the many monorail projects, all of which have been widely heralded as about to revolutionize the transportation industry and as desirable substitutes for ordinary two-rail track construction. But of them all that which depends upon a large flywheel or on several flywheels, carried on the car, as the only protection against the derailment of the car and the death of all of the passengers, is about the most impracticable. Some dangers exist in all means of transportation, but they are at least minimized in a railway of the ordinary construction where, if the machinery breaks down and a stop has to be made, the car is in a state of stable equilibrium. We cannot look upon the new car of Mr. Brennan's in any other way than as a magnified toy, so far as the practical requirements of transportation are concerned.

Freight Revenue of Inland Empire System

Operations of the Spokane & Inland Empire Railroad show a revenue from the transportation of freight that is far greater in proportion to the total gross earnings than most properties report. The total operating revenue of this company for the year ended June 30, 1909, was \$1,269,101, of which \$1,241,898 comprised the revenue from transportation, and the balance of \$27,203 the revenue from operation other than transportation. The revenue from the freight traffic during the year amounted to 25.6 per cent of the total operating revenue. This is a fraction less than the corresponding showing for the year ended June 30, 1908, when the revenue from the freight business aggregated 26 per cent of the total earnings from operation. In the year ended June 30, 1907, 21.9 per cent of the total was derived from the freight traffic. The revenue from freight increased at a greater rate, therefore, in the last two years than that of the entire property, large as the increase has been in gross revenue from all sources. For instance, the revenue from freight was \$144,262 in the 1907 fiscal year, but it was a little more than double that figure in the ensuing year. As compared with this increase of 102 per cent, the total earnings from operation in the same period gained 69.9 per cent. Applying the comparison a year later, it is

found that while the freight revenue of the 1908-09 year was 11.7 per cent greater than in the preceding year, the total revenue from operation gained 13.5 per cent in the same period. When the comparison is extended to the gains of the period from the year ended June 30, 1907, to the 12 months ended June 30, 1909, it is shown that the increases in the freight department, and the total revenue from operation were, respectively, 125 and 93 per cent. Especial attention is directed by Jay P. Graves, president of this company, in his last annual report to shareholders, to the policy of the road in installing spurs and sidings where business could be foreseen from the development of industries. It is evident that further material enhancement of the gross revenue may be expected in the future if the policy of establishing new traffic connections is continued.

Transfers Good in New York After Acceptance

The acceptance by a conductor of a transfer in lieu of fare has been recently held to create the relation of passenger and carrier and to permit the former to recover for breach of the contract of carriage without proving that the transfer was good. The decision was rendered during the summer by one of the appellate courts of New York in the case of Kohn against Nassau Electric Railway Company. The undisputed facts in the case were that about five minutes after Kohn had handed a transfer to the conductor the latter claimed that the transfer was invalid and demanded a fare, and when it was not given he assaulted the passenger, although he allowed him to remain on the car for the rest of his trip. The company offered no evidence in rebuttal, but claimed that as the plaintiff did not prove that the transfer was good on the car where it was presented the relation of carrier and passenger did not exist. In unanimously reversing the judgment of the trial judge (there was no jury), the appellate court said that the conductor having accepted the transfer which the plaintiff gave him, the company was in no position to urge that the plaintiff was not a passenger, and went out of its way to utter some *obiter dicta* to the effect that "the transfer system in vogue among the street railroads in New York City is anything but clear and intelligible except to employees of the company." This general expression seems uncalled for, even though the court considered that the conductor's act was unjustifiable. While the opinion seems to indicate some bias, it is doubtless a correct decision upon a rather unusual set of facts, and directs attention to the necessity of determining the validity of transfers when they are presented.

Economy in Oil Handling

Many companies watch their shop storerooms closely to prevent waste or theft in issuing the ordinary materials kept in stock, but are surprisingly lax in the distribution of oil, turpentine, wood alcohol and other liquid supplies. It is true that a dishonest employee cannot find a market for stolen oil as readily as for brass car fittings or tools, but thoughtless waste usually is responsible for much bigger leaks in the stores department than thieving. While the storekeeper can demand that a worn out part should be returned as a receipt for issuing a new one, exchange is not

possible when supplying fluids. Some storerooms have a row of barrels containing oils and paint supplies, which any shop employee may tap at will, without giving a reckoning to any one of the uses to which the supply drawn is to be put. Furthermore, no two men are likely to agree on the exact amount of oil needed for a given purpose, and thus another source of waste is introduced. The oil storage should be under the supervision of the storekeeper, even when it is not practicable to distribute the oil directly from the general storeroom. Even if a company cannot afford to substitute steel tanks with gages for the crude practice of drawing from the original barrels, it can certainly eliminate a considerable loss by placing catch pans under all taps and keeping count of the quantities drawn by each man for specific purposes. In one shop an appreciable saving has been made by supplying all the pitmen with sets of brass pitchers, each of which holds the exact quantity of oil required for the periodical lubrication of each type of motor in use. This plan makes it very easy to follow up the use of car lubricants. In places where large quantities of fuel oil are used for blacksmith forges, or gasoline for automobile line wagons, the fire underwriters' rules usually require the liquids to be stored in tanks under ground. In this case the pump for drawing off the oil should be kept locked and opened when necessary only by the storekeeper. Any method which places the oil room in the charge of one individual has the further advantage of reducing the fire risk to a minimum by preventing all irresponsible persons from having access to the most dangerous source of fire on the shop premises.

A New Comparative Unit

A great many essays have been written on the subject of the car-mile, the car-hour, the ton-mile, the passenger-mile and other units used in determining the relative cost of operating electric railway cars. It is generally recognized that not one of these units satisfactorily fulfills all of the functions required of a unit, and that a comparison is not always satisfactory, even when two or more of them are used. More than the usual amount of interest, therefore, will be attracted to the suggestion of John H. Rider, electrical engineer of the London County Council Tramways, who in a recent paper before the British Institution of Electrical Engineers proposed the employment of still a new unit, which, for want of a more distinctive name, he termed "figure of merit." This unit is derived as the quotient of a fraction of which the numerator is the product of the units per car-mile multiplied by an arbitrary factor of, say, 100, and the denominator is the product of the average weight of cars in tons times the average speed in miles per hour. The factors in the denominator represent in effect what might be called the average destructive energy of the cars. It is this energy which consumes electric current and car supplies, racks the trucks, motors and car bodies, wears out rails and special work and affects in some degree every item of cost of operation. As showing how a consideration of weight and speed influence comparisons between operating data from two cities, Mr. Rider quoted the figures of average current consumption of tram cars in London and Glasgow. In Glasgow the consumption is 1.34 kw-hours per car-mile, and in London it is 2.24 kw-hours,

or 67 per cent more. The "figures of merit" for the two cities, however, are 1.299 and 1.312, respectively, a difference of only 1 per cent. In other words, the new unit is not a substitute for any of the units now used, and is really not a unit in the same sense as they. Rather, it is a divisor to be used to obtain the rating of car performance based on the theory that the wear and consumption of power and supplies vary directly with the weight of the car, the distance covered and the speed, instead of simply the distance run, as with the "car-mile."

Rapid Transit and Architecture

Recent construction work in connection with the establishment of new elevated, subway and surface lines in Boston and other cities emphasizes the growing appreciation of public utility corporations and municipal authorities that proper architectural treatment of engineering works makes them a part of the ornamental assets of the community. European construction has long reflected this point of view, and the larger projects of American capital concerned with the erection of utilitarian structures in places where thousands of persons see them each week generally betray the hand of the experienced architect when opened for service. It is nothing new to urge that a tasteful design carefully executed has an economic value through its stimulation of cleanliness and the more thorough inspection and maintenance work resulting. The effect of such structures on the public mind is even more far-reaching, however, and it is significant that an architecturally attractive system of installation tends to facilitate the best use of the property by the public, as well as to stand the company in good stead when the regard of the community for its methods and aims is an issue.

These points are illustrated by the use of suitable architectural schemes in connection with subway stations, for instance. The adoption of a color scheme or of a specially significant type of decoration tends to shorten the station stops and reduce crowding on the platforms. Anything which causes the passenger to leave his seat and be at the car door sooner in approaching a station saves valuable time, and after he reaches the platform, if the architectural treatment of the station is simple and effective, with few distractions drawing his attention away from the exits, his more speedy exit clears the way for other travel. Such are the indirect uses of a tasteful station design in the operations of a rapid transit system. The direct effect of wise architectural treatment on the public mind is, in the main, the establishment of the opinion that the company is a permanent force for good in the community; that it is endeavoring to provide the best possible facilities and the most advanced equipment; that it is trying to raise the esthetic standards of construction by its dignified and suitable designs and to avoid injuring property and neighborhoods through the erection of crude, ill-formed and ugly or inferior structures.

The broader aspects of these improvements appear to best advantage in the construction of new lines over bridges which may or may not be built by the company; in the sheathing of iron and steel work when crossing public parks or other places treated with care by landscape gardeners; in the use of copper trimmings and the application of tiles of high quality inside stations, and in the construc-

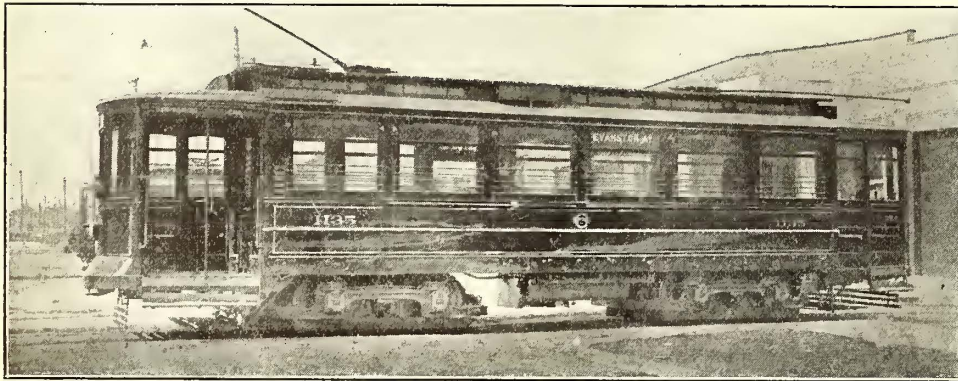
tion of buildings having liberal proportions and well-directed lines when such structures are to occupy commanding positions on given pieces of property. Many a new substation building has raised the standards of construction for an entire neighborhood, and not seldom does the erection of a way station of neat and simple design add to the attractiveness of a residential section in the suburban or rural districts. The cost of erecting tasteful structures is relatively small, compared with the expense of building purely utilitarian additions to the equipment, for simplicity is always the controlling characteristic of high-class engineering architecture.

An Extension of the Use of Turbines

Turbines have demonstrated rapidly and conclusively their usefulness as prime movers in power stations, but their adoption has not been so rapid in the marine field, where it would seem at first thought that they would be especially desirable on account of their compactness and relatively low weight. It is true that a few ocean liners, among them some of the latest Cunard flyers, have been equipped with turbines, and two of the recent battleships ordered by the United States Government will also employ this type of machine, but the employment of turbines in marine service during the past five years has by no means been so general as on land. The reason has been that the turbine is essentially a high-speed machine, and it has been definitely shown that the efficiency of a propelling screw decreases rapidly after the speed has reached a certain number of revolutions, and that this critical speed is very much less than that to which the turbine, as ordinarily constructed, is best adapted. Although somewhat foreign to the electric railway field, it is of general engineering interest to note that during the last few months radical, almost revolutionary, proposals have been made by prominent engineering authorities to adapt what is practically the high-speed land type of turbine to marine work. One of these plans is the use of direct gearing with a ratio of reduction of 5 to 1, which would permit a speed for a 6000-hp turbine of 300 r.p.m. at the propeller shaft. Such a plan necessarily involves gear problems of unprecedented magnitude, because of the power transmitted. But these problems have been very ingeniously worked out by means of a set of two helical involute gears, with a floating frame for the pinion to equalize the wear and insure permanent alignment. The saving in weight claimed for such a device over reciprocating engines and their auxiliary equipment is from 50 to 65 per cent, a very important consideration in marine work, especially in warships, where every gain in weight means added strength in armor or capacity in guns. The second plan is that of driving the propelling shafts of the ship by electric motors, operated from a high-speed turbine of the central station type, so that both screw and prime mover can be driven at the rate which is most efficient for each. This plan substitutes an electrical connection for a direct connection as at present, or a gear connection as proposed in the first plan. It is yet too early to determine practically the relative merits of the several proposals, but the engineering backing of each insures a very thorough investigation of the subject by naval engineers, and it is not at all improbable that a radical change in marine architecture may result.

RECONSTRUCTION AND STANDARDIZATION OF CHICAGO RAILWAYS COMPANY CARS

The shops of the Chicago Railways Company are now rebuilding 328 double-end vestibule closed cars, some of which have been in operation on its lines for six years. All of these cars are being converted for pay-as-you-enter service under license from the Pay-As-You-Enter Car Corporation. They are being repainted according to the standard dark olive green and mahogany color scheme of the Chicago Railways Company. The reconstruction work includes a thorough overhauling of the body and electrical equip-



Chicago Railways Car Reconstruction—Exterior of Rebuilt

ment of each car, rebuilding the trucks and making a considerable number of detail changes. These cars were purchased in separate lots of about 100 each, and as they were not all built at the same time, they have never fully conformed to one standard, although their general appearance is uniform. With the reconstruction work now in progress special care is being taken to standardize all the minor details of the cars and all those parts which need attention, repairing and replacing. It is believed that complete interchangeability of parts will lessen future maintenance costs.

Of the cars now being reconstructed 323 were built by the St. Louis Car Company, and the other five cars were built by The J. G. Brill Company. An elevation and the seating plan are illustrated. The general dimensions of the cars after reconstruction are as follows: Length over all, 41 ft.; length over body, 28 ft.; width, 8 ft. 3 in. and 8 ft. 6 in.; height from top of rail to top of trolley board, 11 ft. 4 in.; trucks, St. Louis No. 47, rebuilt and reinforced; truck centers, 17 ft. 5 in.; wheels, 33-in., 500-lb. Sehoen solid forged and rolled steel; seating capacity, 36; weight, 43,050 lb.; motor equipment, 210 cars, four GE-70 motors; motor equipment, 118 cars, four GE-80 motors; controllers, two K 28. Other special equipment is mentioned later.

RECONSTRUCTION OF CAR BODY

In reconstructing the bodies of these cars the side panels are removed, and where necessary the sag is taken out of the side framing to straighten the belt rail and window rail. The panels are then renewed. If any members of the frame are found to be weak or approaching a decayed condition, they are replaced by new pieces. The underframing is carefully inspected, and in some instances it has been found that decay has taken place in the side sills under the window pockets, where water has entered along the drop sash. Such sills are replaced and outlets for drainage are made from the bottom of each window pocket, so that the wood may remain dry. Needle beams are trussed and the cross framing renewed wherever inspection shows this work to be required.

The roofs of all cars are being covered with National prepared roofing canvas similar to that used on the roofs of the new steel cars recently put in service by the Chicago Railways Company, and where it is found necessary the car ceilings are renewed with waterproof Composite board or Agasote headlining.

Storm sashes are being added to the side windows. The shape and dimensions of these sashes are such that they fit snugly behind the window guards used in the summer, and thus are firmly held at the bottom. Malleable iron buttons serve to clamp the tops of the storm sashes tightly against the window frames. By this arrangement of sashes and window guards the storm sashes may be put up or taken down without removing the longitudinal rods which serve as window guards in the summer.

PAY-AS-YOU-ENTER ARRANGEMENTS

The most important changes in rebuilding these cars are to be found in the platforms, where provision is being made for operation according to the pay-as-you-enter method of fare collection. The wide center

door frame in each end of the bulkhead is being torn out, and the bulkheads are being reconstructed with two door openings, one for entrance and the other for exit, according to the pay-as-you-enter method of operation as followed in Chicago.

The two doors in the end bulkhead are of the same width. The right-hand door in the front bulkhead and the left-hand door in the rear bulkhead are set 8 in. from the side wall. The other door of each bulkhead is set 4 in. from



Chicago Railways Car Reconstruction—Interior of Rebuilt Car, Showing Electric Lighting

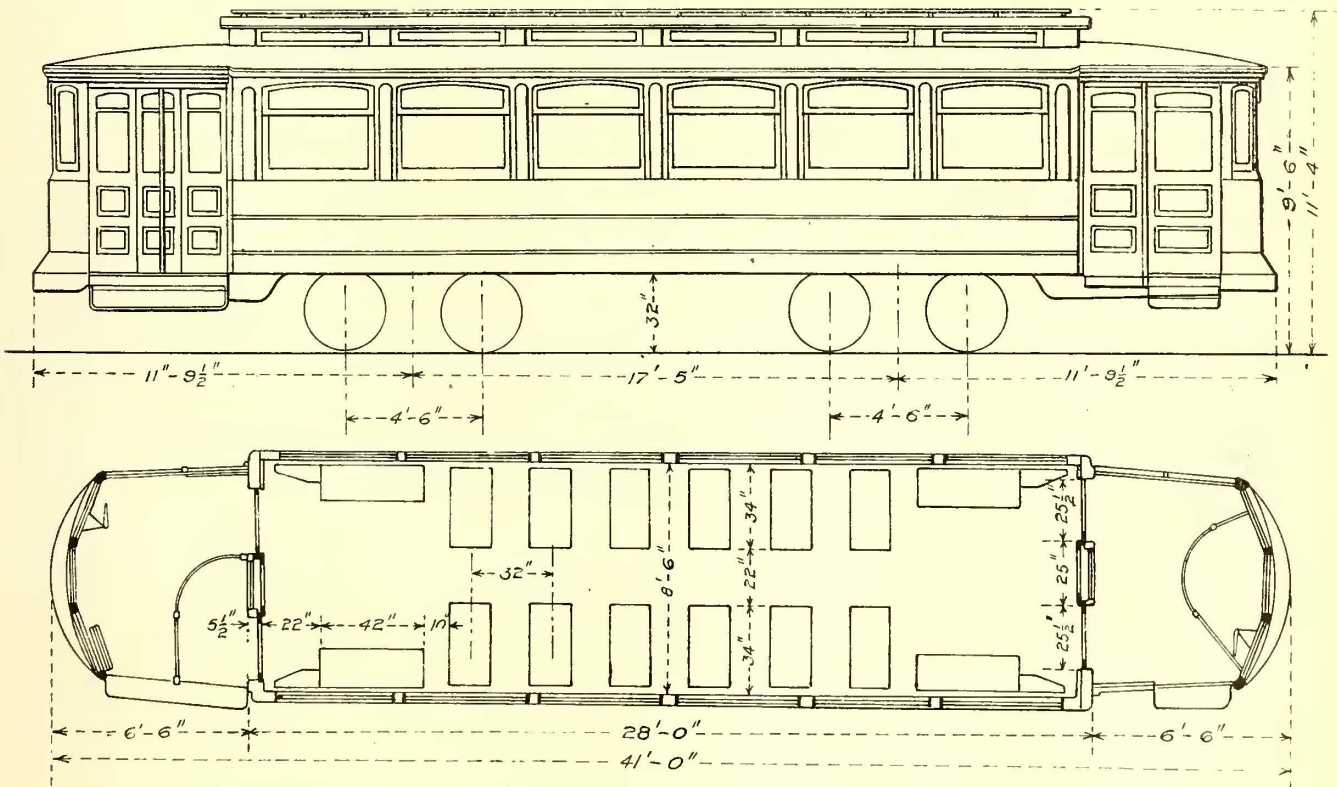
the side wall. This variation in position was made to facilitate the movement of passengers. The right-hand doors are used much more than the others, and so they are set more nearly in line with the aisle, with a view to giving a straight passage between the platform and the car body, unobstructed by the corner of the longitudinal seat. In the

recently built cars of the Chicago Railways Company, purchased in November, 1908, and August, 1909, the doors which serve for entrance from the rear platform and for exit to the front platform are hung on hinges. In the rebuilt cars both doors in the end bulkheads are arranged to slide, because it is thought that service conditions may thereby be improved. A criticism of the swinging door between the platform and the body of the car is that when a front vestibule window is lowered while the car is moving the strong current of air tends to open the hinged door inwardly, and drive the smoky air from the platform into the car body. Some accidents also have been caused by women's skirts and people's fingers becoming caught in the swinging doors. The use of a sliding door will permit of additional standing room for one passenger within the front of the car body.

The bulkhead panel between the two end door openings is divided into two parts. The upper half is fitted with

the Pullman Company and described in the *ELECTRIC RAILWAY JOURNAL* for Nov. 7, 1908, page 1326. The platform on the 600 cars just mentioned are 8 ft. 4½ in. long from end wall to face of bumper. Those on the 328 cars now being rebuilt are 6 ft. 6 in. long between the same points. Each platform is enclosed on one side by a three-leaf folding door, which is left open at the rear end and is tightly fastened in the closed position when the car is operated in the reverse direction. The opposite side of the platform is enclosed half with a fixed panel and half with an exit door operated by the motorman on the front platform. The door arrangements of the two platforms are similar, so that the cars may be operated equally well in either direction.

An important feature in connection with the sliding vestibule door on these rebuilt cars is the use of a new door-operating device, designed and built by the shop department of the Chicago Railways Company. This device differs from others in that all of the mechanism except the



Chicago Railways Car Reconstruction—Floor Plan and Side Elevation of Rebuilt Cars

glass, and the lower half is paneled to match the sides of the car. The lower panel on the inside of the car is hinged to swing in. Normally, the panel is fastened in place by two screws. It has been found advisable to hinge this panel so that broken glass may be removed easily from the pocket into which the two end doors slide. In rebuilding the end bulkheads and placing the two pay-as-you-enter doors special care was taken to finish the door posts with rounded molding set back far enough to avoid sharp corners. In this way plenty of clearance is provided between the door handle and the posts, and it is not necessary, as in other cars, to recess the post opposite the handle.

The original seating capacity of these cars was sufficient for 40 passengers, but the use of two doors in the end bulkheads required shortening each longitudinal seat by the amount required for one passenger. Thus the rebuilt cars have seats for 36 passengers.

The entrance and exit doors in the platform vestibule sides are arranged similar to those on the 600 pay-as-you-enter type cars built for the Chicago Railways Company by

operating crank and staff in the vestibule is out of sight. The movement and locking of the door in the closed position is effected by means of a handle directly above the brake handle in front of the motorman. Any movement of this handle is transmitted through a vertical shaft to a bell crank below the car floor, which, in turn, is connected through a rod and adjusting turnbuckle to a rock shaft which controls the movement of a connecting rod, the upper end of which is connected with the back of the sliding door and controls its movement. The simplicity of this door-operating mechanism, combined with the ease of operation and the positive locking of the door in the closed position, are its attractive features. It is stated that the motorman need give only a 12-lb. pull to the door-operating handle to release the door from its locked position. Then the movement to the full open position is made with less than half that amount of pull. No greater effort is required in closing the door.

Both platforms have folding steps interconnected on opposite sides of the car, so that when the steps are down on

the loading side they are folded against the platform sills on the blind side. All step treads are fitted with lead-filled Universal safety treads. Portable seats are provided for the motorman and conductor. A coating of dark olive green paint applied to the controller boxes, air-brake piping, brake staff and door-operating staff adds to the neat appearance of the platforms.

TRUCKS

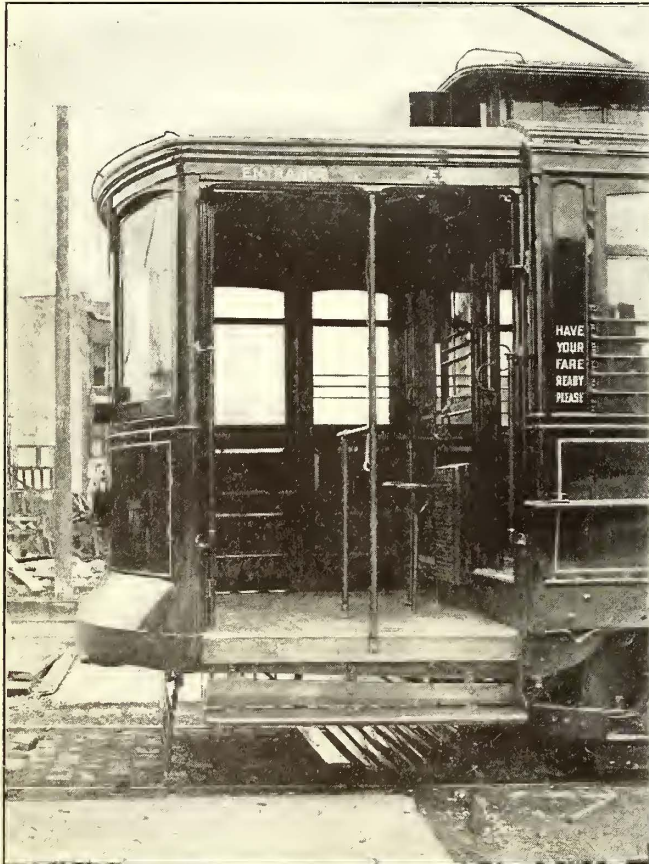
The No. 47 St. Louis trucks originally purchased with these cars are being completely rebuilt. This type of truck is also being placed under the five Brill cars that are being rebuilt according to the standard design. The motor equipment is being completely overhauled while off the truck. An illustration on page 1096 shows one of the trucks after it has been rebuilt in the company's shops. This work of

isfactory service. In addition to these truck guards each car is being equipped with two "H.B." Universal life guards.

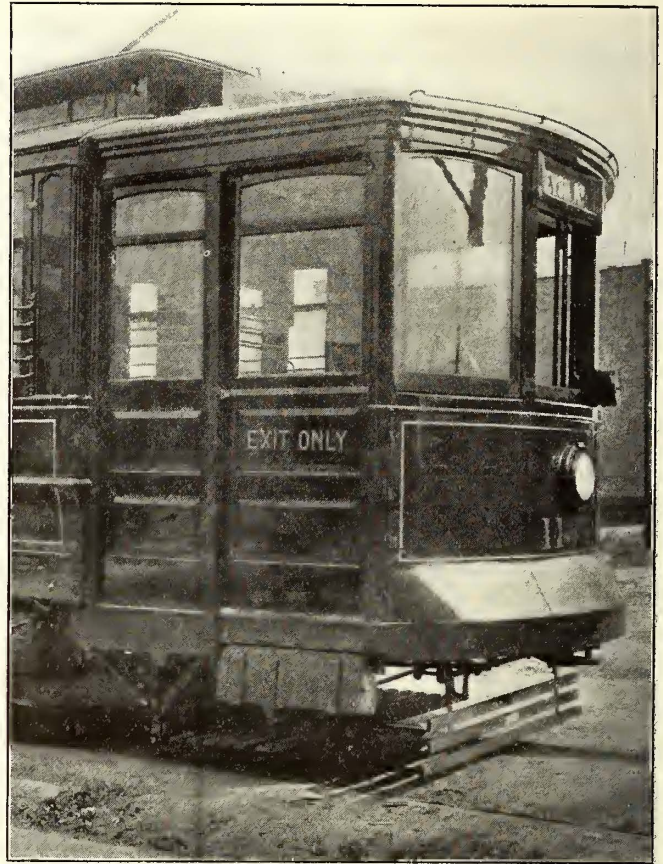
The coupling bars carried on the old cars were made of straight bar iron, but experience showed that they were not stiff enough and frequently would buckle. For this reason new bars are being made for the rebuilt cars. These bars are cut from 3-in. x 3-in. 10½-lb. T-iron, and are finished by flattening the ends and punching the coupling-pin holes. This section of metal gives a much stiffer bar than that originally used.

CAR BODY INTERIOR

Of the cars now being rebuilt 118 were heated originally by hot-water heaters, and the other cars had an old type of electric heater. All of this earlier heating equipment is being replaced by new double-coil electric heaters manufac-



Chicago Railways Car Reconstruction—Rear Platform Arrangement



Chicago Railways Car Reconstruction—Front Platform Arrangement

reconstruction includes the replacing of the main frame of the truck with heavier members. New side pieces cast with an additional longitudinal rib and weighing from 75 lb. to 100 lb. more than the original design, are installed. The old end angles are replaced with heavier pieces formed from 5-in. x 5-in. x ⅝-in. stock, which are riveted instead of being bolted to the side pieces. Symington ball-bearing center plates and Woods roller side bearings are added to each truck. The 3¾-in. x 7-in. journals are carried in Symington equalizing wedge journal boxes, which are fully machined inside and out.

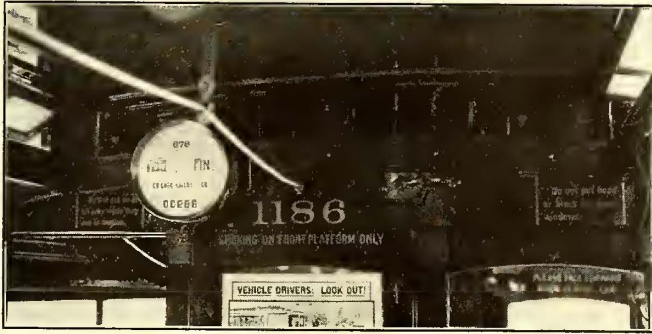
A guard of heavy wood reinforced with iron at the corners is placed around each truck. These guards are so supported that the lower side of the wood is 3 in. above the rail and at the nose each guard has a shield of heavy rubber which reaches down to within about 1 in. above the rail. This type of guard has been used by the Chicago Railways Company about a year, and is said to have given very sat-

isfactory service. A heater is placed under each of the six cross-seats, one in each of the four longitudinal seat boxes, and a special sized platform heater is mounted on each platform against the end bulkhead. The two platform heaters on each car are so connected in the heating circuits that they are inoperative until the second point of heat is reached.

Platform heaters are wound with No. 20 B. & S. wire. The No. 1 coils in the panel and in the cross seat heaters are wound with No. 18 and the No. 2 coils with No. 16 B. & S. gage wire. These three sizes of wire conform to those used in the heaters of the large new cars purchased during the last year and were chosen so that an economy in purchasing might be effected. All of the heater wiring for each rebuilt car is carried in lorricated conduit fastened to the sides of the car directly under the seat frames with pipes branching off at each seat and connecting directly with the heater outlets.

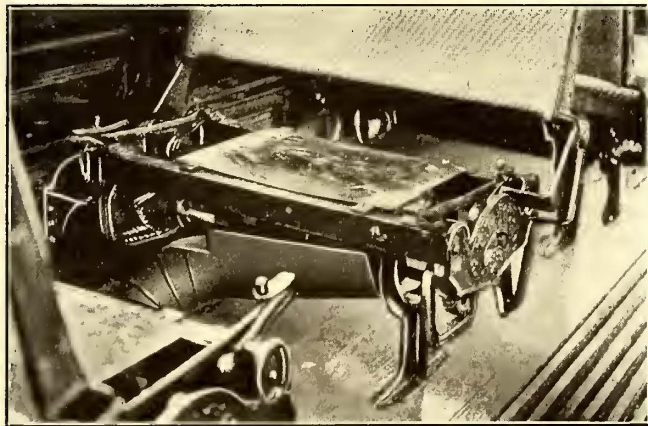
AUTOMATIC VENTILATION

One hundred car bodies will be fitted with Acme ventilators operating in conjunction with the electric heaters. Four ventilators exhaust the vitiated air from the monitor deck space and the partial vacuum thus formed draws in fresh air through openings in the car floor connected with the



Chicago Railways Car Reconstruction—Exhaust Ventilator in End of Upper Deck

heaters under the seats. The deck ventilators are box-shaped copper casings fitted with sheet copper partitions so arranged that with any movement of the car in either direction air from the space within the top of the car body will be withdrawn on the aspirator principle. The ventilators are installed at the front and rear ends of the monitor deck and at the midpoint on each side of the deck. They are designed to fit into the spaces formerly occupied by deck windows. The fresh-air intakes through the car floor have a total cross-section of 375 square inches and are connected to four electric heaters carried under the cross seats and to three heaters under the longitudinal seats. Thus as the air is withdrawn from the top of the car body fresh air is



Chicago Railways Car Reconstruction—Fresh-Air Inlet Under Seats

drawn into the car from below, passing through the coils of the heaters and out into the car body. This system of ventilation is furnished by the Acme Ventilating Company, Chicago, Ill.

A special ventilator has been designed and later will be installed on each of the car platforms. This ventilator is a product of the Chicago Railways Company's shops and tests recently made show that it will give a complete change of air within a closed vestibule four times an hour with the car moving at 8 m.p.h.

LIGHTING

During the reconstruction of the cars a new lighting system is being installed. One row of nine 16-cp spherical,

frosted bulb lamps is placed under each of the lower deck rails and three 32-cp lamps are placed in a row along the center of the upper deck. The nine lamps under each deck rail are connected alternately in series, and operating on the same circuits are 16-cp lamps behind the end destination signs. One 32-cp lamp is placed in each platform ceiling and one in each headlight. A three-way switch serves to cut out the rear headlight and the forward platform lamp. The lighting, signal and car-heating wiring is all being done with Simplex flame-proof wire.

Hunter illuminated signs are being installed, one at each end vestibule window and one on each side of the car. As there is an even number of window openings in the sides of the car, the illuminated signs are staggered in position and so placed that the one on the loading side will be forward of the center of the car. The boxes in which the signs are placed are very substantially built. They are so designed that the entire roller-operating mechanism is within the box and can be reached by opening the inside door, which is so hinged that it will close and latch by gravity. The fixtures which hold the curtain rollers are designed to permit the removal and replacement of the rollers without the use of any tools. Ways are cut in the supporting brackets so that either roller may be quickly lifted out.

While the cars are being rebuilt the control wiring is being carefully inspected and repaired. Where necessary the old cables are entirely removed and are replaced with Roebbling made-up cables.

A back is being installed at each end of the car for carrying an International register. Formerly the conductors complained that with the pay-as-you-enter system, which required them to stand on the platform when collecting fares, it was impossible to hear the fare register signal for



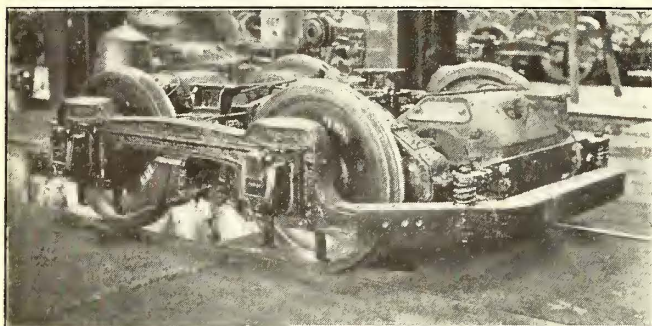
Chicago Railways Car Reconstruction—Special Destination Sign Box

the full length of the car and so the register backs are being placed at each end.

In addition to the equipment heretofore mentioned the following specialties are being installed on these 328 cars: U. S. No. 14 B B trolley bases; MA 13 fuse boxes; Lyon reinforced sheet-steel gear cases; Wilson trolley catchers with Samson spot cord and Keystone cord couplers; Keystone pneumatic bell ringers, which give a continuous ring by reason of compressed air, controlled by Keystone "leakless" foot valves, a flow of air repeatedly driving a steel ball against the gong; large sand boxes with sand traps, built by the railways company, and Keystone "leakless" sander valves. These valves are so designed that on pressing the valve stem to open the admission port a second valve seat

is brought into engagement, thus closing the annular space around the valve stem and preventing the loss of air. New pressed-steel dash headlights, furnished by Adams & Westlake, are being placed on each car. These headlights are provided with a locking device which requires a special wrench for opening the cover. Thus it is thought that the considerable loss of headlight lamps occasioned by tampering and theft may be reduced.

An additional feature being installed on these cars is Consolidated Car Heating Company's push-button buzzer system, which operates directly from the trolley current. The resistance coils, which are used to provide the low-voltage current for this buzzer-operating system, are placed



Chicago Railways Car Reconstruction—Truck as Rebuilt

under a longitudinal seat at one corner of the car. The governor for the air-compressor motor is installed under the same seat and to provide for easy access for inspection, adjustment and repair, these two devices are carried on a shelf so that they are near the top of the seat box. Thus they are free from any dirt that might accumulate on the floor under the seat and also are easily seen and reached when the seat cushion is lifted out.

On 202 of the cars the air-compressor pumps, formerly of 11-ft. capacity, are being replaced by pumps of 16-ft. capacity. Both the old and the new pumps were manufactured by the National Brake & Electric Company.

The work of rebuilding the 328 cars, as here described, is progressing rapidly and the rebuilt cars are being put into service as soon as they are painted.

The Swedish State Railways have accepted bids for the conversion to electric operation of the North Swedish division between Kiruna and the Norwegian frontier. The estimated cost, including a hydro-electric generating station, is \$4,000,000. Premiums and penalties are imposed in the contract for variations above or below the guaranteed operating costs.

The United States Geological Survey has just issued a bulletin on "Commercial Deductions from Comparisons of Gasoline and Alcohol Tests on Internal-Combustion Engines," by Robert M. Strong. The tests, which were under the technical direction of R. H. Fernald, engineer in charge of the producer-gas section of the technologic branch, were conducted at the fuel testing plant in St. Louis, Mo., and at Norfolk, Va. The tests were conducted to determine the relative economy and efficiency of gasoline compared with denatured alcohol. When the series of tests was started it was found that it took from one and one-half to two times as much alcohol as gasoline to produce a given power, but with special alcohol engines, entirely suited to the use of alcohol, the latter fuel has been made to do as much work gallon for gallon as the gasoline.

NOVEMBER MEETING OF THE CENTRAL ELECTRIC RAILWAY ASSOCIATION

The Central Electric Railway Association held a most enthusiastic meeting at Indianapolis, Ind., on Nov. 18. Papers and addresses of unusual value were delivered before an attendance of more than 100 members and guests. President A. A. Anderson was in the chair. It was announced that the next meeting would be held at Columbus, Ohio, on Jan. 27, 1910. This will be the annual meeting and new officers will be elected and installed at that time. The Central Electric Traffic Association will hold a meeting in Columbus on the day preceding that set for the session of the Central Electric Railway Association. Those attending the Indianapolis meeting were entertained with a theater party on the evening of Nov. 18.

STANDARDIZATION OF COUPLERS

The program of the Indianapolis meeting, as announced in the *ELECTRIC RAILWAY JOURNAL* for Nov. 6, was followed. The morning session began with the reading of the minutes of the Detroit meeting by A. L. Neereamer, secretary. R. M. Hemming, general manager, Ohio Southern Traction Company, and T. W. Shelton, master mechanic, Indianapolis, Columbus & Southern Traction Company, members of the standardization committee, reported progress and this committee was voted additional time in which to consider suggestions for standardizing couplers. Mr. Hemming thought that the coupler recommendations of the American Street & Interurban Railway Association did not fully meet the requirements of the roads in the Central Electric Railway Association territory, because some means should be provided for coupling cars of different heights until such time as all cars might have uniform couplers and coupler heights. The idea of his committee, in conformity with that of the American Association, was that the M.C.B. type of coupler should be used finally.

Mr. Shelton showed sketches and described a form of coupling bar pocket and coupling box that could be used in coupling cars of different heights. Other sketches shown presented the positions assumed by cars on curves and exhibited the adverse conditions under which couplers often must operate. The design of a pocket and coupler bar to be used therewith was shown. This pocket was securely anchored to the center sills and the sides of the pocket were so cut away that the coupling bar could swing sideways to accommodate itself to the position of two interurban cars on reverse curves of 40-ft. radius. The bar to be used was 2 in. x 4 in. in section, 4 ft. long and bent to suit the height of the cars to be coupled. This bar was designed for handling cars with varying heights of platforms during the transition stage, which would last until all couplers had been standardized.

L. E. Gould, *ELECTRIC RAILWAY JOURNAL*, described the work of the standardization committees of the American Street & Interurban Railway Engineering Association, which preceded and led up to the recommended standards as approved by the American Association at Atlantic City in 1908. The keynote of that work was to recommend a coupler, or other part, that eventually would be the most desirable to adopt and would be suitable for general interchange, and the committee had asked the member companies to work toward these more desirable designs as they purchased new equipment. This idea had been approved by the American Association.

COMPENSATION FOR CARRYING MAIL

The committee on this subject presented the following

report which was read by H. A. Nicholl, general manager, Indiana Union Traction Company, a member of that committee.

Your committee, appointed to confer with the committee of the American Street & Interurban Railway Association on "Compensation for Carrying United States Mail," begs to report that, after numerous attempts to secure a conference with the American Association committee, it has been unsuccessful. It was not until after our last convention that we learned from the American committee that it had been unable to accomplish any satisfactory results this year, principally on account of the change in the Federal administration and the numerous departmental changes incident thereto, and because the extra session of Congress was devoted solely to tariff revision. Therefore, your committee has not been able to obtain any satisfactory results.

The American Association committee's report made at the Denver convention, after going into statistics at some length, concludes by saying:

"It is important now that the work of the new committee should begin at the earliest possible date after this convention. Your committee strongly feels that with a concerted action on the part of the representatives of the member companies supporting its initiative, it is not unreasonable to hope that something can be accomplished, but this will require active personal co-operation on the part of those interested in electric properties. In the meantime, your committee recommends to all member companies that they respect existing contracts at least, pending the outcome of the attempt to obtain reasonable compensation, but that they should not undertake new contracts or extensions at these unprofitable rates."

Your committee concurs fully in the report of the American committee and strongly urges that a new committee be appointed promptly, or the old one continued, so that plenty of time may be given the committee to secure further information from the American committee, and to be in position to render any assistance in its power to secure results valuable to the members of this association.

Respectfully submitted,

H. A. NICHOLL,
GEO. WHYSALL,
F. W. BROWN.

The association voted that the present committee on "Compensation for Carrying Mail" be continued and instructed to act in conjunction, if desirable, with the committee on the same subject appointed by the American Street & Interurban Railway Association.

Several members discussed the present low rates paid to electric railways for handling mail. Mr. Anderson said that the Indianapolis, Columbus & Southern carried pouch mail and had been asked by the Government to extend the service. The road so far had declined to make the extension, because of the low rates and even had considered cancelling the present contract for that reason. The latter action had not been taken, however, pending the work of the committees mentioned. One member said that it had been ruled in one case that the railway could not cancel a contract to carry mail.

F. D. Carpenter, general manager, Western Ohio Railway, said that the present rates for handling mail on electric cars were made when electric railroading was in its infancy and the service given was poor. Now it was generally known that the electric railways could offer as good service in their territories as could the steam roads, and this should be recognized in the rates paid. He had talked with Congressmen who seemed willing to work for the electric railway interests in this matter and thought that now was a good time to study the means for obtaining concerted action along this line.

T. F. Grover, general manager, Terre Haute Traction & Light Company, spoke of the need of the railways in having the Post Office Department favor their case when-

ever new laws should be proposed with a view to obtaining the increased rates deserved by the service. No electric road was now making any profit in handling mail.

F. W. Brown, freight and passenger agent, Michigan United Railways, described the experience of that road in cancelling a mail-route contract. Formerly his company had two mail routes, one 20 miles and the other three miles long. The company cancelled the latter route after it had been refused an increased rate equal to that paid for a star route of the same length. This was three times more than the electric railway had been receiving. The Post Office Department refused to give the electric railway company the same rate as was paid for hauling the mail by team and after the contract had been canceled it was given to the driver of a wagon at this 300 per cent increase in cost to the department.

Mr. Nicholl quoted the comparison of average compensation per mile paid to electric and steam railways, wagons and pneumatic service. The contrast was decidedly to the disadvantage of the electric railway companies. He thought that the Post Office Department looked with favor upon the raising of rates, but could not do so until the necessary laws had been passed.

LOOSE LEAF FILING SYSTEM

S. D. Hutchins, Westinghouse Traction Brake Company, chairman of the committee to consider methods for facilitating the loose-leaf filing of information contained in technical publications, reported as follows:

The committee has discussed the feasibility of suggesting changes in the form of publications which would make them more adaptable to filing and indexing for current use. The points considered by the committee at a meeting held last night were as follows:

Wider margins that would permit binding loose leaves into book form, and

Standard punching that would be adaptable to a special set of covers for holding such leaves.

In the opinion of the committee, a wider binding margin would make the pages adaptable for filing under a greater number of methods, and the committee begs that the association refer these suggestions to the publishers of the technical journals devoted to electric railway work with the idea that the publishers study the question in its broad sense and report to the association as soon as definite recommendation can be presented.

On motion, the report of this committee was accepted, and L. E. Gould, western editor, *ELECTRIC RAILWAY JOURNAL*, was appointed to study this question from the standpoint of both reader and publisher and report later to the association.

CENTRALIZED TESTING

The first paper of the day entitled "A Centralized Testing Organization, Its Function in the Management of Electric Railways," was presented by J. G. Callan, electrical engineer, Arthur D. Little, Inc., Boston, Mass. This paper was published on page 1065 of the *ELECTRIC RAILWAY JOURNAL* for Nov. 20, 1909.

After the reading of the paper the following committee was appointed to consider the recommendations and suggestions made by Mr. Callan and to report to the association: G. H. Kelsay, Indiana Union Traction Company; L. J. Drake, Jr., Galena Signal Oil Company, and E. J. Jones, Ohio Electric Railway.

PUBLICITY

A paper on the subject of "Publicity" was next presented by A. B. D. Van Zandt, publicity agent, Detroit United Railway. This paper was printed on page 1067 of the issue of this paper for last week.

President Anderson recalled that among his early impressions was one of the vast amount of sometimes abusive publicity which at one time was given the street railways. Later with the growth of the railway business and a better understanding of that business by the newspapers, the publicity circulated by the daily press had a better effect, and about this time the interurban roads began to advertise their service.

The president next appointed the following nominating committee to report at the annual meeting in Columbus, Ohio, on Jan. 27, 1910: F. D. Carpenter, Western Ohio Railway; S. D. Hutchins, Westinghouse Traction Brake Company; W. C. Whitney, Ohio Electric Railway; George W. Parker, Detroit United Railway; J. H. Crall, Terre Haute, Indianapolis & Eastern Traction Company.

AMERICAN ASSOCIATION

The afternoon session was largely devoted to impressions and reports of the Denver convention of the American Street & Interurban Railway Association. Arthur W. Brady, president, Indiana Union Traction Company, and first vice-president, American Street & Interurban Railway Association, spoke at length regarding the progress of the latter-named association, and its valuable convention at Denver. The points brought out were briefly as follows:

On account of the distance of Denver from the large properties of the East, only those undertook the trip to Denver who were interested in the active work of the association. The several excellent special trains in which most of the attendants at the Denver convention traveled served to afford an unusual opportunity for extended acquaintances, so that at the beginning of the sessions every one was ready for work. The Denver convention was to be characterized as an "enthusiastic" meeting. The sessions of the individual associations were well attended and of much worth on account of the spirited discussions which the papers brought forth. By this successful convention the standing of the American Association had been strengthened greatly.

An excellent example for study was afforded in the street railway system of the Denver City Tramway Company. To many railroad men from the East this property was a revelation, with its remarkable, up-to-date methods and numerous operating novelties that were worthy of careful study.

Mr. Brady stated that one result of the Denver convention had been to demonstrate that the American Association was much stronger than ever before in membership and finances. The question now was not whether the association would be a success, but, rather, how great a success the association could be made. It was important to increase the membership and to maintain the present keen interest of the members. The work of the affiliated associations, as exemplified at Denver, had been of a thoroughly practical character. Important evidence of the truth of this statement could be found in the reports of the standardization committee and in the recently adopted rules for both city and interurban service. These were subjects vitally important to all roads.

The work of the American Association itself, as distinct from the affiliated associations, visibly had not been of such important a character as that of the affiliated associations; that was to say, the greatest work done by the American Association had been in the line of organization—in forming the new Transportation & Traffic Association, and in keeping the work of the affiliated associations under movement in the right channels. For this reason the work

of the American Association was immensely valuable, although in general it was of such a character that its practical value was difficult to see and to measure. One important question considered at the Denver convention was the nature of the work which the American Association would undertake in the future. It was believed that the great work for this body, apart from cementing that of the affiliated associations and the electric railway interests of the country, would be to continue along the line of improving public relations; that is, it would tend to disseminate a better understanding among the public of the difficulties which the electric railways must meet. The association also should consider the methods of reform that were being and would be undertaken. The question of rates was always one of vital interest. In the past the public had been misled because of a lack of authoritative information as to the real cost of operation, so that in some localities it was thought that the existing fare within the corporate limits of a city should be reduced from 5 cents to as low as 4 or even 3 cents. For similar reasons, demands had been made for reductions in interurban fares. This situation, Mr. Brady said, was due partly to a misapprehension on the part of the public, because it had not been taken into the confidence of the electric railway companies, and did not know of the physical and other difficulties with which they had to contend. The lack of appreciation of railway conditions as they were might also be due to stories circulated by promoters who intended to be honest but were over-enthusiastic.

Thus the American Association would continue to work along the lines of improving public relations and maintaining concerted action on the part of the affiliated associations. The recently published pamphlet on "The Fare Question" was in line with the future policy of the association's work. This pamphlet, Mr. Brady said, was one of the most valuable ever issued on a similar subject. The questions of regulation by Government authority and of legislation by the National Congress at Washington would be studied, and the association in this matter alone could be of service to the member companies far out of proportion to the cost for membership.

On behalf of the American Association, Mr. Brady presented to the members of the Central Electric Railway Association the future policy as here outlined. He knew that the value of the work done by the American Association would be appreciated, and urged that the Central Electric Railway Association should be confident that there was no rivalry, because both associations were working for a common cause. The desire was that all companies should join the American Association and that all operating officials should become associate members. Mr. Brady recommended a careful reading of the annual address of President Shaw, of the American Street & Interurban Railway Association as delivered at Denver. This address was a magnificent resumé of the electric railway situation of the country, and the problems which had to be met. Copies of the address might be obtained from B. V. Swenson, secretary, American Street & Interurban Railway Association, 39 West Thirty-ninth Street, New York.

CLAIM AGENTS' ASSOCIATION

Ellis C. Carpenter, claim adjuster, Indiana Union Traction Company, presented a paper outlining the work of the American Street & Interurban Railway Claim Agents' Association, as performed at the Denver meetings. Mr. Carpenter was elected president of the association at the close of the sessions in Denver, as previously announced in the

ELECTRIC RAILWAY JOURNAL, and his paper, as read at Indianapolis, was published in this paper last week.

TRANSPORTATION & TRAFFIC ASSOCIATION

J. B. Crawford, superintendent, Winona Interurban Railway, presented a detailed narrative of the proceedings of the Denver convention of the American Street & Interurban Railway Transportation & Traffic Association. This paper was also published in the issue of last week.

GENERAL DISCUSSION

R. M. Hemming suggested to the members of the Central Electric Railway Association that it would be a good thing for all electric railways if a standard stop sign were adopted and used in every city in the country. The meaning of the sign would become known quickly, and strangers would not be confused by the various methods and places of stopping cars as now followed by different roads at the order or suggestion of the municipalities in which they operated.

A discussion followed on the advisability of stopping cars on the near side of the street. Mr. Van Zandt said that the Detroit United Railway, following ordinances of the City Council, had had experience with stopping cars on both sides of the streets. As a result it was now the practice to stop all cars only on the near side of the street when within a half-mile circle enclosing the business section of the city, where all streets were paved.

John J. Mahoney, superintendent, Indianapolis Traction & Terminal Company, said that some years ago the City Council of Indianapolis had ordered the traction company to stop its cars on the near crossing, and that the results with this method of operation had been highly pleasing both to the riding public and the company. Later, the change to the present method of stopping on the far side of the crossings had been ordered. The former practice had greatly facilitated the handling of faster schedules because it eliminated many unnecessary stops, notable among which were those on the far side of a crossing made to receive passengers after the cars already had stopped on the near side of the street so that the facing switchpoints might be thrown.

C. L. Henry, president, Indianapolis & Cincinnati Traction Company, thought that a rule requiring cars to stop on the near side of the street would work a hardship on passengers riding on long interurban cars.

F. W. Brown, Michigan United Railways, asked if any one present could recite the results of legal action following the ejection of a passenger who had attempted to ride on an expired transfer. Mr. Mahoney said that the Indianapolis Traction & Terminal Company had won several lawsuits based on such premises. The day sheets kept by the conductor showed the serial number of the transfers in hand, opposite the time of leaving for each half trip, and also, whenever a conductor found it necessary to eject a passenger, the names of witnesses were taken and a special report made. One case of the nature cited had been lost when there was doubt about the question of whether the transfer for the right line had been given.

The meeting adjourned to reconvene at Columbus on Jan. 27, 1910.

The London County Council has finally secured permission from the Government to build an extension of its tramway lines from Woolwich to Eltham, passing close to the Royal Observatory at Greenwich, provided it will equip the line with double overhead trolley. The Royal Astronomer objected to the use of either the conduit or the single overhead trolley system on the ground that stray current would affect the delicate instruments in the Observatory.

SOME FEATURES OF STATE REGULATION OF PUBLIC UTILITIES*

BY JOHN H. ROEMER, MEMBER OF THE RAILROAD COMMISSION OF WISCONSIN

The doctrine that the public has an interest in the use of the property of a public utility employed in a public service, though resting upon the principles of the common law, was not agreeable to the managements of public service corporations when State regulation and supervision of such corporations were first proposed. Nor has there ever been a full assent to this doctrine or a frank submission to the regulatory measures adopted by the State on the part of many such corporations. The view that their undertakings, except to a limited extent in the case of common carriers, were purely private business enterprises which could be conducted upon like principles as those prevailing in other commercial pursuits, controlled the managements in the transaction of all the affairs of the corporations, whether pertaining to their private corporate functions or to those relating to their public callings.

It was not until *Munn vs. Illinois*, the first of the so-called Granger cases, reached the Supreme Court of the United States and was there decided, that the right of the public in the use of private property devoted to a public purpose which, in its nature and because of economic conditions, clothed the owner with a practical monopoly, was fully recognized in its economic aspects and as legally grounded upon the principles of the common law. This case marks the beginning of a new epoch in economic legislation affecting public service corporations in this country. The agitation of Federal control of interstate carriers at once began in Congress and continued until the enactment of the interstate commerce act. State after State took up the subject and enacted laws along the lines of the Federal act until to-day a number of States have provided State agencies for the control and supervision of transportation by railroads and other common carriers. Perhaps the most efficient and certainly the most carefully considered law on the subject is the Railroad Commission act of Wisconsin. Since its enactment the Wisconsin law has been the prototype of practically all legislation upon the subject in other States where intelligent and effective regulation has been desired.

In less than two years from the time the Railroad Commission act became effective, the propaganda resulted in inducing the legislature to supplement the railroad act with the public utilities law now in force. The scheme of State supervision of public utilities embraced in this law is the most comprehensive in all its economic aspects and the most effective of any law of the kind in existence. After two years of administration under its provisions no amendment changing any fundamental provision of the law has been suggested from any quarter. If the intention of the eminent economist and lawyers, who conceived and framed the law, may control in its administration and may not be nullified by judicial interpretation deemed necessary to meet some theory of constitutional requirements or inhibitions, the experiment undertaken in this State to regulate and supervise public utilities in an intelligent and logically consistent manner may become an established policy of the State and a guide to other States in solving a common problem. We have not, however, proceeded far enough at this time to pass intelligent judgment upon the final results of the operation of the law, nor even to predict with any degree of confidence whether the law will fully meet the purposes of its enactment. Nevertheless we do know that the benefits which have resulted to the public and the utilities so far have been great and important, but the full benefits designed by the law, if attainable under it, can only be enjoyed in time to come. Under the circumstances the public, the utilities, and the commission can well afford to labor together patiently and harmoniously and, disregarding the clatter of the blatherskite and demagogue, to take each step cautiously, knowing that the achievement intended will rebound to the material and moral welfare of society and, if successful, as it probably

*Abstract of an address delivered before the Wisconsin State Bar Association at Milwaukee, Wis., Sept. 1, 1909.

will be if confidence and patience are indulged, will be a credit to the State and a blessing to posterity.

Among the most important and salutary provisions of the law is that providing for the valuation of the property of all public utilities operating within the State. The Supreme Court of the United States having in effect determined that the owner of private property devoted to a public use is entitled to exact from the public such charges for the services rendered or product furnished by him to the public as will generally produce revenue sufficient to meet operating expenses, cost of maintenance, and depreciation of the plant, and also to provide a reasonable return upon a fair value of the property so employed, it was necessary to provide for an appraisal of such property in order to have a lawful basis upon which to determine intelligently the question of rates and charges.

That every legitimate element of value, whether tangible or intangible, might be considered, the law provides for the valuation of the physical property and of all the property of a public utility "actually used and useful for the convenience of the public." In view of the indefinite and uncertain statements found in the opinions of most of the courts regarding the elements of value that properly and necessarily enter into the matter and must, therefore, be considered in arriving at the fair and just valuation of the active property of a public utility, the legislature wisely extended the latitude of the inquiry so that no infirmity in the scheme of valuation proposed might exist because, perchance, of some transgression of the provisions of either the State or the Federal constitution inhibiting the taking of private property for public purposes without just compensation being made to the owner thereof. The duty thus imposed upon the commission is the gravest and most important of all its functions. The value of every security of a public service corporation in this State will be determined and perhaps irrevocably fixed by the appraisal made by the commission of the property of such corporation upon the credit of which such security was issued. There can be no escape from this conclusion.

Fair and reasonable as such appraisal may be, it will signify to the world that in the future public utilities in this State will cease to be subjects for speculative investments. It will also indicate that which is more important, to-wit, that actual and bona fide investments in such concerns, when providently made, will be secure under State supervision and the adequacy of the security will be maintained by a strict enforcement of the law requiring, wherever and whenever possible, an adequate depreciation reserve fund to be set aside so that the physical plant may at all times be maintained to a maximum of efficiency, and the integrity of the investment may not be impaired from any cause or contingency incident to the operation and use of the property.

The need of additional capital to extend existing plants to meet the public requirements may be met at less sacrifice, in my judgment, under such circumstances, than the customary bond discounts of the present day, and if we are to accept the word of some of our leading financiers, capital under the conditions mentioned will be available at less rates than are at present in vogue.

There is no reason why the bonds of public service corporations at a low rate of interest should not compete in a measure with public securities for the favor of those seeking secure investments and such as are readily convertible into cash. In some of the New England States, notably Massachusetts, they stand on a parity with public securities, and by law are permitted to be purchased by savings banks and to become investments for trust funds. Doubtless in time we may find the same conditions prevailing here, but before such is likely to be the case many, if not most, of our public utilities will have to undergo a financial regeneration. To insure stability to the securities it is essential that they approximate a truthful representation of the investment. When the disparity between the actual investment and that reflected by the capitalization becomes a matter of public record, the self-interest of the security holders will doubtless bring about a readjustment of the capitalization upon a sound and truthful basis. This has occurred in almost every public service corporation of any importance in the country, and in some has occurred more than once.

Those who desire to withstand any scaling of capitalization when the latter is discredited by financiers and becomes an impediment to business extension often contend, but never successfully, that the capitalization of a public service corporation does not concern the public; that the securities of such a corporation are mere private corporate contracts between the parties thereto, and should therefore be permitted to assume such lawful form as the parties in interest may agree upon. The contention in relation to stock issues contains an element of truth, but in relation to bond issues and other evidences of indebtedness it is without any moral or reasonable basis for support; but even before it can be conceded as sound in connection with the issue of capital stock there must be a radical change in the character of such securities. If each share of stock represented upon its face but an aliquot part of the property of the corporation, the number of parts into which the corporators should divide the corporate holdings would be of no public consequence, and this is particularly true in this State under the public utilities law, by the terms of which the return to the investors is based upon the fair value of the active property of the corporation which forms the measure of the value of the securities issued against it.

The uniform system of accounting required of all public utilities under the provisions of the law has already demonstrated the wisdom of its adoption.

While the system of accounting comprehends a scientific and carefully arranged separation of accounts, its application to the various situations and conditions under which the utilities are operating may result in certain modifications which experience may demonstrate to be necessary before the method of accounting will be permanently established.

But the principles upon which the system has been constructed, being in accord with the best thought and practice on the subject, will not be changed. Nor will the system be weakened to satisfy the theory of those who believe that the public should be satisfied with general statements of receipts and expenditures rather than detailed reports differentiating the items in accounts that will enable an intelligent judgment to be formed of the various details of operation and management. Any alteration in established business methods necessarily meets with the opposition of the non-progressive and self-satisfied manager, but when a change is once inaugurated such resistance passes away and a return to the old methods would be met with equal aversion.

All municipal public utilities will be required to keep their accounts in conformity with the established system. The most vital objection urged against municipal ownership and operation of public utility plants has been the lack of business ability generally displayed in such undertakings. Under the plan of accounting provided by the law and with the exercise of reasonable diligence on the part of those charged with its execution, I see no reason why municipal plants may not be administered as efficiently and economically as those controlled by private capital.

The valuations thus far made have been undertaken for the most part in connection with rate complaint cases, although the law contemplates the ultimate valuation of every utilities property in the State.

The engineering staff endeavors to determine as accurately as possible the true "cost of reproduction" of each item of physical property included in the inventory. All available evidence is carefully weighed with a definite purpose of arriving at a "middle-ground" decision on the value of each detail of the property, both as to the "cost new" and the depreciated or "present value." Throughout its work the attitude of the staff is carefully guarded against bias of any kind, with the intention that the service rendered to the commission shall be identical in kind and quality with that of a technical expert chosen independently by the court to give expert advice or opinions in technical matters. This balance of judgment, it is believed, is strongly sustained by the fact that the staff is continually engaged in physical valuations for both taxation and rate-making purposes.

In the course of its work, extending through a period of years and covering the widest possible range or variety of detail of physical properties, there has been accumulated a vast fund of cost data and other information invaluable

in work of this kind, much of the data naturally being of a confidential character. An important feature of the valuation staff work is the collection and assimilation of this information.

Special studies of local conditions, with a view of discovering the underlying causes for defective service and of pointing out the best manner of remedying such defects, afford the sole means of successfully attacking some of the problems which confront the commission.

The commission has carefully guarded against assigning its staff to those lines of service which properly should be undertaken by the engineer in private practice. Such intrusion may perhaps not be wholly avoided, but slight encroachments, if they occasionally occur, are quite certain to be outweighed by the frequent opportunities which already have arisen to suggest to inquiring officials the names of eligible practicing engineers to render a specific service beyond the legitimate scope of the work of the staff. This latter delicate service has been rendered in a number of cases by suggesting the names of several engineers eligible for a given service.

Although not directly concerned with the public utilities law itself, mention may appropriately be made of the exhaustive study of the service rendered by the Milwaukee Street Railway Company, the staff report on which was recently given to the public.

Various reasons have been assigned for the general failure of such corporations to act in accordance with the desire of the legislature respecting the surrender of local franchises and the acceptance of indeterminate permits, but the controlling reasons for the attitude assumed by such corporations in the matter seem to have been (1) a doubt as to the legal right of the directors and stockholders to make the surrender without the consent of the bondholders whose mortgage security covers and includes the franchises of the corporation; (2) the practical impossibility of ascertaining all the bondholders and acquiring their consent, and (3) the erroneous, though perhaps not all-founded, conception of the value of such franchises.

The fact that a new phase, "indeterminate permit," was coined and employed in the act to denominate a franchise when used in its generic sense, that is, as embracing all the secondary or special franchises granted to a public service corporation, either directly by the State under general legislative provision or indirectly by the State through a Common Council or other municipal body duly authorized thereto, has had a deterring effect upon such corporations, and notwithstanding the legislature has again opened the season for exchanging franchises there has been no perceptible change in the attitude of the corporations toward the proposition.

As the utilities are generally desirous of canceling their long time discriminatory contracts with municipalities for service for municipal purposes and those with individuals for private purposes, it would have been, perhaps, better if the Legislature had in the first instance attached less importance to such contracts and amended every franchise by making it exclusive and practically perpetual, although subject to termination by the acquisition of the physical property of the utility under eminent domain.

In considering the features of the law, hereinbefore discussed, in their broader aspects it would appear that the unbiased mind must necessarily come to the conclusion that the system of State regulation and aid provided by the public utilities law of this State is capable of producing eventually more permanent and satisfactory results than any system of local control that can be conceived. It recognizes that public utilities are business enterprises requiring a high character of scientific skill as well as business ability for their successful operation and management. Any public control which ignores this fact must of necessity fail. Local control, as commonly practiced, consists of nothing more nor less than spasmodic attacks upon rates and services of public utilities regardless of the physical conditions of their plants, their financial needs or possibilities. Because of local attacks public service corporations have not infrequently yielded to local pressure and reduced their charges for the sake of peace when public interest, if the situation had been properly understood, would have been best served by maintaining the revenues

so as to have enabled them to make improvements by adopting new inventions and thereby rendering better service at a permanently reduced cost. That public regulation which does not deal intelligently with the business interests as well as the physical property of a public service corporation will prove disastrous in the end. The Wisconsin law is well adapted to a wise supervision of all the affairs pertaining to the operation and business administration of every public utility subject to its provisions.

IMPROVEMENTS CONTEMPLATED IN LOS ANGELES BY THE PACIFIC ELECTRIC RAILWAY

The Pacific Electric Railway, under which name the interurban lines of the Huntington system in Los Angeles are being operated, is planning to make important extensions and improvements during the coming year. During the last three months the company has purchased 5500 tons of rails and 300 steel freight cars, most of them of 100,000 lb. capacity. The company is now carrying daily 250 carloads of freight. It is also proposing to extend the capacity of its main passenger station at Sixth and Main Streets, Los Angeles, to accommodate its increasing traffic.

SOME EMPLOYMENT CONDITIONS OF BERLIN CAR MEN

The Grosse Berliner Strassenbahn, operating with its subsidiary companies practically all the street railways and part of the omnibus traffic of Berlin, employs about 7600 motormen, conductors and chauffeurs. The average daily working time for conductors is 10 hours and for motormen is nine hours. This paid working time includes the period needed to make the car ready for operation, for which purpose the conductor is allowed 10 minutes and the motorman 15 minutes. The men are also paid for waiting time. The average paid "lay-over" time is 12 minutes an hour, but compensation is given for "waits" up to and including 30 minutes provided that they occur within working hours. If all paid non-run "waits" are subtracted from the nominal labor time the actual working periods of the motorman and conductor average, respectively, 7 hours and 15 minutes and 8 hours. A platform man is granted at least 8 hours' free time between successive days. When the schedule calls for a little overtime a full hour's pay ($\frac{1}{2}$ M) is given for periods of 30 minutes and over. On the average every regular man has a day off every seven days at his own expense. Of this free time at least seven days in the year must fall on Sundays or holidays. Trippers have at least two free days without pay every month.

RATES OF PAY AND OTHER ITEMS

In considering the wages paid to the platform men it should be borne in mind that while the German mark has an exchange value of 24 to 25 cents only many of the expenses of living are lower than in the large Eastern cities of the United States. Consequently it will not give a correct idea to divide by four the figures hereinafter given to obtain the American equivalent in dollars; in many cases a division by two or by two and one-half would give a more exact concept of the purchasing power of the mark in Germany. The monthly wages of motormen and conductors are as follows: First year, 95 M; after one year, 100 M; after three years, 105 M; after five years, 110 M; after seven years, 113 M; after nine years, 115 M; after 11 years, 118 M; after 12 years, 120 M; after 15 years, 125 M; after 20 years, 130 M. It will be noted that seniority is an important factor in the rates paid. Instructor motormen receive extra compensation. Extra men get 3 M

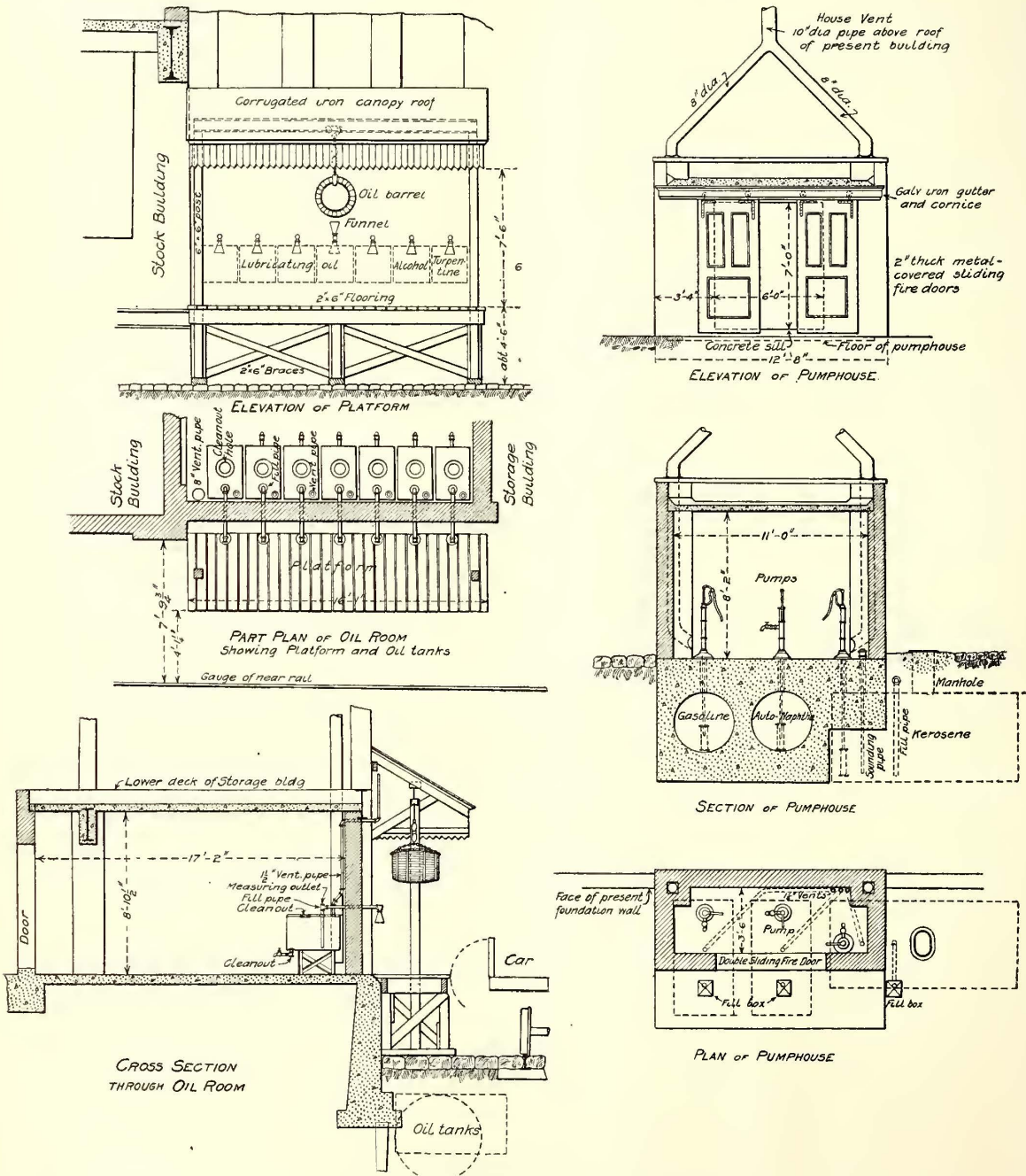
a day. Students are paid 2 M a day, but if they have been in the employ of the company for three months they receive a daily wage of 2.5 M. Overtime for "extras" and "students" is paid for at the rate of 0.3 M an hour.

Every motorman and conductor is provided with a free service uniform as follows: Motormen and conductors, one cap and jacket once a year and one pair of trousers every two years. A cloth cape is also furnished to both classes in addition to which the motormen receive overcoats and winter caps. The company also gives large amounts to various employees' benefit funds. The functions of the latter need not be described in detail in this article, but may be summarized as follows: Sick and ill-

co-operative building association, an off-shoot of the welfare association, which has been assisted by low interest loans. Compulsory insurance against the injury of employees is cared for by membership in a mutual insurance organization of railway companies.

OIL HANDLING IN BROOKLYN

The Brooklyn Rapid Transit Company recently has installed at its Nostrand Avenue track and line headquarters some fireproof storage facilities and pumping apparatus for handling oil and other inflammable liquids. The installation comprises one unloading and two storage plants,



Brooklyn Oil Handling—Elevations and Sections, Showing Transportation of Oil to Inside Storeroom and Also to Underground Storage.

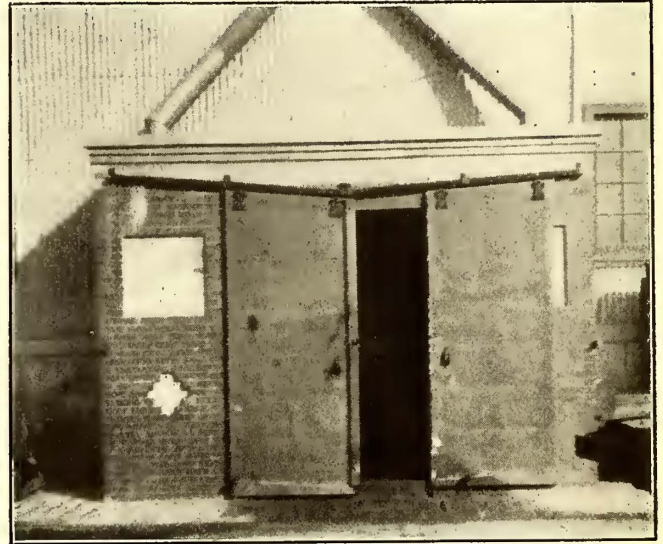
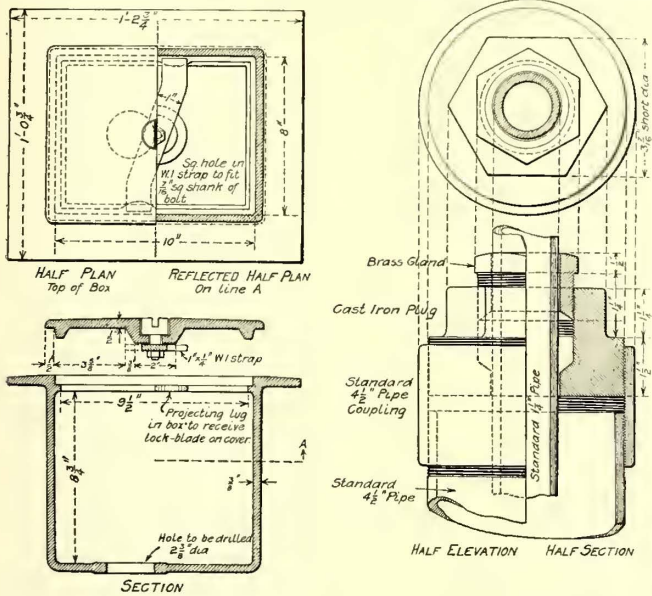
ness fund, a compulsory institution to which the company gives voluntarily more than the sums required by the law; pension, widow and old-age fund, which was started in 1905 with a \$200,000 endowment from the company; social organization of employees for miscellaneous welfare work, which receives an annual contribution from the company;

all being arranged alongside the stock and storage buildings adjacent to one of the unloading tracks which run through the yard. The new method of handling oil in bulk greatly simplifies its delivery, and it is quite possible that in future the supplies will be brought in tank cars which will serve the entire system.

The larger underground storage consists of a concrete pit, in which are buried one gasoline and one auto-naphtha tank, each 3 ft. 2¼ in. in diameter and 5 ft. 10½ in. long inside, and one kerosene tank, 4 ft. 8¼ in. in diameter and 10 ft. long inside. The kerosene tank is provided with a 10-in. x 16-in. manhole, to permit cleaning and inspection. As shown in the accompanying section, each tank has a

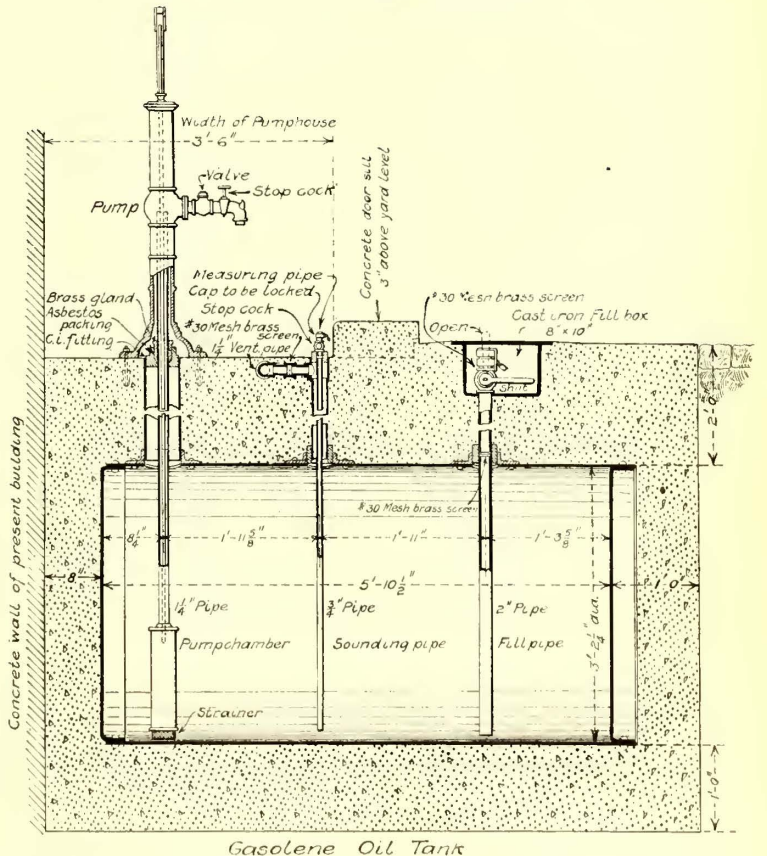
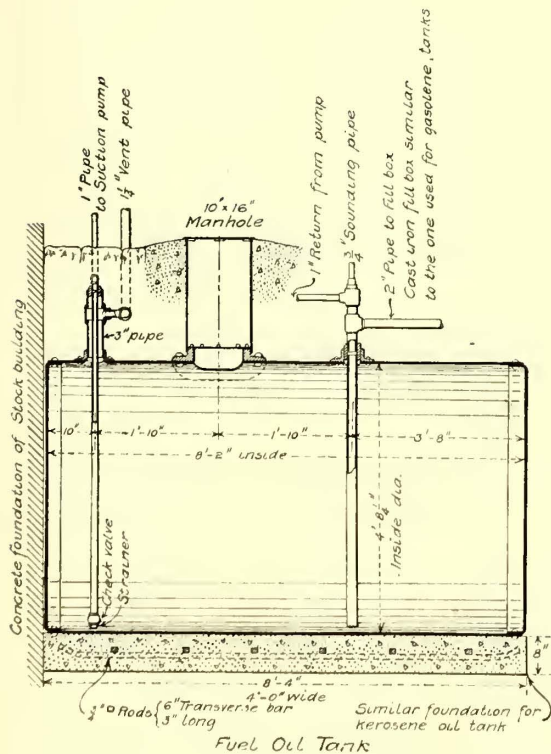
with reinforced concrete roof. Entrance to the house is through a sliding double fire door. The main vent pipe is carried through and above the roof of the pump house to the top of the adjacent building.

The second underground installation was required in connection with the blacksmith shop. It consists of a pit with reinforced concrete base, containing a fuel oil tank 4 ft. 8 in. in diameter and 8 ft. 2 in. inside length, which



Brooklyn Oil Handling—Details of Cast-Iron Fill Box and Fittings

Brooklyn Oil Handling—Pump House Over Underground Storage Tanks



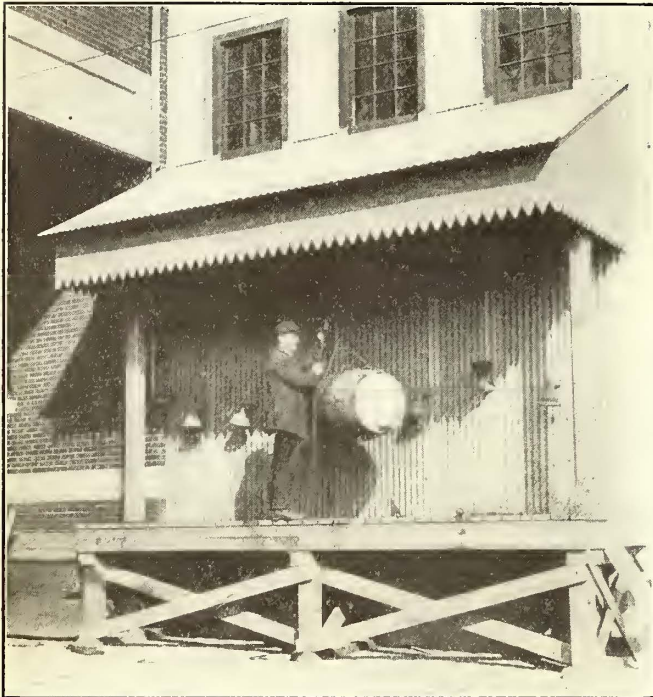
Brooklyn Oil Handling—Cross Section Showing the Pumping Arrangements for Underground Storage Tanks

cast-iron fill box with fill pipe, a pump and a sounding pipe with vent. The gasoline and auto-naphtha tanks are separated from the wall of the storage building by 8 in. of concrete, and from the floor of the pump house by 24 in. of concrete, the whole making a safe and durable construction. The three pumps are protected by a neat brick house,

rests directly against the wall of the building. This tank is also provided with a 10-in. x 16-in. manhole to allow overhauling. The oil is conveyed to the forges on the floor above by means of a suction pump which is driven by belting from a short countershaft outside the building.

To facilitate the delivery of supplies to the inside oil

room, there has been erected between the two pits described a wooden unloading platform with a corrugated iron roof. This platform is opposite the outer wall of the oil storage room and on a level with unloading cars. It is furnished with hoisting blocks, chains and a set of galvanized-iron swivel funnels, one for each kind of liquid delivered. As a barrel is emptied the contents pass from the funnel through



Brooklyn Oil Handling—Filling Oil Tanks in Storeroom From Outside Platform

a corresponding pipe in the wall to the alcohol, turpentine or lubricating oil tanks in the storage room, as illustrated. The tanks are of metal and are carried on steel bents. By storing the oil in this way, the utmost cleanliness is assured, and the barrels can be taken away immediately.

LAYING RAILS IN REINFORCED CONCRETE

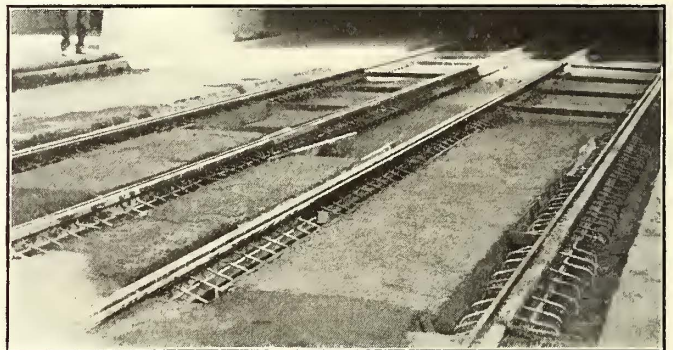
Dr. M. Eisig, manager of the Chemnitz, Germany, municipal street railway system, has recently designed a novel construction for rigidly anchoring in a reinforced concrete base rails laid in paved streets. As shown in the accompanying engravings, the anchorage consists of iron rods $\frac{3}{4}$ in. to $1\frac{1}{8}$ in. in diameter and from 20 in. to 24 in. long passing through the web and the base of the rail from 6 in. to 8 in. apart and imbedded in the concrete girder which surrounds the rail below the head. These rods are securely fastened to the rail by conical channel pins and are bent down at the ends to secure a firm hold in the concrete. The rods not only tie the rail to the concrete, but also serve as lateral reinforcement in the concrete beam. Additional reinforcement can be used by placing longitudinal rods in the concrete beam parallel to the rail and tying the two sets of rods together with wires at the points of intersection.

The resistance to lateral motion of the rail under this construction is increased by inserting the transverse rods through the web of the rail close under the head. The distance between the top of the head of the rail and the center line of these rods depends on the depth of the paving and the thickness of the layer of concrete above the rods. As shown in the cross-section engraving, the rods are in-

serted $2\frac{3}{4}$ in. below the top of the rail head, with an asphalt pavement 2 in. thick. The adhesion of the concrete to the rail and the rigidly attached reinforcing rods prevent any movement of the rail relative to the concrete beam, and thus there is no grinding or pulverizing due to the rail working loose under vibration.

In laying track with this construction, careful workmanship is essential. The work should be entrusted only to specialists in reinforced concrete construction. To avoid the formation of bubbles, the concrete forming the supporting beam should be mixed with more water at the base than near the top of the rail. Before being imbedded in the concrete the rails and reinforcing rods should be free from all surface imperfections, such as rolling mill scale, rust, dirt and grease. The first section of track laid in Nurnberg, Germany, in June, 1909, was built in the following manner:

The rails, after being bolted together at the joints, were thoroughly cleaned with steel brushes. The transverse



Reinforced Concrete Track Foundation in Nurnberg, Germany

rods were then placed in position and securely fastened with channel pins. Next, the longitudinal reinforcing rods were wired to the cross rods. Mold boards were put in place to confine the main body of plain concrete between and outside of the rails, and this concrete was then placed and tamped to the proper level. About half an hour later the mold boards were removed and the concrete beam surrounding the rail and inclosing the reinforcement was poured and thoroughly worked into a solid mass. Finally, the two masses of concrete were tamped on the surface to obtain perfect adhesion at the contact surfaces. The concrete foundation was allowed to set for 10 days before laying the asphalt paving.

This piece of trial track was about 200 m long, and the cost of laying, including concrete and reinforcing rods, but excluding the rail, is said to have been \$1.77 per yard of rail, or \$3.54 per running yard of track. The cost of the concrete used in the supporting beam was higher than for ordinary track foundations, because a richer mixture was required, but, on the other hand, the cost of labor was slightly less. While the cost of this method is claimed to be materially less than that of supporting the rails on ties imbedded in concrete, the principal advantage which is claimed is that it insures a unit structure of the rail and the concrete foundation beam. It is not possible for the rail to separate from the concrete unless the latter disintegrates completely. The construction also prevents lateral tilting of the rail head due to the elasticity of the web. If the theory that corrugation of rails is largely caused by vibration is correct, this construction should go far toward eliminating at least one cause of corrugation.

While it may be more difficult to replace or to repair

THE FUEL CONSUMPTION OF LOCOMOTIVES

Prof. W. F. M. Goss has just made an analysis of the utilization of fuel in locomotive practice in a bulletin just issued by the United States Geological Survey. Professor Goss says that the locomotives in service on the railroads of this country consume more than one-fifth of the total coal production of the United States, and places their entire annual consumption at 90,000,000 tons, valued at \$170,500,000. The amount utilized and lost is tabulated in the report as follows:

SUMMARY OF RESULTS OBTAINED FROM FUEL BURNED IN LOCOMOTIVES.

	Tons.	Percent
1. Consumed in starting fires, in moving the locomotive to its train, in backing trains into or out of sidings, in making good safety-valve and leakage losses, and in keeping the locomotive hot while standing (estimated)	18,000,000	20.0
2. Utilized, that is, represented by heat transmitted to water to be vaporized	41,040,000	45.6
3. Required to evaporate moisture contained by the coal	3,600,000	4.0
4. Lost through incomplete combustion of gases	720,000	0.8
5. Lost through heat of gases discharged from stack	10,080,000	11.2
6. Lost through cinders and sparks	8,640,000	9.6
7. Lost through unconsumed fuel in the ash	2,880,000	3.2
8. Lost through radiation, leakage of steam and water, etc.	5,040,000	5.6
	<hr/> 90,000,000	<hr/> 100.0

In discussing these several amounts Professor Goss says that the amount of fuel consumed in preparing locomotives for their trains, etc., is controlled principally by operating conditions, by the length of divisions, and by the promptness with which trains are moved, and it is reasonable to expect that the normal process of evolution in railroad practice will tend gradually to bring about some reduction in the consumption thus accounted for. The fuel required to evaporate moisture in the fuel and that which is lost through incomplete combustion are already small and are not likely to be materially reduced. That represented by the heat of gases discharged from the stack offers an attractive field to those who would improve the efficiency of the locomotive boiler. So long as the temperature of the discharged gases is as high as 800 deg. Fahr. or more there is a possibility of utilizing some of the heat by the application of smoke-box superheaters, reheaters, or feed-water heaters, though thus far the development of acceptable devices for the accomplishment of this end has made little progress.

The fuel loss in the form of cinders collecting in the front end and passing out of the stack is very large and may readily be reduced. A sure road to improvement in this direction lies in the direction of increased grate area. Opportunities for incidental savings are to be found in improved flame ways such as are to be procured by the application of brick arches or other devices. Such losses may also be reduced by greater care in the selection of fuel and in the preparation of the fuel for the service in which it is used. It is not unreasonable to expect that the entire loss covered by this item will in time be overcome. The fuel which is lost by dropping through grates and mingling with the ash is a factor that depends on the grate

design, on the characteristics of the fuel, but chiefly on the degree of care exercised in managing the fire. More skillful firing would save much of the fuel thus accounted for. The radiation and leakage losses may, in part, be apparent rather than real, owing to possible inaccuracies in the process of developing the heat balance. On the assumption that the values are correct as stated in this bulletin, however, Professor Goss does not think it likely that under ordinary conditions of service they can be materially reduced.

In conclusion he says: "Locomotive boilers are handicapped by the requirement that the boiler itself and all of its appurtenances must come within rigidly defined limits of space, and by the fact that they are forced to work at very high rates of power. Notwithstanding this handicap, it is apparent that the zone of practical improvement which lies between the present-day results and those which may reasonably be regarded as obtainable is not so wide as to make future progress rapid or easy. Material improvement is less likely to come in large measures as the result of the revolutionary changes than as a series of relatively small savings in the several items to which attention has been called."

RESTRICTING THE LIMITS OF THE 5-CENT FARE ZONE*

BY J. H. WILSON, PRESIDENT, MOBILE LIGHT & RAILROAD COMPANY

Many electric railway companies have realized that the rates of fare adopted several years ago are inadequate; they find that operating expenses have increased very much and they also see now that they miscalculated as to the prospective profit.

State Railroad Commissions have realized that a mistake was made and have authorized increases in rates. A mistake that many companies have made and are still making, is the extension of the 5-cent fare zone to a distance where it becomes unprofitable and loads the company with an encumbrance that holds it down and prevents the profit to which the investment is entitled. I know of a road that carries a passenger 19 miles for five cents. This road reaches on its 5-cent fare zone a small suburban town, nine or 10 miles away from the business center of the city; the operating expense per passenger per car-mile would indicate that the road loses a few cents on each passenger carried over this suburban line.

The Mobile Light & Railroad Company can tell, with its system of records, whether or not a profit is made on the second 5-cent zone of lines extending to suburban districts. A company having a one-fare zone for the entire district can not accurately determine on account of lack of data whether or not it has adopted the correct plan.

The Mobile Light & Railroad Company operates 55 miles of track in a district having approximately 65,000 population. The gross passenger receipts are about \$550,000—transfers being issued. The system is divided into four divisions, the city division or first 5-cent fare zone, and three county divisions, known respectively as the Spring Hill, Whistler and Magazine Point divisions, on each of which an additional fare is collected. The three county divisions commence at points about four miles from the down-town terminus. The first extends three miles and the others two miles into the country. Each month a statement is made giving statistical information and costs of each division. Costs are actual or estimated according to earnings, car mileage or car hours. The form can be used for a yearly or quarterly statement, and is shown on the opposite page.

The extensions of this form for both statistics and costs have columns for current and previous years, increase or decrease, and percentage of such increase or decrease. The items under the heading of "costs" are also carried out for

*Abstract of paper read before the Alabama Light & Traction Association, Birmingham, Ala., Nov. 15 and 16, 1909.

current and previous years per car-mile, and show the increase or decrease of car-mile costs. The same information is shown per car-hour and per car-trip. The statistics are absolute, the costs are partly absolute and partly estimated. The maintenance of roadway and tracks and electric lines are the actual amounts expended, account being kept of all work done on each division. The group entitled "power house operation, maintenance and insurance," is

.....DIVISION FOR.....19.....	
STATISTICS.	
K.-W. hours .....	.....
Mileage—full-time cars .....	.....
Mileage—tripper cars .....	.....
Mileage—extra cars .....	.....
Mileage—total cars .....	.....
Hours—full-time cars .....	.....
Hours—tripper cars .....	.....
Hours—extra cars .....	.....
Hours—total cars .....	.....
Trips—full-time cars .....	.....
Trips—tripper cars .....	.....
Trips—extra cars .....	.....
Trips—total cars .....	.....
COSTS.	
ACCOUNTS.	
Maintenance of roadway and track (actual) .....	.....
Maintenance of electric lines (actual) .....	.....
Maintenance of buildings and structures. Extra power house (mileage) .....	.....
Maintenance of equipment except power house (mileage) .....	.....
Maintenance of shops (mileage) .....	.....
Superintendent of transportation (car hours) .....	.....
Power house operation, maintenance and insurance .....	.....
Operation of cars (car hours) .....	.....
Traffic expense (earnings) .....	.....
Administration and general expense, less power house insurance (earnings) .....	.....
Injuries and damages (earnings) .....	.....
TOTAL OPERATING AND MAINTENANCE.	
Taxes—State and county (earnings) .....	.....
Taxes—city (earnings, city division only) .....	.....
Licenses—State and county (earnings) .....	.....
Licenses and per cent on earnings (city division only) .....	.....
Interest on funded debt (earnings) .....	.....
Interest on floating debt (earnings) .....	.....
TOTAL FIXED CHARGES.	
Depreciation .....	.....
GRAND TOTAL.	
Earnings from operation .....	.....
Surplus or deficit .....	.....
Per cent .....	.....

charged according to the current consumed on each division. Taxes for each division are estimated according to earnings. This is a fairly correct method in Alabama in arriving at an estimate of taxes chargeable to the division, as in this State the franchise tax is the principal tax assessed against an electric railroad company, and the value of the franchise is derived from the earnings.

The form is worked up from information derived from our accounts for information of the management only.

The cost of maintenance of tracks and roadway this year has been higher than usual on account of the renewal of a large number of ties, with creosoted ties, but as nearly every year has some extraordinary expense, I do not know that this renewal charge ought to be mentioned.

There are three rates of fare, tickets at the rate of 22 for \$1, commutation school tickets in books at 3½ cents each, good only for the month of issue, and the regular 5-cent cash fare. The three county divisions for the first nine months of 1909 carried 471,103 revenue passengers, the company receiving \$23,182.64, an average fare of 4.92 cents. The cost of carrying the average passenger on the three county divisions, including operating expenses, fixed charges and depreciation amounted to 6.19 cents, the loss on each passenger being 1.27 cents; assuming that the cost of carrying each passenger on the city division, including fixed charges and depreciation, is four cents, the average fare received being 4.94, the profit on the average passenger is 0.94 cents. The average passenger who rode over both divisions was carried at a loss of 0.33 cent. How would it be possible to adopt a one-fare zone for the while system of the Mobile Light & Railroad Company with profit to the company? Yet the company in the past had one director who desired the adoption of the one-fare zone.

The country around Mobile is not as thickly settled as around other cities of approximately the same population. Companies in cities having thickly populated suburbs could, of course, extend the 5-cent fare zone farther than is done in Mobile.

If we should abolish to-morrow the additional 5-cent fare on the outside divisions, the costs of operating with the

same number of passengers would be the same as at present. If the number of passengers increased, more cars would have to be added, thereby increasing expenses. The number of passengers would have to increase several hundred fold before there would be an advantage, and even then it is questionable whether it is a wise policy in cities of from 30,000 to 100,000 people to induce persons to live six and seven miles away from the business center and carry them for 5 cents, when there are hundreds of acres of vacant land within four miles of the business center already reached by the car lines. In and around Mobile there is sufficient land unoccupied by houses within the limits of the 5-cent fare zone and reached by car lines to accommodate an additional 60,000 people.

If companies in cities of from 30,000 to 100,000 population that carry passengers for 5 cents to thinly populated suburbs 4 to 8 miles away from the business center would estimate the cost of operating the mileage in excess of the first 4 or 5 miles, according to the form used by the Mobile Light & Railroad Company, they would probably find that the cost per passenger for excess mileage equaled the fare received. They would find that at least the balance left to pay for carrying the passenger over the 4 or 5 miles of the strictly city line would be but a small portion of the total cost of carrying the average passenger on the city division.

As a rule there are no franchise requirements that compel an electric road to carry a passenger beyond the city limits for five cents; the 5-cent rate for long suburban rides has generally been made voluntarily by the companies, and was done at a time when the promoters of such roads had not learned as much about operating expenses as is now known, and when car-mile costs were not kept as at present. I cannot understand why a company voluntarily carries a passenger outside the city limits five and eight miles away from the business center for five cents, when the operating expenses, fixed charges and depreciation per car-mile per passenger amount to much more than the fare received.

The Mobile Light & Railroad Company would be much better off to-day if it did not have a single county division; the population then would be more dense inside the limits of the 5-cent fare zone, which would enable the company to give more frequent service and maintain its tracks more perfectly. The question of extension of lines into the suburbs should be very carefully considered before the investment is made, and it should not be assumed that all fares to be collected will be that much added revenue. A great many of the passengers now carried on suburban extensions would be riding on the city division regularly if the extension had not been built.

This article does not refer to the question of interurban extensions, except where the first 5-cent fare zone extends beyond a reasonable distance.

A mistake that has been made in Mobile and many other cities, is the extension of lines that already run out into the open country, by 2000 or 3000 ft. to accommodate some real estate dealer who pays the cost of building the extension. Each of such extensions means the addition of a car to the service and very little added receipts, so that at the end of the first year, unless it is a rapidly growing city, the company has lost as much as was donated to build the track. It usually takes several years for such an extension to bring in sufficient extra receipts to pay costs of operating, maintenance and fixed charges on car and line.

Extend slowly, let the real estate promoters wait a few years, always extend so that there is considerable vacant land near the line, but extend through no long distance of sparsely occupied territory.

The writer became identified with the street railroads of Mobile in 1892. Previous to that time there was only one line, the Spring Hill line, that reached a greater distance than two miles from the business center. The writer reduced the rate of fare to Spring Hill from 15 cents cash to 10 cents, and built seven extensions reaching from three to four miles from the business center, charging one fare on same. He built the Whistler and Magazine Point extensions, charging an additional 5-cent fare over the extension from the end of the city division. Instead of making a mistake in not charging one fare over the whole system the mistake made was in building too many extensions.

ELECTRICAL WORKING CONSIDERED BY AMERICAN RAILWAY ASSOCIATION

At the semi-annual meeting of the American Railway Association held in Chicago on Nov. 17, a short report was presented from the committee on electrical working. This committee consists of George Gibbs, chairman, chief engineer of electric traction, Pennsylvania Railroad; J. F. Deems, general superintendent of motive power, rolling stock and machinery, New York Central Lines; J. D. Isaacs, consulting engineer, Harriman Lines; W. J. Harahan, assistant to president, Erie Railroad; C. S. Sims, second vice-president and general manager, Delaware & Hudson Company; L. C. Fritch, chief engineer, Chicago Great Western Railway; E. H. McHenry, vice-president, New York, New Haven & Hartford Railroad. Its report, which was dated Oct. 18, 1909, is short, but is of importance as an expression of opinion from representatives of the leading steam railroads of the country in relation to some phases of electric operation of trains. The report in full follows:

The committee on electrical working held its first session in New York City on Oct. 6, 1909. At this session the permanent organization of the committee was effected by the election of George Gibbs as chairman and discussion had of its best usefulness to the association.

In the short time elapsing between the organization of the committee and the meeting of the association, it was impracticable to prepare a lengthy report, or, indeed, to formulate definitely the lines of action which will be of greatest usefulness to the association. When it can be done properly, a report will be presented to the association, giving the present status of electric traction as applied to railway operation under steam railroad conditions. In the meanwhile, the committee holds itself in readiness to make recommendations upon specific questions.

As this committee supersedes the committee on standard location for third-rail working conductors, and as the latter committee had at the date of its last report some questions still under consideration, it was decided by the committee on electrical working to appoint a subcommittee, consisting of Messrs. Gibbs, Fritch and Isaacs, to give special consideration to third-rail and overhead working conductor clearances.

Another subject discussed by the committee and considered by it of present importance is that of standardizing the location of electric connections between cars of passenger trains, especially the connections of electrically equipped cars for multiple unit train operation. The connections are required for controlling current to the cars, for heating, lighting, etc., and they occupy considerable space at the ends and between platforms of coupled cars. It is considered that it will be useful to the members of the association to have information as to these electrical requirements, as well as suggestions for standard locations which will permit of their proper installation without interfering with the functions of other connections, such as couplings, air brakes, etc. A subcommittee, consisting of Messrs. Deems, Harahan and McHenry, has, therefore, been appointed to consider this subject, in order that it may be brought to the attention of the association as soon as practicable.

A third subject has been considered by the committee, namely, the effect of the electrical working of railways upon automatic signaling systems. The conclusions of the committee will be brought out fully in a subsequent report, but it may be of use to the members of the association to know that electrical working requires the adoption of an alternating current track circuit for signals instead of the direct-current track circuit control heretofore in general use. It would seem advisable, therefore, that in the installation of any new automatic signaling an alternating current track circuit should be employed, and that extensions to existing systems should also be made in the same way. This recommendation applies not only to roads contemplating the adoption of electric traction, but to those in localities where electric traction is or may be employed upon nearby roads.

HEARING ON VALUATION OF CONEY ISLAND & BROOKLYN RAILROAD

Frank R. Ford, of Ford, Bacon & Davis, took the stand on Nov. 15 in the hearing before the New York Public Service Commission, First District, of the case involving the valuation of the Coney Island & Brooklyn Railroad. Commissioner Bassett presided.

Mr. Ford testified that his firm had continued, since the hearing of the other cases involving the Coney Island & Brooklyn Railroad, to be the consulting engineers of the company, and he had continued his studies of the physical and financial condition of the property.

Under the supervision of Mr. Ford an estimate had been prepared, which showed that in the calendar years 1910, 1911 and 1912 it would be advisable to make additions and betterments costing \$1,207,269. Those were in the nature of additions and betterments to provide for what B. J. Arnold had called inadequacies and obsolescence, and were partly renewals and partly capitalizable.

Testifying in relation to the balance for reserves, contingencies and capital stock of \$113,557 shown in the income account of the company for the fiscal year ended Aug. 31, 1909, Mr. Ford said he thought the reserves should

ANALYSIS OF INCOME ACCOUNT OF CONEY ISLAND & BROOKLYN RAILROAD, FOR THE YEAR ENDED AUG. 31, 1909. SHOWING RESULTS OF OPERATION IN FIRST ENTIRE YEAR OF 10-CENT CONEY ISLAND FARE ON WEEK-DAYS.

PRESENTED BY FRANK R. FORD.		Per car-mile, cents
Gross earnings from all sources..	\$1,485,116.88	24.3
Operating Expenses:		
Maintenance	\$134,453.39	2.2
Transportation	575,469.47	9.4
General	249,007.74	4.1
Total	\$958,930.60	15.7
Taxes	62,538.35	1.0
Operating Expenses and Taxes..	1,021,468.95	16.7
Gross Income	\$463,647.93	7.6
Deductions from income:		
Interest on funded debt and floating debt	251,417.60	4.1
Reserve for depreciation:		
Amount actually spent for renewals and extraordinary maintenance	98,673.20	1.6
Total deductions	350,090.80	5.7
Balance for reserves, contingencies and capital stock	\$113,557.13	1.9
Car miles operated (exc. bdge. locals, etc.).....		6,111,630
Passengers carried		35,958,023

be the same as he had stated in his testimony in the previous cases; that is, reserves for increase in outstanding damage claims, for amortization of discount on bonds, for accumulation of surplus to provide for unliquidated damage claims and for contingencies. The expenditure for maintenance, \$134,453, averaged 2.2 cents per car-mile. The amount actually spent for renewals and extraordinary maintenance was \$98,673, or 1.6 cents per car-mile, making a total for the two items of 3.8 cents. Mr. Dykman asked what balance would have been left if 5 cents per car-mile had been reserved for these expenditures, as suggested by Commissioner Bassett. Mr. Ford replied that the difference was 1.2 cents per car-mile. The balance for reserves, contingencies and capital stock actually remaining from the year's operations was 1.9 cents per car-mile, so that if 1.2 cents was subtracted there would be left 0.7 cent as a balance for reserves, contingencies and capital stock. This multiplied by 6,111,630 car-miles operated would give about \$43,000 for that item.

Mr. Ford thought there should be added to the cost of operation of the Coney Island & Brooklyn road, or deducted

from surplus earnings, an amount to cover various expenses which the Public Service Commission did not allow to be capitalized and extraordinary expenses which had to be met infrequently. The contingent items might be grouped under the following heads:

1. Requirements of local authorities that cannot be capitalized, as, for instance:

(a) Cost of protecting tracks while sewers, gas pipes, water pipes, electric conduits, etc., are laid under them. As an instance, it was stated that the company expended in the last year about \$6,000 in the protection of its tracks while a sewer was laid in DeKalb Avenue. The commission and its experts and accountants refused to include that item in the valuation of the property, stating that it was a proper operating expense charge. While the company had included this expense in its balance sheet, Mr. Ford understood that the commission had ruled that the item would have to be charged against surplus. This cost was not included either in the capital cost of the property to which Bion J. Arnold testified or in the operating expenses for the year, so that it would have to be charged against the balance for reserves and contingencies.

(b) Cost of changing grade. Under this head Mr. Ford would place the expense of changing the grade of track required of a company, sometimes before the track was worn

phasized by the condition that the property and operations of a street railway company occupied a comparatively small area and were subject to such disasters as had overtaken San Francisco, Galveston, Charleston and Baltimore.

Answering a question as to the effect of the increase of Coney Island fare from 5 cents to 10 cents on week days during the year ended Aug. 31, 1909, upon the earnings of the company, Mr. Ford said he would say that the road was better off to-day by \$100,000 as a result of the experience during that year. He thought the gross earnings of the company were about \$50,000 larger by reason of the higher rate of fare and that the company had saved an equal amount in operating expenses by carrying fewer passengers. No exact comparison could be made, as the company had no record of the passengers carried on the Coney Island division in the year ended Aug. 31, 1908. As this information was not available proof had to be deduced from other data. Mr. Ford submitted a comparison and analysis of passenger earnings for the years ended Aug. 31, 1906, 1907, 1908 and 1909. Discussing these figures, which are published herewith, Mr. Ford said that the reason for dividing the year into seven winter months and five summer months was that 15 per cent of the total Coney Island business was done in the former period and 85 per cent in the latter. The statement showed that in 1907 there was ap-

COMPARISON AND ANALYSIS OF PASSENGER EARNINGS, CONEY ISLAND & BROOKLYN RAILROAD, YEARS ENDED AUG. 31, 1906 TO 1909, INCLUSIVE. IN FISCAL YEARS 1906, 1907 AND 1908, 5-CENT CONEY ISLAND FARE WAS CHARGED ON WEEK-DAYS; IN 1909, 10-CENT CONEY ISLAND FARE WAS CHARGED ON WEEK-DAYS.

	PRESENTED BY FRANK R. FORD.									
	1906	1907	Decrease	%	1908	Decrease	%	1909	Decrease	%
Total Earnings	\$1,675,263.53	\$1,592,925.09	\$82,338.44	4.9	\$1,514,824.96	\$78,100.13	4.9	\$1,431,542.73	\$83,282.23	5.5
Total earnings, winter ..	808,015.60	764,101.82	43,913.78	5.4	730,048.75	34,053.07	4.4	682,707.64	47,251.11	6.5
Total Earnings, summer ..	867,247.93	828,822.27	38,424.66	4.4	784,776.21	44,046.06	5.3	748,745.09	36,031.12	4.6

Note:—Coney Island second fares of 7 winter months—\$30,087.63 or 14.8 per cent of total second fares year ended Aug. 31, 1909.

Coney Island second fares of 5 summer months—171,837.02 or 85.2 per cent of total second fares year ended Aug. 31, 1909.

Note.—Brighton Beach Line of Brooklyn Rapid Transit Company opened express service on May 30, 1908.

Ridgewood elevated extension of Brooklyn Rapid Transit Company opened on Oct. 1, 1906.

Subway to Atlantic Avenue opened in May, 1908.

out, whenever the city elected to change the grade of streets. The company had to change its grade on Jay Street line upon the construction of the Manhattan Bridge approach.

(c) Cost of track repairs not necessary by reason of the condition of tracks, but required by change of paving of streets. There were a number of other similar expenses.

2. Requirements of State authorities that cannot be capitalized, such as administration, legal and technical expenses in connection with appearances before the Public Service Commission in rate and other cases.

Of the extraordinary expenses, 20 years of experience had demonstrated that a street railway investment had many elements of risk, of which the following might be included:

1. Disasters to city under that heading would be the items of general conflagration, flood, earthquake, epidemic, cyclone, riot.

2. Business depressions, which might be either national or due to local retrogression, loss of trade or labor troubles.

3. Fire, strikes, coal strikes, accidents which crippled plant or service and support of amusement enterprises. Such an allowance might also cover the company's participation in a pension system toward which transportation and industrial corporations are tending and other general contingencies applying to street railways, which might be competition of other street railway systems, steam railroads or other transportation systems.

4. Unexpected public burdens. These risks were em-

proximately a decrease of \$82,000 in gross earnings as compared with 1906, and in 1908 a decrease of \$78,000 as compared with 1907. In 1909 the decrease from 1908 was \$83,000. Apparently this continuous decrease was due to some other cause than a change in the rate of fare to Coney Island. Careful investigation showed that the decrease in 1907 and 1908 when the 5-cent rate of fare was charged on week days to Coney Island, were caused by increased competition from the Brooklyn Rapid Transit Company and, so far as the latter was concerned, in part by the business depression. For the fiscal year 1909 and part of 1908 there were two other causes of competition which were more serious than anything the company had experienced during the four years. The opening of the subway to Atlantic Avenue, Brooklyn, had a decided effect on the earnings of the company because of (1) the loss of the short riders on the De Kalb Avenue and Smith Street lines and (2) the loss on the Smith Street line due to the fact that it did not pass a subway station. The opening of the subway had also practically destroyed the business of the Hamilton Street ferry, the service of which had deteriorated and this had reduced largely the riding on the Hamilton Avenue line of the company.

In addition to these competing causes of decreased gross earnings the express service on the Brighton Beach line of the Brooklyn Rapid Transit Company was started on May 30, 1908.

In making an analysis of the decrease of \$83,282 in passenger earnings in 1909 as compared with 1908 Mr. Ford

separated the loss as between the various lines of the company, week-days as compared with Saturdays, Sundays and holidays, the seven winter months and five summer months and as between the city division and the Coney Island division for both winter and summer. With the exception of the Franklin Avenue line, which was not affected by competition from the subway and the new Brighton Beach line, all the lines showed a decrease. Mr. Ford thought it could be shown by the following methods that the gross earnings had increased on week-days as a result of the 10-cent fare.

The saving in cost of operation would not be the total operating expenses per car-mile, as some operating expenses which varied with the car-mileage operated, and others practically did not vary.

Taking the operating expenses, which varied with the car-miles, it was found that 50.4 per cent of the gross earnings would be saved by a decrease in car-mileage, and this amounted to 50.4 per cent of 24.3 cents, or approximately 12 cents per car-mile, which, multiplied by 413,909, gave a total saving of \$49,669.

John A. Thake, assistant secretary and treasurer of the Coney Island & Brooklyn Railroad, was also called as a witness on Nov. 15. Mr. Thake presented a statement of the underlying mortgages and the trust mortgages and the bonds outstanding thereunder, and also of the floating debt, aggregating \$100,000, and the capital stock outstanding. The purposes of the issues of capital stock were stated, as, for instance, when \$500,000 was added on account of the change in motive power in January, 1893.

William M. Dykman, of counsel for the Coney Island & Brooklyn Railroad, introduced the complete evidence of Frank R. Ford in the previous cases involving the rates of fare of the company, and also various statements of earnings submitted in connection with those cases.

The hearing was adjourned until Nov. 22.

INFORMATION FOR EMPLOYEES OF THE LONDON UNDERGROUND ELECTRIC RAILWAYS

In line with its policy to give the employees full data on operating and traffic features without using many separate bulletins or obtrusive posters, the Underground Electric Railways of London issue all such information in the shape of a circular which is published on the second and fourth Friday of every month. This publication is prepared specifically for the operatives of the company's three tube lines, and ranges in size from eight pages upward, according to conditions. The contents are necessarily of the most varied character, as the circular goes to all classes of employees. Thus the station ticket agents, or booking clerks, are supplied regularly with a list of the principal attractions in town, with the playing hours, the name of the nearest station and information as to through tickets and the like. This feature is greatly appreciated by the stranger who is looking for pointers on where and how to go for a good time. They also receive change of fare notices in this way. Motormen are informed through the same medium of the running times and train makeups which have been adopted for their lines and what telephonic action should be taken when it is necessary to switch off current at the substations. This publication is also the clearing house with regard to lost caps, badges and pass-books. A great deal of attention is given to having all station furnishings in the best shape, and particularly with regard to the neat and appropriate posting of both the company's and foreign advertising matter.

The official circulars give some interesting pointers also

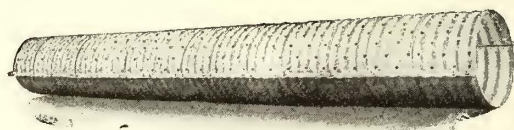
on the company's relations with its men. Employees are usually disciplined by reduction in rank, and in every case announcement is made of the offense and punishment. While offenders' names are not published, the company makes a practice of announcing the names of all promoted from one stated position to another. Practically all members of the transportation department are allowed annual leave with pay on the scale shown in the table below. The column A gives the number of days allowed per year to men in the service over six months and under 12 months; column B over 12 months, and column C over three years.

	A	B	C
Switchmen, gatemen, elevator operators, elevator machinery men, porters and lamp men	2	3	4
Motormen	4	6	6
Traveling inspectors, foremen motormen, and shop foremen	6	10	10
Signalmen and conductors.....	3	4	5
Assistant station masters, ticket examiners, junior ticket agents and constables	3	6	7
Station masters and agents in charge....	5	8	9
Telephone operators	7	10	10
Ticket collectors	2	4	5

Inspectors, foremen, yard masters and station masters must advise the superintendent's office before March 6 of each year, giving the dates for which they and their men wish to take vacations, it being understood, of course, that the dates desired are not necessarily those which will be granted. When all the applications have been received and considered the parties mentioned are acquainted with the approved dates. Applications must not be made from any two men at one station for the same dates, and no dates must include public holidays or Sundays "on duty."

CORRUGATED METAL RAILWAY DRAIN

The Canton Culvert Company, Canton, Ohio, whose "Acme" nestable culverts of galvanized "No-Co-Ro" anti-corrosive metal sheets are widely used on both steam and electric railways, has now devised an improved railway drain made of corrugated metal. The new specialty is



Corrugated Metal Drain

known as "Duro." It is based on the style of the company's nestable culvert, made either flat or round bottom, and has the top circumferential sections perforated with 1/2-in. holes staggered in the corrugation valleys at 4-in. intervals. To eliminate raw edges, the perforated sections are galvanized in the company's plant by hand dipping after the perforations are made.

BOSTON ELECTRICAL SHOW

The first annual electric show to be held in Boston was opened in Mechanics' Building, Huntington Avenue, Nov. 15, and will continue to Nov. 25. The Boston Elevated Railroad Company has a large exhibit space and is showing a complete automatic working model of the company's elevated track and third-rail construction, equipped with an electric locomotive and full-sized block signals. The Edison Electric Illumination Company, of Boston, has a very elaborate exhibit, as have a number of manufacturers of electrical apparatus in Boston.

ELECTRIC RAILWAY LEGAL DECISIONS

LIABILITY FOR NEGLIGENCE

Alabama.—Carriers—Injuries to Passenger—Pleading—Variance—"At"—Electric Railroads—Injuries to Alighting Passenger—Sufficiency—Setting Down Passengers—Duty—Jury Question.

A complaint against a street railway company alleged that a passenger was injured while alighting "at" C., which appears to have been a shed station, and not a town or city. The evidence showed that the accident occurred about two car lengths from the station. Held, that there was no variance, "at" as pleaded meaning "at or near." A complaint claimed specified damages against an electric railway company on allegations that, while plaintiff passenger was alighting at his destination, the car started or jerked, or the speed thereof was suddenly increased, proximately causing him to fall, resulting in specified injuries; that he was thrown or caused to fall through and as a proximate consequence of defendant's negligence in and about carrying him as its passenger. Held, that the complaint was not demurrable as being vague, uncertain, and indefinite, as not showing any duty or any violation of any duty. It was an electric railway company's duty to hold a car at a stopping place sufficient time to allow passengers to alight, and not to start it while a passenger was alighting; but it would have been a defense to an action for injury to him that the car had stopped a sufficient time, and that those in charge did not know that he was alighting. In an action against an electric railroad company for injury to an alighting passenger, held under the evidence a jury question whether the conductor saw that the passenger was about to alight and might have prevented it, or prevented the starting of the car while he was alighting. (*Birmingham Ry., Light & Power Co. v. McGinty*, 48 S. Rep., 491.)

California.—Street Railroads—Collision with Vehicle—Question for Jury—Contributory Negligence—Trial—Submitting Special Issues to Jury—Appeal and Error—Harmless Error—Refusal of Special Issues—Injury Avoidable by Defendant.

In an action for death of the driver of a vehicle by collision with a street car, evidence held to present questions for the jury as to whether the motorman was negligent in failing to give proper warning of the approach of the car, and in operating the car at an excessive rate of speed. In an action for death of the driver of a vehicle in a collision with a street car, evidence held to present a question for the jury as to whether decedent was guilty of contributory negligence. Where the evidence showed that decedent was driving his vehicle parallel to the track of a street railroad, and as a car approached from the rear allowed the vehicle to swerve toward the track, so that it came into collision with a car approaching from the rear, a special issue requested by defendant, "Did the deceased change the direction in which he was driving so as to swerve in toward the track, and thereby bringing his wagon into a position of danger?" was not subject to the objection that it did not refer to any particular time or place, and improperly refused. In an action against a street railroad company for death of the driver of a vehicle by collision with a street car which approached the vehicle from the rear as it was being driven at the side of the track, error of the court in refusing a special issue as to whether decedent allowed his vehicle to swerve toward the track so as to come into collision with the car was immaterial, where the evidence warranted a finding that the motorman might have avoided the collision by sounding the bell and checking the speed of his car, and that an affirmative answer to the desired special issue would not have been inconsistent with the general verdict for plaintiff. Where the driver of a vehicle was killed by collision with a street car which approached the vehicle from the rear, decedent's negligence in permitting his vehicle to swerve toward the track would not defeat recovery where the car could have been stopped in time to avoid the collision after decedent changed his course. (*Ruppel v. United Railroads of San Francisco*—Civ. No. 561—101 Pac. Rep., 803.)

Illinois.—Carriers—Injuries to Passenger—Setting Down Passenger—Defects in Street—Evidence—Conclusions of Witness—Intoxication.

Though a city is responsible for the existence of snow and ice in the street near a street railroad track, the street railroad company will be liable for injuries to a passenger received while alighting from one of its cars, where, owing to negligence in operating its car, such passenger slipped on the snow and ice and was run over by the car. Where, in an action by a passenger against a carrier for injuries, defendant has introduced evidence that plaintiff had taken one or more drinks during the evening of the accident, it was

not error to permit plaintiff to testify that he was not under the influence of liquor at the time of the injury, and defendant's contention that plaintiff's testimony should have been confined to the quantity of liquor drunk was not well taken. (*Ward v. Chicago City Ry. Co.*, 86 N. E. Rep., 1111.)

Indiana.—Master and Servant—Injuries to Servant—Assumed Risk—Obvious Dangers—Hidden Dangers—Superior Knowledge of Master—Compliance with Commands—Apparent Dangers—Commands of Master—Choice by Servant of Dangerous Work—Actions—Findings—Construction—Trial Findings of Evidentiary Facts.

A servant must use his senses to observe and avoid obvious dangers, and must take cognizance of natural laws. A servant need not search for hidden defects or dangers, that being the master's duty, and he may rely on the master's superior knowledge in the performance of such duties.

Where a servant was injured by slipping on a bridge timber, which, as well as the other objects around him, was covered with sleet and ice, such dangers being obvious to everyone of ordinary intelligence, the master's knowledge thereof could not be superior to the servant's, and the servant could not rely on the master's superior knowledge of the conditions, but assumed the risk of injury therefrom.

Where conditions surrounding the work are not complex, but easily comprehended, an employee with knowledge thereof is bound to know the dangers incident thereto, and if he continues work with such knowledge he assumes the risk of injury.

Where a servant is ordered to go in a dangerous place and perform a dangerous task, or use a dangerous tool at a particular time or in a particular manner, he may obey the order without assuming the risk or quitting the employment, unless the danger is so apparent that a prudent man would not assume it.

Where a servant was injured by falling from a bridge timber while attempting to place it on a trestle, because of ice and snow thereon, an order directing the servant to proceed with the work of constructing the bridge was not a specific direction to go upon the trestle at all, but could have been construed as an order to do any other work about the bridge that could have been done with safety, so that the servant was not justified in attempting the obviously dangerous work of placing the timbers when covered with ice.

In a servant's action for injuries while placing a bridge timber, where the jury answered "yes" to special interrogatories as to whether plaintiff and his men were ordered to go on top of a trestle that morning and place the timbers, and found that the specific order was to "go ahead and push the work on the trestle," and other interrogatories showed that plaintiff was directed to keep working at the trestle and push the work, the answers, taken together, did not find that an order was given to do any specified work at a certain time, but that it was only a general order to do the work in plaintiff's discretion.

Findings in answer to a special interrogatory whether a servant was ordered to place timbers on a trestle, that the order was to "go ahead and push the work on the trestle on the island" was not a finding, of an evidentiary fact, and setting out the order verbatim in the finding did not make it so. (*Mellette vs. Indianapolis Northern Traction Co. et al.*—No. 6187—86 N. E. Rep., 432.)

Kentucky.—Master and Servant—Injury to Servant—Defective Tools—Assurances and Direction of Master—Obvious Danger—Evidence.

Where an employee, being directed to do work with a wrench, an ordinary one with a piece of gas pipe attached to the handle to give it leverage, told the foreman that it was out of repair and unsafe, and the foreman, who had used it and knew of its tendency, told him that the wrench was all right, and to go ahead and do the work with it, and he, relying thereon, used it, with the result that it slipped and threw him, the master is liable for the injury, unless the danger was so obvious that an ordinarily prudent man would have refused to do the work; and this though two or three times during the week, before his injury, the defects came near causing him to fall, and he made no complaint thereof to the foreman.

That using a defective wrench, which the foreman told a complaining workman was all right, and that he should use, was not obviously dangerous, was indicated by the fact that, several times before it slipped and threw him, it slipped, and he saved himself from injury. (*Rogers vs. South Covington & C. St. Ry. Co.*, 112 S. W. Rep., 630.)

Massachusetts.—Carriers—Injury to Passenger—Action—Evidence—Prima Facie Case—Management of Conveyance.

In an action by a street car passenger for injuries by

being thrown from a platform, plaintiff does not make out a prima facie case merely by proof that the car gave a jerk or similar motion, and that he was hurt; but must further show that it was due to a defect in the track or to negligence in operating the car.

The motorman of an electric street car is not bound to maintain a uniform speed, even though the car is between 250 and 300 ft. from a stopping place for which a signal has been given.—(McGann v. Boston Elevated Ry. Co., 85 N. E. Rep., 570.)

Massachusetts.—Master and Servant—Injuries to Servant—Orders—Negligence in Giving—Fellow Servants—Persons Engaged in Superintendence—"Employee Intrusted with and Exercising Superintendence"—Negligence of Master—Failure to Post Orders—Proximate Cause of Injury—Appeal and Error—Report—Construction.

Where the forgetting of an order by an employee will not be followed by serious consequences, orders may be given verbally; but, where human life depends upon the exact execution of an order, the employer's failure to take precautions to prevent orders from being forgotten or misunderstood may be negligence.

A car dispatcher on a street railroad is an "employee intrusted with and exercising superintendence," within the direct provisions of Rev. Laws, c. 106, § 71, cl. 2, giving employees an action for personal injuries caused by the negligence of such person.

In an action against a company for the death of a motorman in a collision on a special trip, it being the general custom to notify both the conductor and the motorman of a regular car, which is to wait for a special car, and to post written orders for special cars on a bulletin board, the jury was warranted in finding that defendant's car dispatcher was negligent in not notifying both the conductor and motorman of the car which collided with decedent's car, as well as in not posting the order on the bulletin board.

In an action for the death of a motorman in a collision, caused by the motorman of the other car forgetting orders, because of the negligence of the car dispatcher in not posting them, the negligence of the dispatcher in failing to post the orders was the proximate cause of the accident, and not the forgetfulness of the other motorman.

In an action on two counts for the conscious suffering and for the death of decedent, in which the jury found specially \$2,500 damages on each count, where by the terms of the report, upon a finding of the law for plaintiff, judgment is to be entered for him for \$5,000, with interest and costs, since the two halves of the sum recovered will go to different persons, the report will be construed to mean that verdict be entered for \$2,500 on each count, and that judgment, with interest on each verdict and one set of costs, be entered on the verdicts.—(Fitzgerald vs. Worcester & S. St. Ry. Co., 85 N. E. Rep., 911.)

Michigan.—Carriers—Street Railroads—Injuries to Passenger—Premature Start—Verdict—Evidence—Action—Misleading Instructions.

In an action for injuries to a passenger on a street railroad by the premature starting of the car as he was alighting, evidence, though conflicting, held sufficient to sustain a verdict for plaintiff.

The court, in an action for injuries to a passenger, having instructed that the burden of proof was on plaintiff, and that he must prove defendant's negligence and his own freedom from negligence by a preponderance of the evidence, an instruction that the jury were the best 12 men to determine "this accident, because of this negligence, as the case may be, of any 12 men in the world," because the jury had heard and knew more about it, was not objectionable as misleading the jury to believe that defendant's negligence had been established.—(Malinowski v. Detroit United Ry., 117 N. W. Rep., 565.)

Missouri.—Pleading—Consistency—Injuries to Passengers—Carriers—Carriage of Passengers—Injuries—Actions—Instructions—Discharging Passengers.

In an action by a passenger for injuries received while alighting from a street car, plaintiff alleged in her complaint that she was caused to fall by the sudden starting of the car, and also alleged that her fall was the result of the sudden stopping of the car after it had started. Held, that these statements were not so conflicting that proof of one act of negligence would disprove the other, and it was permissible to plead both acts of negligence as the cause of the injury, and recover on proof of the existence of one or both of them.

In an action against a carrier for injuries to a passenger in alighting from a car, the court instructed that it was the duty of defendant to exercise toward plaintiff, if a passenger, the highest reasonably practical degree of care and foresight to carry plaintiff and allow her to safely alight from the car, and that if defendant failed to exercise such

degree of care by starting up its car while plaintiff was in the act of alighting therefrom, and before she had reasonable time to alight therefrom, and plaintiff was thrown from said car to the ground and injured without any fault on her part contributing thereto, that the verdict must be for the plaintiff. Held, that this instruction was not defective as ignoring the question whether defendant's servants saw, or by proper care should have seen, plaintiff in the act of alighting when the car was started; all of defendant's evidence being to the effect that the conductor did observe plaintiff while she was alighting, and as the accident occurred at a regular stopping place, and it was the duty of the conductor before giving the signal to start to know whether the passenger was alighting.

Where a street car had stopped at a regular stopping place and passengers were getting on and off, it was the duty of the conductor, in the exercise of reasonable care, before giving the signal to start, to know whether a passenger is alighting. (Alten vs. Metropolitan St. Ry. Co., 113 S. W. Rep., 691.)

New York.—Street Railroads—Operation—Collision with Vehicles—Liability—Negligence.

While defendant could move its street car past a vehicle on the street and sound the gong in crossing another street, the vehicle being necessarily close to the car because of the narrowness of the street, the motorman was bound to exercise reasonable care in sounding the gong and starting the car, and if he unnecessarily and violently sounded the gong, so as to frighten the horse, or suddenly increased the speed of the car, so as to cause a collision with the vehicle, by which the persons therein were injured, the company would be liable. (Sauter vs. International Ry. Co., 112 N. Y. Sup., 863.)

New York.—Subways—Injuries to Passengers at Stations—Actions—Instructions—Submission of Issue Not in Case.

In an action by a passenger against a subway carrier for injuries from stepping into an opening in the station platform while boarding a car, where it appeared that the station platform was crowded, but no negligence of defendant was claimed in respect thereto, a charge that defendant was not negligent in permitting crowding, but was obliged, in view thereof, to take such reasonable precautions as would reasonably protect its passengers from injury, was erroneous, because inapplicable and calculated to distract attention from the real issues. (Becker vs. Interborough Rapid Transit Co., 112 N. Y. Sup., 816.)

New York.—Carriers—Street Railroads—Injuries to Passengers—Collision—Res Ipsa Loquitur—Negligence—Presumption—Res Ipsa Loquitur.

Plaintiff, a street car passenger, was injured in a collision between the car on which she was riding while it was standing still letting off passengers at a regular stopping place, and a following car. Two other lines of cars used the track at the place of the accident, which were operated by a company other than defendant. Held that, in the absence of evidence that defendant owned and operated the following car that caused the collision, the circumstances of the accident did not establish a prima facie case of defendant's negligence under the maxim res ipsa loquitur, which applies only to cases where the occurrence would not have happened in the ordinary course except by negligence on defendant's part.

A presumption of negligence does not arise except out of the fact that there is no other way to account for the occurrence, in which case the burden is on defendant to show freedom from negligence. (Elliott vs. Brooklyn Heights R. Co., 111 N. Y. Sup., 358.)

Pennsylvania.—Negligence—Injuries to Trespasser—Wantonness—Duty of Defendant—Questions for Jury.

It is the duty of the owner of a city lot on which there was an electric motor to avoid intentional or wanton injury to a trespasser by any act which would expose him to danger.

Where plaintiff, a minor, went on a lot owned by defendants on which was an electric power house, while the employees of the owner were not bound actively to care for such minor by keeping her off the lot, or by protecting her after she had entered it from injury that might result from the condition of the property, there was a duty not to injure her negligently.

Where a minor trespassing on property of defendant was injured by the starting of the machinery of an electric motor thereon, whether the employee starting the machinery observed where the minor stood and realized the consequences resulting from his act in starting the machinery, and that it would expose the minor to danger, were questions for the jury. (Walsh et al. vs. Pittsburgh Ry. Co., 70 Atl. Rep., 826.)

News of Electric Railways

Discussion on Rapid Transit in New York

The *Evening Post* of New York is publishing a series of six articles on the subject of rapid transit development in New York. Sections appeared on Nov. 16, 18 and 20, and they are being continued on alternate days of this week.

The first article outlined briefly the history of the elevated, surface and subway lines in the city, and then declared that the great defect of the present rapid transit system is the lack of rapid transit in the downtown districts. The congestion caused there extends to the suburban districts. One of the greatest dangers, the article declared, to the present development of a comprehensive rapid transit system in the city is the demands from the residents of suburban localities for non-self-supporting lines. The writer also stated that surface car feeders to existing and new rapid transit lines should be encouraged.

The second article was entitled "Companies Block Transit," and contained various allegations that the existing companies had manifested an attitude of hostility toward proposed extensions to their systems and to other projected lines. The fact that no company had yet accepted a contract for operating the Center Street subway and the lack of complete use of the Williamsburgh Bridge were quoted, among other instances, to prove this claim.

The third article pointed out three places where the city needed more rapid transit. One was Manhattan, south of Central Park, the downtown district of Brooklyn and the borders of the East River, which, together, were claimed, offer the richest traction area in the world. The second was the built-up residential districts of the city which comprise a less profitable field, but should be provided with rapid transit by companies which enjoy the downtown traffic. The third was the suburbs, which are the least profitable of all to the railway company, but through the increase in land values are the most profitable to real estate owners. Here rapid transit should be provided by assessment, either in part or entirely upon the land benefited.

The fourth article appeared Nov. 22, and compared the New York rapid transit system to that in Paris which, it is claimed, was far superior to that in New York in arrangement and in the degree by which the public interests were safe-guarded, and also that the fares in Paris were much lower than those in New York.

Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, gave out an interview to the *Evening Post* for Nov. 19 in reply to statements made in the second article. He said that that company was and always had been prepared to build any extensions which would prove to be profitable. Under the old Elsberg law, by which the franchise was limited 25 years, it was impossible to secure money for subway construction. The present law authorizes the Public Service Commission to grant franchises on much more liberal terms. The company on June 27 offered to build an extension uptown on Lexington and Third Avenues; but the Public Service Commission suggested Madison Avenue, and the company accepted the change promptly, but has as yet received no reply to its offer. The extensions which the company is prepared to build will cost \$100,000,000 to construct and equip; but the authorities seem to be more interested in attempting to induce the company to build lines in the suburbs than to relieve the congestion in Manhattan and the Bronx. Mr. Hedley also denied the statement made in the article that the company had been compelled by the commission to install side-door cars. He said that in October and November, 1906, eight months or more before the commission was appointed, the company had prepared designs for new steel cars with center side doors, and in March, 1907, had ordered 50 of these cars. In 1908 the company was requested by the commission to equip an eight-car train with end-side doors and had done so at a cost of about \$35,000. After a trial these doors were found to be unsatisfactory, and the commission finally approved the center side door design originally planned by the company. At an expense of \$1,300,000 the company has recently improved its signal system and is now spending \$65,000 to reduce the headway of the trains 7 seconds.

Edwin W. Winter, president Brooklyn Rapid Transit Company, also denied that that company had attempted to obstruct or delay the construction of new lines over the Williamsburgh Bridge, as stated in the article. Arrangements for the use of this bridge were made a year before it was opened and more than five years before it was possible to put it into effect immediately upon the completion of

the bridge elevated and trolley cars were put in operation, the trolley cars within six hours after it was ready for that traffic.

On Nov. 23 the commission issued a reply to Mr. Hedley.

Cleveland Traction Situation

On Nov. 16, 1909, the manner of financing the proposed improvements of the Cleveland Railway was discussed. Judge Tayler favored a bond issue because the interest was limited to 5 per cent., whereas the dividends on stock would be 6 per cent. Horace Andrews, president of the company, stated that he would prefer to secure the money by selling stock in Cleveland, as the interests of the property would be conserved better if the securities were owned to a large extent by local people. He said that a bond issue such as will be necessary would have to be secured in the East. A stock issue would also afford a much better financial basis than a bond issue. Mayor Johnson also favors the sale of stock in Cleveland.

Prof. M. E. Cooley surprised both sides by declaring as a witness on Nov. 17 that the schedules prepared during the Goff-Johnson negotiations were incomplete and that the value of the Cleveland lines was \$20,000,000 instead of the figures that were finally made at that time. Prof. Cooley mentioned a number of items to which attention has not heretofore been called, and said that the contractors' profits should be from 10 per cent to 15 per cent. Judge Tayler said that Prof. E. W. Bemis, in his valuation work in Detroit in 1899, agreed with the ideas of Professor Cooley. Mayor Johnson asserted that Professor Bemis was not then and is not now a practical railway man.

Professor Cooley discussed overhead charges and stated that a substantial allowance must be made for this purpose, as no inventory could ever be complete. However, in this case items had been omitted from the schedules to such an extent that he would be unable to make anything like a close estimate of the distribution of the items.

On Nov. 18 Mayor Johnson and Attorney D. C. Westenhaver presented arguments for the protection of the claims of the guaranteed stockholders. They stated that those who purchased stock on the influence of the advertisements in the newspapers and magazines, through the so-called free stock exchange, should be protected, but that those who purchased the stock in other ways should receive no preference, whether they were influenced by the advertising or not. Those who patronized the free stock exchange paid par, whereas they could have secured the stock in the Cleveland Exchange for much less.

Mayor Johnson, at the meeting on Nov. 19, complained that the testimony of the experts introduced by the Cleveland Railway put the valuation at an extreme. Mr. Andrews said that he had warned witnesses to make no statement that had not been proved by their own experience, and he believed they had complied with his injunction in all their testimony.

At the close of the hearing on Nov. 19 Judge Tayler authorized the payment of the remainder of the preferred claims against the Municipal Traction Company, amounting to about \$75,000. The question of interest will be taken care of later.

As there has been no objection, the Cleveland Construction Company will purchase the 250 tons of scrap rail on hand at \$20 a ton.

Mr. Andrews has stated that he will continue as president of the Cleveland Railway until a settlement of the troubles of the company is effected and the proposed improvements financed.

Convention Trip of Detroit United Railway Car

A party of representatives of the Detroit (Mich.) United Railways traveled in a special car of that road to Indianapolis and return from Detroit on the occasion of the meeting of the Central Electric Railway Association on Nov. 18. Those who made the entire trip were: G. W. Parker, general express and freight agent; John F. Keys, general passenger agent; A. D. B. Van Zandt, publicity agent; L. S. Taekabury, assistant to the general manager; Nathan Rumney, traveling freight agent, and James Wier, chief clerk of the electrical depot, Detroit United Railway; Elmer C. Allen, division superintendent Detroit Jackson & Chicago Railway; James Anderson, general manager Sandwich, Windsor & Amherstburg Railway, and R. G. De Lisle.

traveling freight and passenger agent Detroit Monroe & Toledo Short Line Railway.

The following bulletin issued by A. L. Nccreamer, secretary-treasurer of the Central Electric Railway Association, shows the route on the car to and from Indianapolis:

GOING SCHEDULE, NOV. 17, 1909.		Authority of
Lv Detroit, via Detroit, Monroe & Toledo Short Line	7:00 a. m.	
Ar Toledo	9:00 a. m.	
Delivery to the Toledo, Forstoria & Findlay Railway	9:18 a. m.	F. W. Adams, 11-8-09.
Lv Toledo, via Toledo, Forstoria & Findlay Railway	9:22 a. m.	
Ar Findlay	10:30 a. m.	
Lv Findlay, via Western Ohio Railway..	10:35 a. m.	F. D. Carpenter, 11-5-09.
Ar Lima	11:50 a. m.	
Lv Lima, via Western Ohio Railway....	1:00 p. m.	C. M. Paxton, 11-5-09.
Ar Piqua	2:35 p. m.	
Ar Dayton, via Dayton & Troy Electric Railway	3:20 p. m.	
Lv Dayton, via Ohio Electric Railway..	3:25 p. m.	W. S. Whitney, 11-5-09.
Ar Richmond, Ind.	4:55 p. m.	
Ar Indianapolis, Ind., via Terre Haute, Indianapolis & Eastern Traction Company	7:10 p. m.	R. I. Todd, 11-5-09.

RETURN SCHEDULE, NOV. 19, 1909.		Authority of
Lv Indianapolis, via Indiana Union Traction Company	7:00 a. m.	H. A. Nicholl, 11-5-09.
Ar Peru	9:30 a. m.	
Lv Peru, via Ft. Wayne & Wabash Valley Traction Company	9:35 a. m.	C. D. Emmons, 11-5-09.
Ar Ft. Wayne	11:30 a. m.	
Lv Ft. Wayne, via Ohio Electric Railway	12:35 a. m.	W. S. Whitney, 11-5-09.
Ar Lima	2:35 p. m.	
Lv Lima, via Western Ohio Railway....	2:35 p. m.	F. D. Carpenter, 11-5-09.
Ar Findlay	3:38 p. m.	
Lv Findlay, via Toledo Urban & Interurban Railway	3:40 p. m.	C. F. Smith, 11-5-09.
Ar Toledo	5:25 p. m.	
Delivery to the Detroit United Railway..	5:50 p. m.	
Lv Toledo, via Detroit United Railway..	5:50 p. m.	
Ar Detroit	7:50 p. m.	

Proposed Railroad Terminal Electrification in Chicago

The subject of compelling the railroads in Chicago to electrify their lines within the city limits has reached the stage of public hearings, and the first meeting of this character was held by the local transportation committee of the City Council on Nov. 17. Representatives of the railroads and railroad trainmen were heard on the one side, while on the other speakers for the people of Chicago presented their case. The proposed ordinance was read first. It provides that within six months after its passage the railroads must submit plans to operate their lines in Chicago by means other than steam and without the production of steam, noxious gases or noxious vapors. It is also stipulated that by Jan. 1, 1912, all trains must be operated by means other than steam on penalty of a fine of \$200 a day.

The first speaker was P. J. Calkins, an organizer of locomotive engineers. He said that the railroads and their employes were doing their best to abate the smoke nuisance. Electrification in New York had resulted in loss of life and injuries to trainmen. Furthermore, the Chicago situation was very different from that in New York. Many locomotive engineers would have to leave Chicago if the railroads were electrified, for their occupation would be gone. To do away with a little smoke, it was proposed to imperil the lives of many men employed on the railroads. The end does not justify the means.

As a representative of the Anti-Smoke League, Judge A. N. Waterman addressed the committee. He pointed out that every great reform has been strenuously, even violently opposed. The locomotive engineers were entitled to consideration and so were the mine operators and the dealers in soft coal. Nevertheless, the soft-coal burning locomotives constitute a great nuisance, and the speaker made a plea for the homes of the people constituting the community of 2,000,000 men, women and children in Chicago.

For the Illinois Central Railroad, Blewett Lee, of counsel, suggested some modifications of the ordinance. He said that the railroads of Chicago were so interlinked by interchange of traffic that the subject of electrification should be considered by all of them together and not by any one railroad. He thought that Jan. 1, 1912, gave altogether too short a time to make such an extensive improvement. The penalty of \$200 a day he also thought excessive. The proposed ordinance apparently prohibits the burning of hard coal or coke to get smokeless operation, as it expressly mentions noxious gases and vapors, as well as smoke; the speaker thought that this should be modified. Furthermore, he was of the opinion that the measure should only apply to thickly-populated districts and that no hardship

would result if steam locomotives were permitted in the outlying parts of the city.

W. A. Gardner, vice-president of the Chicago & Northwestern Railway, read a paper giving many interesting details of practical railroad operation in Chicago. The railroads, he said, were bound up intimately with the industrial and commercial life of the city, and it would be impossible to change the motive power of the railroads without affecting the business interests. The Chicago & Northwestern Railroad alone had approximately 375 miles of track in the city, and it had never less than 10,000 freight cars on these tracks. Considering all the railroads, 2000 passenger trains enter and depart from the city every day, and there was a movement of no less than 65,000 freight cars in and out of Chicago daily. The change proposed in the ordinance was a revolution, and should receive very careful and long-continued investigation. Conditions in New York and Chicago were very different. For instance, there were 13,000 track switches in Chicago. His company used coal for which it pays \$3.05 a ton especially to abate the smoke nuisance, although Illinois soft coal could be bought for \$1.70 a ton.

The date of the next meeting has not yet been announced.

Transit Affairs in New York

The Public Service Commission has notified the Board of Estimate that plans for the so-called Lexington Avenue route, the Broadway-Lafayette route and the extension to the Fourth Avenue Subway have now practically been completed by the engineering department of the commission, and the legal department is now engaged upon forms of contracts. A change has been made in the Broadway-Lexington Avenue route which will necessitate the approval of the Board of Estimate and of the property owners or the Appellate Division of the Supreme Court. It is anticipated that the consents required may be obtained and bids to these routes advertised early in 1910.

Theodore P. Shonts, president of the Interborough Rapid Transit Company, and Frank Hedley, vice-president and general manager of the company, have resumed the conferences with the Public Service Commission begun last summer and continued until a few weeks ago, regarding the plans of the company for the construction of subway and elevated lines. A session was held on Nov. 19, but it was announced that matters have not yet reached the point of considering the terms of construction.

In response to the resolution passed by the Board of Estimate and Apportionment requesting the Public Service Commission to make application for the appointment of condemnation commissioners in connection with the Fourth Avenue Subway, Chairman Willcox has written to the Board of Estimate expressing the opinion that it would be unwise for the city to institute proceedings for the condemnation of easements along the Fourth Avenue Subway until the Court of Appeals has passed on the same question in the Joralemon Street case. This decision is expected within a short time, and if the contention of the city is sustained in that case there will be no need for condemning the easements.

The Public Service Commission has sent to the Board of Estimate requisitions for more than \$13,000,000 corporate stock to complete payments for the construction of the Fourth Avenue subway in Brooklyn, according to the contracts let recently.

Officers and directors of the Pennsylvania Railroad made a trip of inspection through the company's Hudson and East River tunnels on Nov. 18, 1909, on a special train of four cars which left Philadelphia at 9 o'clock. Stops were made at all the points of interest, including the new uptown station and the Long Island terminals. The company announces that the entire system will be open to traffic on June 1, 1910.

The engineers of the Department of Bridges of New York are preparing plans for the reconstruction of the Brooklyn Bridge so as to accommodate subway traffic. It is understood that the reconstruction work will not be begun until the Manhattan Bridge is in service. One of the tentative plans provides that the upper deck of the railroad tracks shall be used by the elevated trains and the lower deck by the subway trains. The cables need not be disturbed. It is reported that the work of completing the plans and carrying out the reconstruction will consume four years.

Rehearing of Ohio Franchise Case Refused.—The Supreme Court of Ohio has refused the request of the solicitor of Akron to rehear the case of the City of Akron against the East Ohio Gas Company, in which it was decided that a franchise to be perpetual must have the words "in per-

petuity" written into it, as noted in the ELECTRIC RAILWAY JOURNAL of Nov. 20, 1909, page 1079.

Rochester Railway Employees' Ball.—The tenth annual ball of the Rochester Railway Employees' Association was held in Convention Hall, Rochester, on Nov. 17, 1909. It is estimated that 1200 persons attended, including the heads of the various departments of the company. In the absence of E. J. Cook, general manager of the company, W. R. W. Griffin, superintendent, represented the company officially. Mayor Edgerton of Rochester was among the guests.

Power Contract in Indiana.—The Indiana & Michigan Electric Company, South Bend, Ind., began to deliver power to the Chicago, Lake Shore & South Bend Railway, South Bend, Ind., and the Northern Indiana Railway, South Bend, on Nov. 16 under a 15-year contract. The Indiana & Michigan Electric Company is also furnishing power to the Southern Michigan Railway, South Bend, and the Chicago, South Bend & Northern Indiana Railway, South Bend, which control other lines in South Bend and vicinity.

Niagara Power Contract Approved.—The Public Service Commission of the Second District of New York has approved the contract between the Niagara, Lockport & Ontario Power Company and the Buffalo, Lockport & Rochester Railway, Buffalo, N. Y., leasing and granting to the Niagara, Lockport & Ontario Power Company the right and privilege of using the excess capacity of the transmission line of the Buffalo, Lockport & Rochester Railway for the purpose of transmitting and selling power to persons, corporations and firms other than the railway in the locality traversed by the transmission line.

Meeting of New England Street Railway Club.—The regular monthly meeting of the New England Street Railway Club will be held at the American House, Boston, Mass., on Thursday evening, Dec. 2. The date has been changed from the fourth Thursday of the month, because that fell upon Thanksgiving Day. Dinner will be served at 6:45 o'clock. A charge for members of 75 cents will be made for dinner tickets and \$1.25 for guests. After the regular business meeting there will be brief addresses on "Impressions of the City and Interurban Railway Systems in the Far West" by a number of those who participated in the trip of the Massachusetts Street Railway Association to Denver, Seattle and the Pacific Coast on the street railway special. The remarks will be illustrated by the aid of an opaque projector, or reflectoscope, through the courtesy of the Boston & Northern Street Railway. Among those who will speak will be James F. Shaw, B. V. Swenson, Henry C. Page, Paul Winsor, M. H. Bronsdon and Nugent Fallon.

Public Utilities Commission Ordinance in Los Angeles.—The City Council of Los Angeles has passed over the veto of the Mayor an ordinance to create a public utilities commission to supervise the work of the public service corporations operating in Los Angeles. The ordinance provides for a commission of five members to be appointed by the Council, each of the five commissioners to receive a salary of \$1,000 a year, the secretary to receive \$2,400 a year and devote his whole time to the work of the commission. The ordinance carries an appropriation of \$8,000, which leaves only \$600 for the work of the body after meeting the salaries of the commissioners and the secretary. The Mayor favored a somewhat similar ordinance advanced by the Municipal League, which provided for a commission of three members to be appointed by the Mayor and confirmed by the Council, the commissioners to serve without salary and to select their own secretary. This ordinance carried an appropriation of \$12,000, to be employed at the discretion of the commission, and required the Council to submit applications for franchises to the commission for approval.

Second Fall Meeting of the Technical Publicity Association.—The Technical Publicity Association, an organization composed of the men in charge of the publicity departments of a number of the large manufacturing concerns, held its second fall meeting on Nov. 11, 1909, at the National Arts Club, New York, N. Y. There was an unusually large attendance. After an informal dinner the association held a business meeting at which the principal speakers were James H. McGraw, president of the McGraw Publishing Company; Robert Frothingham, advertising manager of *Everybody's*, and J. George Frederick, managing editor of *Printer's Ink*. In the absence of President Redfield, O. C. Harn, advertising manager of the National Lead Company, was toastmaster. Howard M. Post, chairman of the publicity committee, reported very satisfactory progress. He presented a portfolio of technical and trade paper comments showing graphically the increasing recognition of the Technical Publicity Association as a factor in the technical advertising field. The association, at the close of a very profitable evening, adjourned to meet on Dec. 8, 1909.

Financial and Corporate

New York Stock and Money Market

November 22, 1909.

The stock market during the past week has been more concerned with large deals affecting domestic companies than with the financial situation. The prices for Interborough have remained practically stationary; Third Avenue, however, has declined 2 points or more upon the suggestion of a reorganization plan that involved a heavy assessment on the stock.

The foreign situation is better, and American bankers seem to carry their load without much trouble. Quotations to-day were: Call, 4½ to 5 per cent; 90 days, 4¼ to 5 per cent.

Other Markets

In the Philadelphia market prices are practically unchanged. There has been some little trading in Union Traction without any change of price.

In the Boston market, Massachusetts Electric issues have been traded in to some extent, especially preferred, but the prices at the close of the week were practically the same as at the opening. There have also been a few scattered sales of Boston Suburban stocks.

In Chicago there have been a few sales of Chicago Railways, Series 1, the price being 100, which is many points below the last previous sales reported. Series 2 remains about the same price.

In Baltimore, the bonds of the United Railways Company continue to be the absorbing traction interest and are liberally dealt in at prices that are practically unchanged from former quotations. There have been a few sales of the stock of the same company at about 13½.

The only traction securities sold at the weekly auction in New York last week were 201 shares Brooklyn City Railway Company, \$10 each, at 197¾.

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

	Nov. 16.	Nov. 22.
American Railways Company.....	445½	445½
Aurora, Elgin & Chicago Railroad (common).....	449¼	450
Aurora, Elgin & Chicago Railroad (preferred).....	95	92
Boston Elevated Railway.....	130	130
Boston & Suburban Electric Companies.....	187½	15
Boston & Suburban Electric Companies (preferred).....	477¼	77
Boston & Worcester Electric Companies (common).....	112	112
Boston & Worcester Electric Companies (preferred).....	452	452
Brooklyn Rapid Transit Company.....	77	77¾
Brooklyn Rapid Transit Company, 1st pref., conv. 4s.....	87	86¼
Capital Traction Company, Washington.....	136	135
Chicago City Railway.....	190	*190
Chicago & Oak Park Elevated Railroad (common).....	2	2
Chicago & Oak Park Elevated Railroad (preferred).....	10	*10
Chicago Railways, ptcptg., ctf. 1.....	102	101
Chicago Railways, ptcptg., ctf. 2.....	435	432½
Chicago Railways, ptcptg., ctf. 3.....	424	420
Chicago Railways, ptcptg., ctf. 4s.....	10	*10
Cleveland Railways.....	84	*84
Consolidated Traction of New Jersey.....	477	477½
Consolidated Traction of N. J., 5 per cent bonds.....	106	107
Detroit United Railway.....	62¾	*60¼
General Electric Company.....	163	162
Georgia Railway & Electric Company (common).....	100	103
Georgia Railway & Electric Company (preferred).....	86	88
Interborough-Metropolitan Company (common).....	23¾	22½
Interborough-Metropolitan Company (preferred).....	56¾	54¾
Interborough-Metropolitan Company (4½s).....	83½	82½
Kansas City Railway & Light Company (common).....	410	439
Kansas City Railway & Light Company (preferred).....	82	*82
Manhattan Railway.....	141¾	140
Massachusetts Electric Companies (common).....	116	116½
Massachusetts Electric Companies (preferred).....	80	80
Metropolitan West Side, Chicago (common).....	167½	117
Metropolitan West Side, Chicago (preferred).....	453	453
Metropolitan Street Railway.....	27	25
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	78½	79
Northwestern Elevated Railroad (common).....	119	118
Northwestern Elevated Railroad (preferred).....	468	468
Philadelphia Company, Pittsburg (common).....	48¾	48¾
Philadelphia Company, Pittsburg (preferred).....	44½	44½
Philadelphia Rapid Transit Company.....	26¾	26½
Philadelphia Traction Company.....	89	86
Public Service Corporation, 5 per cent col. notes.....	100¾	*100¾
Public Service Corporation, ctf. s.....	100¾	101
Seattle Electric Company (common).....	117	117
Seattle Electric Company (preferred).....	103½	103½
South Side Elevated Railroad (Chicago).....	453	456
Toledo Railways & Light Company.....	18	*8
Third Avenue Railroad, New York.....	20½	10½
Twin City Rapid Transit, Minneapolis (common).....	100	*100
Union Traction Company, Philadelphia.....	52¾	52½
United Rys. & Electric Company, Baltimore.....	13¼	13½
United Rys. Inv. Co. (common).....	42	*42
United Rys. Inv. Co. (preferred).....	72½	*72½
Washington Ry. & Electric Company (common).....	116	114
Washington Ry. & Elec. Company (preferred).....	102	101
West End Street Railway, Boston (common).....	92	92½
West End Street Railway, Boston (preferred).....	105	105
Westinghouse Electric & Manufacturing Company.....	85½	85¾
Westinghouse Elec. & Mfg. Company (1st pref.).....	*140	*140

a Asked. * Last Sale.

Annual Report of Spokane & Inland Empire Railroad

Gross earnings from operation of the Spokane & Inland Empire Railroad in the year ended June 30, 1909, compare with the previous year as follows:

	1908.	1909.	Increase.
Freight	\$ 291,008	\$ 325,020	\$ 34,012
Passenger	516,071	539,543	14,472
Earnings from street railway system and miscellaneous.....	310,939	413,537	102,598
Total	\$1,118,018	\$1,269,100	\$151,082
Operating expenses—including taxes \$	807,388	882,151	74,763
Net operating income.....	\$ 310,630	\$ 386,949	\$ 76,319

Total operating expenses, excluding taxes, were \$844,352, or 66.5 per cent of the total earnings from operation. Of the expenses \$262,517, or 20.7 per cent of the total operating revenue, was applied in maintenance. The expenditure for maintenance of way and structures was \$143,662, or 11.3 per cent of gross, and the amount used for maintenance of equipment was \$118,855, or 9.4 per cent of the operating revenue. Transportation expenses aggregated \$459,265, equivalent to 36.2 per cent of gross. General expenses and traffic expenses absorbed 7.8 per cent and 1.8 per cent respectively.

Jay P. Graves, president of the company, says in part in his statement to shareholders:

"In submitting my third annual report to the stockholders of this company I have much of good and somewhat of ill to report, and I shall put the ill report first.

"On July 15 of this year the registration for homesteads on account of the opening of the Cœur d'Alene Indian reservation was commenced in Cœur d'Alene. Owing to the simultaneous opening of the Flathead and Spokane Indian reservations the travel over the Cœur d'Alene division of this company was phenomenal. Even with extra service it was almost an impossibility for us to handle the crowds between Spokane and Cœur d'Alene, and every train that went out either from Spokane or Cœur d'Alene was mobbed. We called upon the police officers of both cities to keep the crowds in some restraint, and with the assistance of many extra employees the rush was handled without a single accident occurring until July 31. On that day special No. 5, westbound, collided with regular passenger train No. 20, eastbound, at Gibbs Station, about 1½ miles from Cœur d'Alene. Both trains were packed, and as a result of the collision 17 persons were killed and between 100 and 200 were injured more or less seriously. No. 20 was in charge of Motorman Delaney and Conductor Seymour, both old and experienced railroad men. It was brought to a stop before the collision, and no one on it was injured to any appreciable extent. Special No. 5 was in charge of Motorman Campbell and Conductor Whittelsey. Both of these men had been in the employ of the company for several years and had had previous railroad experience of a great many years. Both were experienced railroad men, had passed first-class examinations, both at the time of their employment and subsequently, and were rated as among our most reliable employees. The collision was due, however, solely to their negligence and violation of the rules.

"Immediately after the collision the company requested Robert H. Elder, acting prosecuting attorney for Kootenai County, Idaho; Fred C. Pugh, prosecuting attorney of Spokane County, and E. O. Connor, corporation counsel of the City of Spokane, to act together with three members to be named by the Chamber of Commerce of Spokane and three members to be named by the Chamber of Commerce of Cœur d'Alene, as a committee to investigate the cause of the wreck. Their report fully exonerated the company from any moral responsibility for the wreck, showing that it had done everything that could be done by the company to protect its passengers from injury and placing the blame for the wreck upon Motorman Campbell and Conductor Whittelsey of special No. 5.

"While this report exonerated the company from moral responsibility it did not, of course, affect its legal liability for all damages sustained by reason of the wreck. The company has proceeded as rapidly as possible with the settlement of the claims made against it. Many claims have been settled. Owing to the fact that some claimants have shown themselves most unreasonable, so much so that the company has not been able to settle with them on any fair basis, it is probable that some litigation may result, and owing to that fact the claim and legal departments of the company have not yet felt competent to give an accurate estimate of the cost of the wreck. It is hoped, however, that it will be kept within the \$300,000 mark, which, considering the magnitude of the disaster, should be regarded as most fortunate.

"I turn now to the other side of the picture, which, I think, shows the property to be in excellent condition.

"As stated in the last report, our power plant at the Nine Mile site is now in operation and is furnishing power to operate the Inland division. We are using for the operation of that division from 4000 to 5500 hp. Our power contract with the Washington Water Power Company, entered into when our lines were first constructed, has yet six years to run. We are using, under that contract 3800 hp, the minimum amount permitted by the contract. We have contracts for approximately 1200 hp with outside parties, for which we are receiving approximately \$4 per hp per month. During the ensuing year we have 2800 hp additional business in view to be used in the development of irrigation projects alone. Other business, which is practically certain, will require so much additional power that it will be necessary to increase the plant 10,000 hp this coming winter. The company owns a right of way to its power plant over which the transmission line is built. This right of way was selected over a grade which will permit of the building of an electric road upon the same whenever it appears that business will warrant the construction of such a line. Twenty-two miles of 60,000-volt high tension line have been constructed during the past year and 40 miles will be added this winter. Net earnings of the power plant, exclusive of the amount required for the operation of the railway line, are estimated at \$140,000 for the ensuing year.

"The operating and other revenues of the company for the fiscal year ending June 30, 1909, were \$1,269,100, an increase of \$151,082 over last year's earnings. The operating expenses were \$882,151, an increase of \$74,763 over the operating expenses of last year. This increase in operating expenses is due to the greater mileage operated during the past fiscal year, about 16 miles of the Inland division and 2 miles of the traction division, and also to the unusually hard winter of 1908-09 and floods on the Inland division, which, in common with all the other railroads in the country, suffered severely from washouts during the unprecedented high water in the latter part of January.

"By divisions the traction division shows an increase of 34.4 per cent in gross receipts over that of the past year. The Inland division shows an increase of 22.5 per cent. Owing to the shutting down of the mines in the Cœur d'Alene mining district, and of the mills about Cœur d'Alene Lake during the greater part of the year, the Cœur d'Alene division does not show any increase in receipts for the year. During the last few months, however, the Cœur d'Alene division shows an increase in receipts of from 25 per cent to 50 per cent per month over the earnings for the same months during the past year. This is exclusive of the registration business, which is not taken into account in these comparisons. This increase was due to resumption of the lumber and mining industries, and is undoubtedly permanent.

"The physical condition of the property is excellent. The roadbeds have been kept in first-class condition, every third tie on the Cœur d'Alene division has been renewed and our lines are all fully ballasted and are comparable with the very best steam railroad lines in this country.

"We have built up, at Liberty Lake, a first-class summer resort. Being near the City of Spokane (17 miles), and maintaining a low rate—75 cents for the round trip—has made it very attractive for pleasure seekers, and our business during the past summer has been excellent. We have so arranged our schedules on the Cœur d'Alene division as to put trains on between Liberty Lake and Spokane which handle not only the Liberty Lake business but the local business through the valley from Greenacres, thus permitting us to make better time with our through trains on the Cœur d'Alene division. It has been decided, on account of the rapidly growing business at Liberty Lake, and also along the line from Greenacres, where a number of new irrigated projects are under way, that it will be necessary during the coming year to double-track the line from Greenacres to Spokane. This, in connection with the double track now in operation between Greenacres and Spokane Bridge, will give us 18 miles of double track—from Spokane to the Idaho line. We expect this to suffice for the double-tracking until the business is very greatly increased over the present time.

"To take care of the increased business we have found it necessary to order two more electric freight locomotives and four two-car trains of heavier equipment for the Cœur d'Alene division. This will permit us to put the lighter equipment, which was put on that road when it was first built, on the branch lines and local service, and will give us sufficient equipment to take care of the business for several years to come.

"The total expenditure for the year ending June 30, 1909, for new lines and extensions, equipment and betterments was \$771,562.

"It has been the policy of the company, in order to build up industries along its lines, to put in spurs and sidings wherever business promised. There were 19 different industrial tracks completed during the past year, aggregating in length about 2.45 miles. This policy not only helps to build up the country through which the road runs, but will add materially, in time, to the earning power of the system. "The management expected to resume the payment of dividends on the preferred rights during the year 1909, as the earnings of the company warranted it. The deplorable accident, however, will eat up our earnings for the greater portion of the year, and, much as we regret it, the payment of dividends will be postponed until next year. We confidently hope to resume them then, as the earnings will warrant it as soon as this extraordinary and unprecedented demand upon our resources has been disposed of. The management regrets this enforced postponement of dividends, but feels that it is fully excused, in view of this calamity, which the utmost care could not prevent."

The report contains the following traffic and mileage statistics:

	Year ended June 30,	
	1909.	1908.
Passenger—(railroad division)—		
Number revenue passengers carried.....	1,088,682	1,096,817
Number revenue passengers carried 1 mile...	24,608,962	25,089,489
Number revenue passengers carried 1 mile per mile of road.....	149,145	167,263
Average distance carried (miles).....	22.6	22.88
Total passenger revenue.....	\$501,982.28	\$488,605.83
Average amount paid by each passenger (cents).....	46.11	44.55
Average rate per passenger per mile (cents).....	2.04	1.95
Total passenger earnings, including mail, baggage and express.....	\$530,542.84	\$516,070.90
Mileage of passenger cars.....	1,555,078	1,513,521
Mileage of passenger trains.....	707,874	713,039
Passenger earnings per train mile (cents).....	74.95	72.37
Passenger earnings per average mile of road operated.....	\$3,215.41	\$3,440.47
Freight—(railroad division)—		
Revenue tons carried.....	379,136	331,594
Revenue tons carried 1 mile.....	15,099,677	11,574,193
Average distance haul 1 ton miles.....	39.8	34.9
Total freight revenue.....	\$325,020.18	\$291,007.58
Average amount received per ton freight (cents).....	85.73	87.76
Average receipt per ton per mile (cents).....	2.15	2.51
Mileage of loaded cars.....	797,841	644,597
Mileage of empty cars.....	539,615	419,055
Total mileage.....	1,337,456	1,063,652
Mileage of freight trains.....	194,407	188,755
Freight revenue per train mile.....	\$1.67	\$1.54
Freight revenue per average mile of road operated.....	\$1,969.82	\$1,940.05
City Traction System—		
Revenue passengers carried.....	7,821,526	5,790,893
Passenger car mileage.....	1,602,323	1,396,472
Passenger earnings.....	\$384,933.55	\$286,476.25
Passenger earnings per car mile (cents).....	24.02	20.5

Reorganization Plan of Trenton & New Brunswick Railroad and the New Jersey Short Line Railroad Approved

The depositing bondholders of the Trenton & New Brunswick Railroad, Trenton, N. J., and the depositing bondholders of the New Jersey Short Line Railroad have approved the plan for the reorganization of the companies prepared by the bondholders' committees, representing the depositing bondholders of the two companies. A. M. Taylor, Philadelphia, Pa., is chairman of both of these committees.

The plan provides that a new company, to be called the Elizabeth & Trenton Railroad, shall be formed to take over the property of the Trenton & New Brunswick Railroad and the New Jersey Short Line Railroad, and that this new company shall issue \$180,300 par value in preferred stock, for cash, and \$811,350 in common stock. The amount of new preferred stock to be issued is equal to 10 per cent of \$1,803,000, the amount of the original bonds outstanding against these properties, and each bondholder is given the right to purchase his proportionate share thereof, namely, an amount equal to 10 per cent of his bondholding, each share of the preferred stock carrying with it two shares of common stock as a bonus. The common stock bonus accompanying the preferred stock allotted to the bondholders is equal to 20 per cent of the par value of the original bondholdings.

All bondholders participate in the distribution of the balance of the common stock proportionately, whether they take their pro rata share of the preferred stock with the common stock bonus accompanying it or not, and this distribution of common stock to all depositing bondholders will give each one an amount equal to 25 per cent of his original bondholding.

Such of the preferred stock of the new company, accompanied by the bonus of common stock, which is not purchased and paid for by depositing bondholder on allotment, will be sold to outside investors.

The bulk of the money necessary to complete the high-speed line through from Trenton to Elizabethport, via

New Brunswick, will be raised by issuing bonds against the property acquired by the new company.

Mr. Taylor stated at the bondholders' meeting that a verbal understanding had been entered into between Thomas N. McCarter, president of the Public Service Corporation, and himself, to the effect that the Public Service Railway would later take the property of the new company, provided satisfactory arrangements were made for the raising of the new money necessary to complete the New Jersey Short Line Railroad, and to pay the balance of the cost of rehabilitating the Trenton & New Brunswick Railroad. This would enable the operation of through high-speed cars from Trenton, via New Brunswick, Elizabethport and Elizabeth, to the Newark terminal of the Hudson & Manhattan Railroad, from which point passengers would have the advantage of high-speed service to New York City.

Anderson (S. C.) Traction Company—The property of the Anderson Traction Company has been sold by E. W. Robertson, who bid it in at receiver's sale on Oct. 12, 1909, to a syndicate composed of L. W. Parker, W. J. Thackston, H. J. Haynesworth, J. B. Duke and B. N. Duke. The Greenville, Anderson & Spartanburg Traction Company, it is said, will be organized to take over the property and extend the road.

Boston (Mass.) Elevated Railway.—In a report to the Chamber of Commerce the public utilities committee of that body advises the stockholders of the West End Street Railway to agree to the consolidation with the Boston Elevated Railway on the terms provided for by the Legislature. The committee says that these terms are adequate and gives its reasons for such a conclusion. It suggests an amendment to the enabling act to prevent the minority from preventing the merger.

Boston & Worcester Street Railway, Boston, Mass.—The Massachusetts Railroad Commission has been requested by the Boston & Worcester Street Railway to sanction an increase of stock from \$2,025,000 to not more than \$2,525,000, to be offered to stockholders at \$100 a share to provide for extensions and improvements, and an issue of 20-year 4½ per cent bonds not to exceed \$500,000 for improvements and refunding \$46,000 of the 5 per cent bonds of the Framingham Union Street Railway which have matured.

Metropolitan Street Railway, New York, N. Y.—The Supreme Court of the United States on Nov. 15, 1909, refused to review the decree of the lower courts ordering the foreclosure of the mortgage of the Guaranty Trust Company on a portion of the property of the Metropolitan Street Railway. At the same time writs of certiorari to the Circuit Court of Appeals in New York in the same suit were denied.

Tarrytown, White Plains & Mamaroneck Railway, White Plains, N. Y.—Justice Keogh of the Supreme Court at White Plains has confirmed the sale of the greater part of the property of the Tarrytown, White Plains & Mamaroneck Railway to Richard Sutro, of Sutro Brothers, New York, N. Y., representing the New York, New Haven & Hartford Railroad. The property was sold under foreclosure, as noted in the ELECTRIC RAILWAY JOURNAL of Nov. 13, 1909, page 1038.

Third Avenue Railroad, New York, N. Y.—An outline of the revised plan for the reorganization of the Third Avenue Railroad shortly to be submitted to the Public Service Commission of the First District of New York, proposes an assessment of 50 per cent on the stock, with the provision that the stockholders for this assessment amounting to \$8,000,000 receive \$9,000,000 in 4 per cent first mortgage bonds and have their stock reduced by 25 per cent. The plan proposes also the issuance of \$6,000,000 new first mortgage 4 per cent bonds for the outstanding \$5,000,000 of 5 per cent bonds and the scaling down of the \$37,500,000 4 per cent consolidated bonds to \$25,000,000 of 4½ per cent income bonds.

United Railways, St. Louis, Mo.—The voting trustees for the common stock of the United Railways under the agreement of Nov. 1, 1904, which expired by limitation on Oct. 31, 1909, have given notice that the trust certificates may now be exchanged for the shares of the common stock which they represent. Brown Brothers & Company, New York, N. Y., and the National Bank of Commerce, St. Louis, will redeem the certificates.

Washington Railway & Electric Company, Washington, D. C.—The directors of the Washington Railway & Electric Company have declared an initial dividend of 1 per cent on the \$6,500,000 of common stock of the company for the half year payable on Dec. 1, 1909, to stock of record on Nov. 13, 1909. The directors have also declared the eleventh semi-annual dividend of 2½ per cent on the \$8,500,000 of preferred stock.

Traffic and Transportation

Relief and Pension Work on Metropolitan Street Railway, New York.

The annual report of the Metropolitan Street Railway Association of New York, relating to the year ended Sept. 19, 1909, shows the following benefits: Paid to members on account of sickness or injury, \$13,707, paid for death claims, \$14,690.35; estimated value of medical service and attendance, \$6,365.25; total, \$34,762.60. There was received in dues and initiation fees from members the sum of \$27,976.50, leaving an excess of benefits over the amount paid to members aggregating \$6,786.10. Oren Root, chairman of the board of trustees, states that since the organization of the association the following amounts have been paid to members or their heirs: Death claims, \$114,366.03; sick or injury benefits, \$180,484; value of medical advice and attendance (estimated) \$95,868.82; total, \$390,718.85. The total amount received in dues and initiation fees from the time of organization to the close of the last fiscal year was \$317,278.49, leaving an excess of benefits over the amounts paid by members of \$73,440.36. The value of securities and cash on hand in the treasury of the association at the end of the year was \$47,247.82.

In issuing the annual report of the association, Oren Root, general manager for the receivers of the Metropolitan Street Railway, sent a copy of the pension regulations together with a statement addressed to all employees. This statement said in part:

"For some years the management of the Metropolitan Street Railway, as a mark of appreciation of long and faithful service, has been paying pensions to employees who have become too old to continue their duties.

"Since this property has been under the control of the receivers, the same policy has been followed, and at the present time there are 19 men on the pension roll drawing monthly pensions varying in amount from \$15 to \$28.17 each.

"The pension system has been very successful in its operation and the money thus paid out has been of much assistance in the support of men during their old age, and in contributing to the comfort of their families.

"The pension system is supported solely by the railway company, while the Metropolitan Street Railway Association is an organization of the employees. The affairs of the association are managed by the employees with the assistance of the officers of the company, and the association is supported financially by the employees and by donations made by the company and other friends from time to time. The association was formed by the employees of the Metropolitan Street Railway to afford the men an opportunity to protect themselves and their families in the event of illness or injury, which might render a man temporarily unable to work, and also to provide for the payment of \$300 to the man's family at the time of his death, when the money would be most needed. By this means members of the association obtain for themselves accident and sickness insurance and secure life insurance for the benefit of their families."

The pension regulations as published are identical with those printed in 1902 for the Interurban Street Railway, then lessee of the Metropolitan system.

Conference on Front Platform Rule in Philadelphia

The members of the Railroad Commission of Pennsylvania met the officers of the Philadelphia (Pa.) Rapid Transit Company in Philadelphia on Nov. 18, 1909, and Chas. O. Kruger, president of the company, and Attorney Ballard assured the commissioners that the officers and representatives of the company would do everything in their power to carry out the requirements of the order of the commission issued on Oct. 30, 1908, prohibiting passengers from riding on the front platforms of cars. It is expected that some definite method of enforcing the order will be determined upon within a few days. The company desires to cause a minimum of inconvenience to the traveling public. At places like the Philadelphia Navy Yard workmen fairly mob the cars in their effort to board the first city-bound cars, and the greatest difficulty will be experienced in complying with the commission's ruling, and additional reserve equipment may be necessary.

Mr. Kruger explained to the commissioners that since the order was issued the Philadelphia Rapid Transit Company had posted notices and placed extra cars on the lines to live up to its provisions. He said that 122 extra trippers were put on the central city lines during the rush hours in addition to the trailers, 60 of which are now in use, and that the company had done everything possible to clear the

platforms, but that it was impossible and would probably cause innumerable lawsuits.

In justification of the order that the rule be enforced at all times and under all circumstances, whether the public approves or not, Nathaniel Ewing, chairman of the commission, says:

"The safety of the public demands that this rule shall be rigidly enforced. I want to make it plain that the rule is a benefit to the public, and not the company. Where it might result in some inconvenience and disorder, it is better to have the inconvenience and disorder at the start than danger of accident."

The order of the commission to the companies regarding the carrying of passengers on the front platform was published in the ELECTRIC RAILWAY JOURNAL of Nov. 7, 1908, page 1353.

Accidents in New York During October

The Public Service Commission of the First District of New York has issued the following summary of accidents which occurred in October, 1907, October, 1908, and October, 1909, on the railways within its jurisdiction:

OCTOBER.	1907.	1908.	1909.
Car collisions	221	97	123
Persons and vehicles struck by cars.....	1,145	882	1,134
Boarding	510	533	561
Alighting	593	681	641
Contact electricity .....	..	33	27
Other accidents	2,397	2,442	1,961
Totals	4,866	4,668	4,447
INJURIES.			
Passengers		1,715	1,742
Not passengers		738	548
Employees		500	440
Totals		2,953	2,730
SERIOUS (Inc. in Above).			
Killed	47	47	25
Fractured skulls	15	15	8
Amputated limbs	9	10	3
Broken limbs	40	36	38
Other serious	80	60	138
Totals	191	168	212

Heated Vestibules in Kansas.—The new State law has gone into effect requiring that street cars operated in Kansas be fitted up so that the vestibules of the cars where the motormen stand be heated the same as the interior of the cars.

East St. Louis Employees Adjust Differences.—The agreement between the employees of the East St. Louis & Suburban Railway and the company regarding terms of service will continue in force unchanged until its expiration on May 1, 1910.

Ticket-Selling Machines in Hudson Terminal Station.—The Hudson & Manhattan Railroad, operating between New York and New Jersey, under the Hudson River, has installed two nickel-in-the-slot ticket-selling machines in its terminal at Cortlandt Street and Church Street, New York City, as an experiment.

Hearing on Lighting of Subway and Elevated Cars.—The Public Service Commission of the First District of New York has ordered that a hearing be held on Nov. 29, 1909, to inquire into the lighting of the cars and stations on the subway and elevated lines of the Interborough Rapid Transit Company, New York, N. Y.

Philadelphia & Western Railway Abandons Beachwood Park.—The Philadelphia & Western Railway, Philadelphia, Pa., has decided to abandon Beechwood Park, a pleasure resort three miles west of Philadelphia, and the buildings at the park are all being razed. The property will be cut up into building lots and offered for sale.

Philadelphia Rapid Transit Company Increases Freight Service.—To meet the increasing demands of patrons which have followed the recently inaugurated policy of carrying freight, the Philadelphia Rapid Transit Company has completed another station at Glenside, and is transporting freight over the Glenside division.

Workmen's Tickets in Racine.—In return for certain rights granted by Council in the streets of Racine, the Milwaukee Light, Heat & Traction Company has agreed to sell six tickets for 25 cents, good during two hours in the morning and two in the evening. The hours selected are from 6 a. m. to 8 a. m. and from 5 p. m. to 7 p. m.

Service in Pittsburgh.—The Railroad Commission of Pennsylvania has been asked to reopen the complaint filed against the Pittsburgh (Pa.) Railways in October, 1908, by Mayor Magee, who hopes to be able to show that the

recommendations of the commission have not been complied with. The Mayor will probably confer with the members of the commission in Harrisburg during the first week in December.

Peculiar Accident on Illinois Traction System.—A freight train on the Illinois Traction System composed of a motor car and two express trailers was derailed at Thayer, Ill., on Nov. 11, 1909, and knocked down a trolley pole carrying a d.c. feeder cable which fell on one of the trail cars and set it on fire. The motor car was saved, but both of the trail cars, fully loaded with express matter, were destroyed. None of the cars was overturned.

Gymnasiums for Pittsburgh Employees.—The Pittsburgh (Pa.) Railway has opened at its Talbot Avenue car house for the use of its employees the first of the gymnasiums with which it is proposed eventually to equip all of the car houses of the company. Four rooms on the second floor of the Talbot Avenue house are given over to the men. Two are equipped with athletic apparatus, one with baths and the fourth is fitted up as a reading and card room.

Placards Showing Way to Alight in New York.—The Metropolitan Street Railway, New York, N. Y., is placing signs in its cars showing the correct and incorrect ways of alighting. One picture exhibits a woman with an umbrella stepping from a car facing the direction in which it moved. She wears a complacent smile. The other picture shows the same woman stepping off backward. She is about to fall and the umbrella is soaring through the air.

Fender Ordinance to be Recommended in San Francisco.—The Public Utilities Committee of the Board of Supervisors of San Francisco has decided to recommend the passage of an ordinance requiring all cars operated in the city to be equipped with fenders similar to those in use on the San Mateo cars. Some modifications will be made in the ordinance to overcome the difficulties that will be encountered in using the fenders on cars operating over lines with heavy grades and sharp curves.

Warning Signs in Chicago.—The Chicago (Ill.) City Railway has posted placards in its cars warning patrons of the danger of attempting to alight before a car has been brought to a standstill. The sign says: "One moment, please! Before getting off or on a car wait until it has actually stopped. Better be safe than sorry." The company has also started a campaign of education through the medium of transfer slips, with the idea of minimizing accidents and of putting a stop to the illegal use of transfers. The advice and warnings are printed on the backs of the transfers and they will be circulated among patrons of the company in the usual manner at the rate of 12,000,000 copies a week.

Inland Empire System Wins Farm Product Prize.—The Inland Empire System, through C. L. Smith, its industrial agent, has won the Hill trophy cup, offered at the Billings Dry Farming Congress, for the best exhibit of farm products raised in Washington, east of the Cascade Mountains within 25 miles of the Great Northern Railway. The exhibit which won the cup consisted of 22 varieties of apples, eight varieties of pears, five of plums, four of field corn, two of sweet-corn, two of popcorn, three of peas, two of beans, four of wheat, two of barley, three of oats, one of rye, five of potatoes and one of carrots, all grown on Moran prairie, on the route of the Inland Empire System between Spokane and Waverly. The trophy carries this legend: "Presented by James J. Hill for best exhibit of farm products raised in the State of Washington east of the Cascade Mountains within 25 miles of the Great Northern Railway under dry farming methods exhibited at the Dry Farming Congress held at Billings, Mont., Oct. 26, 27 and 28, 1909."

Section Foremen Awarded Prizes.—The Oregon Electric Railway, Portland, Ore., has announced awards of prizes for the best maintained section on its system. The foreman of Section No. 5 was given first prize, \$25 in cash, and will display a gold-lettered sign on the section house at Wacanda which will indicate that for the current year he and his men have kept up their 8 miles of track better than the section crews of the other five sections of the main line. The second prize, \$15, was awarded to the foreman of Section No. 4. On a basis of 100 per cent the following points were considered: Alignment and surface, 25; spiking ties, lining, spacing, switches and frogs, 25; drainage and ballast, 20; material, grass and weeds, 10; road crossings, run-offs and fencing, 5, making the total 85. Houses and grounds were allowed 10 points and sidings 5 points, but were not considered in the final awards. Three disinterested steam railroad officials were secured to pass on the rating. The company has announced that next year the first prize will be \$30; the second prize will remain at \$15.

Personal Mention

Mr. R. I. Brunner has been elected auditor of the Enid (Okla.) City Railway Company, to succeed Mr. C. F. Bruce.

Mr. William Anderson has been appointed auditor of the Wausau (Wis.) Street Railway to succeed Mr. F. A. Heckler.

Mr. E. Leland has been appointed auditor of the Meridian Light & Railway Company, Meridian, Miss., to succeed Mr. E. M. Martin.

Mr. Edward B. Ryan, chief clerk of the Yonkers (N. Y.) Railroad, has been appointed auditor of the company to succeed Mr. Frank Horan.

Mr. George R. McDermot has been appointed chief engineer of the power station of the Citizens' Railway, Waco, Tex., to succeed Mr. Ros Marquis.

Mr. R. A. Bowers has been appointed superintendent and park manager of the Pascagoula Street Railway & Power Company, Scranton, Pa., to succeed Mr. G. B. Chapman.

Mr. J. W. Smith has been elected president of the Fargo & Moorhead Street Railway, Fargo, N. D., to succeed Mr. L. B. Hanna. Mr. Smith was formerly treasurer of the company.

Mr. J. B. Ingersoll denies that he contemplates retiring as electrical engineer of the Spokane & Inland Empire Railroad, Spokane, Wash., to engage in other work, as previously reported.

Mr. H. C. Foss, general manager of the Sydney & Glace Bay Railway, Sydney, N. S., has been elected vice-president of the company to succeed Mr. A. F. Townsend, and will hereafter act as vice-president and general manager.

Mr. J. P. Martin, vice-president of the Fargo & Moorhead Street Railway, Fargo, N. D., has been elected treasurer of the company to succeed Mr. J. W. Smith, and will hereafter act as vice-president and treasurer of the company.

Mr. H. L. Pierce, president of the Laconia (N. H.) Street Railway, who resides in Leominster, Mass., has been elected to the Legislature of Massachusetts by what is said to have been the largest Republican majority ever given a candidate in Leominster.

Mr. F. J. Foote has been appointed master mechanic of the Ohio Electric Railway, Cincinnati, Ohio, vice, D. A. Faut, resigned. Mr. Foote was previously connected with the installation and maintenance department of the Cincinnati office of the Westinghouse Electric & Manufacturing Company.

Mr. Paul Winsor, chief engineer of motive power and rolling stock of the Boston (Mass.) Elevated Railway, and Mr. Edward S. Webster, of Stone & Webster, Boston, Mass., are among the eight candidates who have been nominated by the Alumni Association of the Massachusetts Institute of Technology to be members of the corporation.

Mr. Charles S. Butts has resigned as engineer of maintenance of way of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio. Before becoming connected with the Cleveland, Southwestern & Columbus Railway, Mr. Butts supervised the construction of 75 miles of interurban electric railway for the Illinois Traction System, Champaign, Ill.

Mr. C. R. Pettengill has been appointed general freight and passenger agent of the Elgin & Belvidere Electric Company, Marengo, Ill., to succeed Mr. W. C. Farquhar. Mr. Pettengill entered the employ of the Elgin & Belvidere Electric Company as night dispatcher. About a year later he was appointed chief dispatcher, and continued in this capacity until he was appointed freight and passenger agent of the company. Mr. Pettengill was connected with the Chicago & Northwestern Railway for 15 years as operator and agent before becoming connected with the Elgin & Belvidere Electric Company.

Mr. George R. Grant has been appointed assistant secretary of the Public Service Commission of the Second District of New York. Mr. Grant is a member of the law firm of Grant & De Ceu, Buffalo, N. Y. He was born in Cape Vincent, Jefferson County, New York, won a State scholarship at Cornell and was graduated from Cornell in 1904. In 1906 he was graduated from the Buffalo Law School, and was awarded the Daniels thesis prize for the best English essay on a legal subject. He was admitted to the bar in 1906 and entered the law office of Mr. Daniel V. Murphy. During the first year after his graduation from the Buffalo Law School, Mr. Grant lectured at the school on criminal law.

Mr. C. L. Crabbs, who since 1907 has been principal assistant engineer of the Brooklyn (N. Y.) Rapid Transit

Company, has recently been given the title of engineer of way and structures and placed in charge of the company's engineering department. The office of chief engineer has been abolished and Mr. W. S. Menden, who formerly had the title of assistant general manager and chief engineer, will hereafter be known as assistant general manager and will give the greater part of his time to the operation of the system. Mr. Crabbs was connected with the Metropolitan West Side Elevated Railway, Chicago, Ill., during the construction of that road, was with the engineering department of the city of Chicago, and for six years was engaged in factory superintendence.

Mr. E. D. Reed has been appointed engineer of the Chattanooga Railway & Light Company, Chattanooga, Tenn., to succeed Mr. W. W. Wysor, whose appointment as chief engineer of the Lehigh Valley Transit Company, Allentown, Pa., was noted in the *ELECTRIC RAILWAY JOURNAL* of Oct. 2, 1909. Mr. Reed's street railway experience dates from his appointment in 1894 as assistant engineer of the Scranton (Pa.) Railway. In 1900 he was appointed engineer of the Scranton Railway and continued to serve in that capacity until 1906, when he became connected with the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., as supervisor of maintenance and construction, including the building of the interurban line from Lewiston to Waterville. Mr. Reed continued with this company until his appointment as engineer of the Chattanooga Railway & Light Company.

Mr. J. A. Young has been appointed superintendent of the London (Ont.) Street Railway. Mr. Young was born in Cleveland, Ohio, in 1870. He entered railway work in 1896 as a conductor in the employ of the International Traction Company, Buffalo, N. Y., and remained in the service of that company until July, 1903, when he accepted a position with the New York Central & Hudson River Railroad at Albany as shipping clerk in the department of stores. Subsequently he resigned from the New York Central & Hudson River Railroad to accept an appointment as inspector of admissions at the St. Louis Exposition, made through Governor Bliss of Michigan. At the close of the Exposition Mr. Young entered the employ of the London Street Railway as night clerk. He was subsequently appointed day clerk in charge of the starting of cars, and was promoted from day clerk to inspector. He entered upon his duties as superintendent of the company on Nov. 1.

Mr. A. D. Miller, whose appointment as manager and superintendent of the Reno (Nev.) Traction Company was announced in the *ELECTRIC RAILWAY JOURNAL* of Nov. 13, 1909, was graduated from Stanford University, California, in 1905 with the degree of electrical engineer. His first commercial work was with the engineering department of the Truckee River General Electric Company, Reno, Nev. Subsequently he was appointed assistant engineer of the company, which controlled the Truckee River General Electric Company, the Reno Power, Light & Water Company and the Reno Traction Company. Several months ago the property of the Truckee River General Electric Company and the Reno Power, Light & Water Company was sold, the former owners retaining the property of the Reno Traction Company as their only interest in Nevada. The former manager of all three properties entered the employ of the owners of the Truckee River General Electric Company and the Reno Power, Light & Water Company and Mr. Miller was appointed general manager of the Reno Traction Company.

Mr. George M. Wegman has been appointed superintendent and purchasing agent of the Rochester & Manitou Railroad, Charlotte, N. Y., to succeed Mr. F. E. Pritchard as superintendent and Mr. K. B. Castle as purchasing agent. Mr. Wegman started as an apprentice to a printer, but in 1889 abandoned his trade to enter the service of the Rochester (N. Y.) Electric Railway as a motorman on the line between Rochester and Charlotte, one of the first electric railways in Northern New York. Five years later he was advanced to the position of electrical engineer of the company. In 1894 the Rochester Electric Railway was absorbed by the Rochester Railway, and Mr. Wegman entered the employ of the Buffalo (N. Y.) Railway and served in the mechanical and electrical departments of this company and the International Traction Company, its successor, until 1902. He then accepted the position of superintendent of the Rochester & Suburban Railway. This company was absorbed by the Rochester Railway in 1905, but Mr. Wegman continued with the company until 1906, resigning to become mechanical and electrical engineer and superintendent of construction of the Standard Electric Construction Company and consulting engineer of the Bryden Electric Supply Company, Rochester, N. Y., with which he continued until appointed to his present position.

Construction News

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

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

RECENT INCORPORATIONS

***North Carolina Traction Company, Sunbury, N. C.**—Incorporated to build an electric railway from Moore to Piedmont Springs. Headquarters, Sunbury. Authorized capital stock, \$2,000,000; issued, \$10,000. Incorporators: Dr. H. P. Macknight, Southern Pines; E. Hillman, Aberdeen; W. C. Reffert, Harrisburg, Pa., and E. L. Krafft, Indianapolis, Ind.

Toronto (Ont.) Terminal Company.—Application has been made to the Dominion Parliament for the incorporation of the Toronto Terminal Company by J. W. Woods, Hugh Blain and Peleg Howland. Associated with these parties is Lucien B. Howland, engineer and promoter of the enterprise. The plans of the company contemplate the construction and operation of a viaduct or subway which will handle all railway traffic entering Toronto. The company also asks for the right to construct passenger and freight stations, warehouses and other terminal facilities in Toronto; also branch railways and to acquire water power rights.

***Berks County Traction Company, Fredericksburg, Pa.**—Application will be made on Dec. 2 by this company for a charter to build an electric railway from Wyomissing to Fredericksburg, a distance of 35 miles. Applicants for the charter are W. C. Riffert, Lewis Crater, A. S. Seidel and Henry Fry.

***Castle Valley Railway, Salt Lake City, Utah.**—Incorporated to build an electric railway from Price to Cedar Creek Canyon. W. C. Rice, Salt Lake City, president.

FRANCHISES

San Diego, Cal.—The City Council has granted a franchise to the San Diego, El Cajon & Escondido Electric Railway to construct an electric railway in San Diego and extending to Escondido. G. W. Pursell, general manager. [E. R. J., Oct. 16, '09.]

San Diego, Cal.—The San Diego Electric Railway has asked the Common Council to advertise for bids for a street railway franchise on Thirteenth Street from K Street to L Street. The petitioner asks that the franchise be sold to the highest bidder; also that the Council stipulate that work must be started on its construction within three months after the franchise is granted and completed within nine months. The company desires to secure the franchise so that it will have access from the K Street line to the new car house which is being erected between L Street and M Street.

Waycross, Ga.—The City Council has granted a franchise to the Waycross Gas, Electric & Railway Company for the street railway, electric and gas privileges in Waycross. G. W. Deen, Waycross, president. [E. R. J., Sept. 26, '08.]

Chicago, Ill.—Eugene Purtelle, president of the Chicago Heights & Eastern Electric Railroad, has applied to the County Court for a 75-year franchise for an electric railroad from Chicago Heights east to the State line, the route to run along the south of and near the Elgin, Joliet & Eastern Railroad. Permission is asked for the railway to cross all intersecting highways.

Lapel, Ind.—The Town Board has granted a new franchise to Wallace B. Campbell, Anderson, for the construction of an electric railway in Lapel. The franchise expires Jan. 1, 1912. [E. R. J., Feb. 6, '09.]

Adel, Ia.—At a special election recently held in Adel a franchise was voted to the Adel City Railway, Des Moines, for the construction of a street railway in Adel. This is part of a plan to build an interurban railway from Des Moines to Adel. D. A. Blanchard is interested. [E. R. J., Sept. 18, '09.]

New Orleans, La.—The New Orleans Railway & Light Company has purchased the franchise known as the Villere extension, good until 1956, and agreeing to pay the city the sum of one-half of 1 per cent on the gross annual receipts for this privilege. The line is to be a double track and begin at the intersection of Villere Street and Lafayette Avenue and traverse that avenue to Franklin Avenue and St. James Avenue.

Takoma Park, Md.—The Town Council has granted permission to the Baltimore & Washington Transit Company to extend its railway from the present terminus at the District line over and along Laurel Avenue, in Takoma Park,

Md., to the south line of Carroll Avenue, and to construct a single or double track with the necessary sidings and crossovers. The extension is to be completed within 90 days.

***Laurel, Mont.**—The Eastern Montana Electric Railway has applied to the City Council for an electric railway franchise. The company proposes to build an interurban railway from Laurel to Billings and extend the line west from Laurel to Red Lodge, crossing the hill to Bear Creek, returning to Laurel by a loop which will embrace the entire Clark Fork Valley. George H. Kessethuth, Billings, is interested.

New York, N. Y.—The South Shore Traction Company has paid over to Controller Metz \$70,000 and obtained its franchise to operate cars from the Queensboro Bridge to Jamaica, a distance of 18 miles, along Jackson Avenue and Hoffman Boulevard.

Norwood, Ohio.—The City Council has extended the franchise of the Cincinnati (Ohio) Traction Company 25 years.

Colonial Beach, Va.—The Municipal Council has granted a franchise to the Hon. John G. Capers, Evans Building, Washington, D. C., for the construction of an electric railway from Colonial Beach to Quantico, 22 miles. [E. R. J., Oct. 30, '09.]

***Aberdeen, Wash.**—Eldridge Wheeler, Montesano, has applied to the County Commissioners for a franchise for an electric railway along certain highways in Chehalis. It is said to be the intention of the promoters to build an electric railway from Olympia to Hoquiam.

Pasco, Wash.—The County Commissioners have granted a franchise to N. G. Blalock, representing the Walla Walla & Columbia Traction Company, to enter Franklin County with an electric railroad. [E. R. J., April 10, '09.]

TRACK AND ROADWAY

Phoenix, Tempe & Mesa Railroad, Phoenix, Ariz.—H. J. Bennett advises that this company intends to begin work within two weeks on its proposed railway, which is to extend from Phoenix to Mesa, via Tempe, 17 miles. It is the intention to operate four gasoline motor cars upon the completion of the line. Capital stock authorized, \$1,000,000. Officers: H. J. Bennett, Phoenix, president, general manager and purchasing agent; Andrew Neilson, Tempe, vice-president; M. L. Vieux, Phoenix, secretary; L. M. Hoghe, Phoenix, treasurer; D. F. Reynolds, Henne Building, Los Angeles, Cal., chief engineer. [E. R. J., Jan. 9, '09.]

Washington, D. C.—An American consul in Mexico reports that the local Legislature has ratified a contract entered into between the Governor of a State in that country and a local business man, representing a traction company, for the construction of a new electric railroad. It is to run between two points about 3 miles apart, at one of which an amusement park or hippodrome is to be built. Name of the contractor can be obtained by interested firms upon application to the Bureau of Manufactures, Washington, by referring to No. 4111.

Kankakee & Urbana Traction Company, Kankakee, Ill.—This company announces that it has made preliminary survey for its proposed railway and has secured about 75 per cent of its right-of-way. It will connect Kankakee and Urbana and thence to Villa George, Camargo and Charleston, 125 miles. Work will include heavy interurban construction. W. J. Brock, president, and W. D. Moore, Jr., is chief engineer, 184 Court Street, Kankakee, Ill. [E. R. J., Aug. 28, '09.]

Mount Vernon, Ill.—A. J. Davis & Company, Security Building, St. Louis, Mo., confirm the report that they are interested in the construction of the proposed electric railway which is to extend from Mount Vernon to a point on the Mississippi River above Chester by way of Winkle, a distance of 83 miles. The company announces that preliminary affairs have not yet been adjusted so as to warrant a statement at this time, although the financing of the line has been arranged. [E. R. J., Oct. 23, '09.]

Bloomington, Pontiac & Joliet Electric Railway, Pontiac, Ill.—This company, with a line now nearing completion between Pontiac and Chenoa, has announced that the railway will be extended to Lincoln, where it will connect with the Illinois Traction System. With a line already in operation between Pontiac and Joliet and Chicago, the construction of the Lincoln extension will complete the interurban link between Chicago and St. Louis. The management announces the Pontiac-Chenoa line will be in operation Jan. 15, 1910.

Elgin & Sycamore Railway, St. Charles, Ill.—B. C. Payne writes that nearly all the right of way for this projected railway has been secured. The road is to connect Elgin,

Sycamore, DeKalb, Oregon, Dixon and Aurora, a distance of 23 miles. It will have a grade of from 1/2 to 2 1/4 per cent for the entire distance, and it will be necessary to build five bridges. It has not yet been decided definitely whether gasoline or electric cars will be used. Capital stock, authorized and issued, \$100,000. Officers: B. C. Payne, St. Charles, president and general manager, to whom all communications should be addressed; F. N. Rogers, Oak Park, secretary; F. W. Merrick, Oak Park, treasurer. [E. R. J., Aug. 21, '09.]

***Greenfield, Ind.**—It is stated that Perry J. Freeman, Richmond, is organizing a company to build an interurban railway from Greenfield to Pendleton, 16 miles north. The line, which will be known as the Greenfield & Northern Railway, will be an independent road and will connect with the Indianapolis, New Castle & Toledo Electric Railway at Maxwell and with the Indiana Union Traction Company's line at Pendleton.

***Clinton, Ia.**—Press reports state that the Clarke Construction Company, Chicago, Ill., is interested in the construction of interurban electric railways between Sterling and Clinton and Dixon and Freeport, which, if built, will afford direct connection between Chicago and Clinton.

Moberly, Mo.—Charles A. Wellman, Ottumwa, Ia., writes that a final company is yet to be incorporated and will likely be known as the Moberly & Huntsville Electric Railway, to build the proposed electric railway between the two cities. For construction purposes a preliminary company known as the Manning, Wellman & Judd Construction Company has been formed, with Calvin Manning, Ottumwa, president. The line will consist of about 7 1/2 miles of single track. It will also reach Radium Springs, a health resort. The company plans to operate five cars. C. B. Judd, Clarinda, will probably build the railway as engineer. The company expects to capitalize for \$100,000, and at present desires to place a bond issue of \$50,000. [E. R. J., June 12, '09.]

St. Louis-Kansas City Electric Railway, St. Louis, Mo.—This company advises that it will be ready to start construction work on its projected railway as soon as preliminary arrangements have been completed. It is to be a standard gage electric line, 550 miles in length, extending from St. Louis to Kansas City, via Fulton, Columbia, Fayette, Marshall, Higginville and Independence. It is also the intention to supply power to towns along the route. W. B. Cauthorn, Columbia, chief engineer. [E. R. J., Nov. 13, '09.]

Morris County Traction Company, Morristown, N. J.—This company announces that it expects to place contracts during the next two weeks for the construction of 5 miles of single track with turnouts. Address, G. C. Gochnauer, president, Morris County Construction Company, Morristown.

Albany Southern Railroad, Hudson, N. Y.—J. G. White & Company, Inc., 43 Exchange Place, New York, have just been awarded the contract for the double tracking of the Albany Southern Railroad between Rensselaer and Kinderhook Lake, N. Y., as well as the straightening of curves and the rehabilitation of a large amount of the present track of that company.

***Islip, N. Y.**—The Board of Trade of Islip and East Islip is said to be considering a plan to establish a new cross island electric railway. A committee, consisting of Frank Parker, Elliott J. Smith and Frank D. Creamer, has been appointed to determine the feasibility of the project and to report at the Board's next meeting. The proposed railway would extend from Islip to Central Islip, Smithtown, Stony Brook Harbor and possibly to Port Jefferson.

Buffalo, Lockport & Rochester Railway, Rochester, N. Y.—The Public Service Commission, Second District, has given its permission and approval to this company that it may exercise the franchise granted it by the village of Middleport, on Oct. 25. The approval is upon the condition that prior to the construction of its transmission line pursuant to the terms of this franchise, the company shall submit to the commission plans and specifications for such construction and that no construction be made until such plans and specifications are approved.

Utica Southern Railway, Utica, N. Y.—The Public Service Commission of the Second District has granted permission to this company to build an additional extension from the southerly line of Hamilton, via Earlville and Sherburne through Norwich, 27 miles. The company has been previously granted permission to build from Clinton to Hamilton, with a branch between Deansboro and Waterville, 26 miles. The company is authorized to mortgage the extension and to issue bonds to the amount of \$628,000, par value, to be used from constructing and equipping the

extension from Hamilton to Norwich, and is further authorized to issue \$400,000 five per cent non-cumulative preferred stock, on condition that the proceeds be devoted to the construction and equipment of the extension. [E. R. J., July 17, '09.]

Washington (N. C.) Investment Company.—W. E. Jones, general manager, writes that construction has been stopped on its railway. Considerable grading has been done and most of the poles set. The company wishes to sell its franchise and dispose of its holdings to some responsible party that would undertake to complete the line. The route as planned extends from Washington to Suburban Park, a distance of 4 1/3 miles. [E. R. J., April 17, '09.]

Cincinnati, Portsmouth, Pomeroy & Pittsburgh Electric Railway, Cincinnati, Ohio.—This company is said to have made surveys for its proposed line. The plan is to construct an electric railway from Cincinnati to Pittsburgh along the Ohio River Valley. Right-of-way is being secured, and at present more than 200 miles have been acquired out of a total of 466 miles. It is expected to obtain the rest of the right-of-way by January and to begin construction early next spring. A. E. Cox, 1502 Third Avenue, Huntington, W. Va., president; C. P. Sanborn, chief engineer, Huntington, W. Va. [E. R. J., Aug. 22, '08.]

Coffeyville-Nowata Railway & Power Company, Nowata, Okla.—This company announces that it expects to begin work on its projected railway by Jan. 1. It will be 23 miles long and will extend from Nowata, Delaware, Lenatah, South Coffeyville, Okla., and Coffeyville, Kan. W. V. Thraves states that the line will pass through a rich oil and gas field and that the cities along the proposed route are growing rapidly. It is the intention to furnish power to these cities. Capital stock, authorized, \$200,000. Officers: W. V. Thraves, Nowata, president and general manager; W. P. Brown, Coffeyville, Kan., vice-president; J. A. Tillotson, Nowata, secretary and treasurer; E. P. Hannaford, Nowata, chief engineer. [E. R. J., Oct. 30, '09.]

Mid-Continent Traction & Power Company, Tulsa, Okla.—This company, chartered to build an electric railway from Joplin, Mo., through Tulsa, Tanaha, Sapulpa and Shawnee to Oklahoma City, has commenced work on its Tulsa-Tanaha-Sapulpa division of 15 miles and will have cars running through the Glen pool oil and gas fields connecting up the above three towns by June 1, 1910. A subsidiary company of the Mid-Continent Traction & Power Company now owning and controlling upward of 400 acres of producing gas territory at Tanaha, midway between Tulsa and Sapulpa, is preparing to install power plants for both the electric railway and manufacturing enterprises under a 2 1/2 cent rate per cu. ft. for natural gas. The Mid-Continent Traction & Power Company is a reorganization of the Mid-Continent Traction Company. A feature of the Tulsa-Tanaha-Sapulpa line will be a 260-acre park whereon an artificial lake of 120 acres will be built for attractions and Chataqua and club uses. Graham Burnham, Tulsa, president and general manager.

Slate Belt Electric Street Railway, Pen Argyl, Pa.—This company has recently completed the work of straightening its tracks between Wind Gap and Pen Argyl, and eliminating several sharp curves. The company has also erected several miles of additional feeder. J. T. Hambleton, general manager.

West Penn Railways, Pittsburgh, Pa.—This company has taken charter extensions from Greensburg to New Alexandria, Pa., a distance of 7 miles; from Uniontown to Leisenring, 7 miles; from Hunker to W. Newton, a distance of 10 miles, and from W. Newton to Scott Haven, 5 miles. H. F. Barnard, Pittsburgh, purchasing agent.

Porto Rico Railways Company, Ltd., San Juan, Porto Rico.—This company expects to double track 1 mile of its line. Montreal Engineering Company, Montreal, Que., purchasing agents.

Black Creek Power Company, Florence, S. C.—S. S. Ingman advises that this company expects to start construction within the next six months on its 12-mile railway between Darlington and Florence. The company has been granted a 50-year electric railway franchise in Florence. A power plant will be built 2 1/2 miles from Florence. In addition to generating current for its own use the company also expects to furnish power for lighting. Capital stock, authorized, \$300,000. Officers: J. L. Barringer, Florence, president; P. A. Wilcox, Florence, vice-president; A. J. Brown, Florence, secretary and treasurer; S. S. Ingman, Columbia, general manager. [E. R. J., Nov. 20, '09.]

Hallam Colonization Company, Brownsville, Tex.—L. H. Hallam, secretary, writes that this company will begin the construction of its railway as soon as the necessary franchise is granted. Three miles of the line will be built in

Brownsville and 5 miles extending through the company's additions in West Brownsville and River View Place. It is the intention to operate electric cars on the belt line in the city and gasoline motor cars in the suburbs. [E. R. J., Dec. 19, '08.]

Haskell, Tex.—M. R. Hemphill, Haskell, writes that he is planning to construct a gasoline motor line from Haskell to Hemphill Park, 8 miles distant, which he has established. It is the plan to start work within two months provided that Haskell grants a satisfactory bonus. Three cars will be operated. [E. R. J., Sept. 18, '09.]

Stamford (Tex.) Street Railway.—L. M. MacArthur, Cumuripa, Son, Mex., general manager and chief engineer, advises that this company has done considerable work on the new street railway between Stamford and Anson. The line will have about 19 miles of single track. The company's plans provide for the erection of a car house and power plant at Stamford. Capital stock, authorized, \$50,000. [E. R. J., Sept., 4, '09.]

Prosser (Wash.) Traction Company.—This company advises that it has not as yet undertaken any work on its proposed railway. It is the intention to start operations as soon as the final survey is completed, which will probably be in 1910. At present 40 miles of the route are under preliminary survey. The line will pass through Bickleton, Patterson and Goldendale. It is proposed to erect a power plant on the Yakima River, 5 miles below Prosser. Power will be furnished to private interests for various purposes. Capital stock, authorized, \$150,000; issued, \$10,000. Officers: Frederick Finn, president; Andrew Brown, vice-president; F. A. Jenne, secretary and treasurer, all of Prosser. [E. R. J., July 25, '08.]

Grand Rapids (Wis.) Street Railroad.—The ELECTRIC RAILWAY JOURNAL is officially advised that this company expects to open its railway for traffic on Dec. 1. It extends from Grand Rapids to South Centralia, Port Edwards and Nekoosa, a distance of 9 miles. Five cars will be operated. The company will lease power to operate the line. The repair shops will be built at Grand Rapids, and an amusement park will be established at Nekoosa. Knox Engineering Company, Fisher Building, Chicago, Ill., purchasing agents. [E. R. J., July 10, '09.]

SHOPS AND BUILDINGS

Twin City Rapid Transit Company, Minneapolis, Minn.—This company has acquired property between Lake Street and Twenty-ninth Street, and proposes to erect there new car houses and shops to cost about \$450,000.

People's Railway, Dayton, Ohio.—Plans are completed and work will be begun at once on the erection of a new car house for this company. The building will be located in Edgemont and its dimensions will be 250 ft. x 180 ft. The cost of the building is estimated at \$125,000.

Slate Belt Electric Street Railway, Pen Argyle, Pa.—This company advises that it is erecting a new machine shop and an addition to its car house. Contracts for material and work have all been closed.

POWER HOUSES AND SUBSTATIONS

Southern Railway & Light Company, Natchez, Miss.—This company is installing additional apparatus in its power station which includes a 300-kw d.c. railway generator, a 300-kw a.c. generator for lighting service and a 500-hp boiler.

Slate Belt Electric Street Railway, Pen Argyl, Pa.—This company has recently placed an order with the Electric Storage Battery Company, Philadelphia, for a 400-amp storage battery. The company has also contracted for a new electric lighting unit, consisting of a 150-kva Crocker-Wheeler, 2300-volt, 60-cycle, 3-phase alternator, direct connected to a Porter-Allen engine.

Stroudsburg & Water Gap Street Railway, Stroudsburg, Pa.—This company expects to begin at once the construction of a new power plant.

Waynesburg & Blacksville Street Railway, Waynesburg, Pa.—This company, which proposes to build an electric railway to connect Blacksville, Waynesburg, Marianna and Pittsburgh, is said to have secured 65 acres of land at Blacksville, W. Va., as a site for its power plant and car house.

Everett Railway, Light & Water Company, Everett, Wash.—The Stone & Webster Engineering Corporation has begun work on a new substation for this company on Broadway between Pacific Avenue and Wall Street, Everett. The building will be constructed of reinforced concrete, one story high and covering 50 ft. x 120 ft. Power will be distributed from this station to operate the new line now in course of construction from Everett to Seattle.

Manufactures & Supplies

ROLLING STOCK

Southwestern Traction Company, London, Ont., will buy four interurban passenger cars next year.

Sabraton Railway, Morgantown, W. Va., expects to buy one small car body within the next three months.

Union Traction Company, Sistrville, W. Va., will purchase two or three passenger cars early next year.

Northern Ohio Traction & Light Company, Akron, Ohio, will order one combination work and wrecking car early in 1910.

Chicago & Southern Traction Company, Chicago, Ill., will be in the market for two double-truck trail cars during 1910.

Schuylkill & Dauphin Traction Company, Pottsville, Pa., contemplates buying five gasoline motor cars during the coming year.

Boston & Worcester Street Railway, Boston, Mass., will be in the market for five or six new semi-convertible or closed cars next year.

Winona Interurban Railway, Warsaw, Ind., will be in the market for eight passenger and six freight cars, and one snow-plow during 1910.

Bangor Railway & Electric Company, Bangor, Me., expects to buy two 28-ft., semi-convertible car bodies with double trucks next year.

Tri-City Railway Company, Davenport, Iowa, contemplates buying next year 10 closed car bodies, 43 ft. long over all, for city service.

Hudson & Manhattan Railroad, New York, N. Y., is having two all-steel baggage cars, about 40 ft. long, built by The J. G. Brill Company.

Chattanooga (Tenn.) Railways has ordered five pay-as-you-enter cars from The J. G. Brill Company and also about 120 trucks, No. 22 Special.

Oklahoma Railway, Oklahoma City, Okla., contemplates purchasing 10 double-truck city passenger cars and six interurban cars during the coming year.

Metropolitan Street Railway, Kansas City, Mo., will buy 50 cars next year, if franchise extension is granted at the coming election, to be held December 16, 1909.

Lexington & Interurban Railways, Lexington, Ky., expect to buy three 30-ft., single-truck, city cars, and two 50-ft., double-truck, interurban cars early in 1910.

Exeter, Hampton & Amesbury Street Railway, Hampton, N. H., has purchased one 20-ft., second-hand closed car body from the Amesbury & Hampton Street Railway.

Rutland Railway, Light & Power Company, Rutland, Vt., expects to purchase, during 1910, three 15-bench, double-truck open cars and also two double-truck interurban closed cars, 50 ft. long and weighing not more than 25 tons.

Municipal Tramways, Calgary, Alta., reported in the ELECTRIC RAILWAY JOURNAL of Sept. 18, 1909, as being in the market for six cars, will soon order this number of closed motor cars 46 ft. 6 in. long and two 46-ft open trailers.

Saginaw & Flint Railway, Saginaw, Mich., contemplates ordering two passenger and one express car with equipment complete. One car is being rebuilt and the company will buy one set of double trucks and four motors for this car.

Ohio Electric Railway, Cincinnati, Ohio, has nearly completed the installation of Westinghouse AMM Schedule automatic air brakes on all of its high-speed interurban cars. These new brakes take the place of straight-air equipments.

Atchison Railway, Light & Power Company, Atchison, Kan., mentioned in the ELECTRIC RAILWAY JOURNAL of Oct. 30, 1909, as being in the market for five semi-convertible cars, has ordered these cars from the American Car Company, it is reported.

Yakima Valley Transportation Company, North Yakima, Wash., will have Standard Motor Truck Company's type C-50 trucks for the rolling stock ordered from the Niles Car & Manufacturing Company, as reported in the ELECTRIC RAILWAY JOURNAL of Nov. 20, 1909.

Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio, has specified that the six cars ordered from the Jewett Car Company, as reported in the ELECTRIC RAILWAY JOURNAL of Nov. 6, 1909, be mounted on Taylor improved single trucks and Midvale 34-in. rolled-steel wheels.

Manor Valley Railway, Irwin, Pa., mentioned in the ELECTRIC RAILWAY JOURNAL of May 1, 1909, as being in the market for rolling stock, has ordered two double-truck and one single-truck passenger car and one single-truck bag-

gage and express car from the G. C. Kuhlman Car Company.

Brooklyn (N. Y.) Rapid Transit Company has closed a contract with the Carnegie Steel Company, Pittsburgh, Pa., for 7800 steel wheels which will be used to replace the chilled iron wheels now in service on the elevated cars and on all maximum traction surface trucks. Part of the wheels will be delivered in 30 days and the remainder by Feb. 1, 1910.

Illinois Traction System, Peoria, Ill., is asking bids on 30 express trail cars and six 50-ton locomotives with steel box bodies. The company has ordered two sleeping cars from the American Car & Foundry Company and also a special private car to be delivered this month for which it was reported to be in the market in the ELECTRIC RAILWAY JOURNAL of Jan. 16, 1909.

Twin City Rapid Transit Company, Minneapolis, Minn., in February, 1909, ordered the construction, in its own shops, of 100 cars for the Twin City lines and 11 cars for the Duluth (Minn.) City Railway. The cars ordered for the Duluth lines have been completed, but only a few of those ordered for the Twin City lines have been built. The work of building the balance of the cars ordered in February of this year will be finished by June or July, 1910.

Indiana Union Traction Company, Anderson, Ind., is rebuilding all of its interurban cars in its shops at Anderson. The cars will be lengthened from 54 ft. to 62 ft., the vestibules of all the limited cars will be raised to the floor level and a baggage compartment 10 ft. 6 in. in length will be provided in each car. The cars will all be equipped with M.C.B. couplers. This company has already rebuilt and lengthened eight of the interurban cars used on the Indianapolis, Columbus & Southern Traction Company's lines.

Cincinnati (Ohio) Traction Company has drawn up the following specifications for the 50 closed, double-truck cars reported in the ELECTRIC RAILWAY JOURNAL of Nov. 6, 1909, as being built by the Cincinnati Car Company:

Wheel base.....4 ft. 10 in. Width over all....8 ft. 4 in.
Length of body.....28 ft. Height inside.....8ft. 1¼ in.
Length over vestibule..... Interior finish.... Mahogany
43 ft. 6 in. Body Composite
Length over all.....44 ft. Underframe Composite

Kind and Makers of Special Equipment
Air brakes National B. & E. Co. Heaters...Heunefeld hot air
Headlights...Dayton No. 1561
Axles4½ in. Journal boxes...3¾ in. x 7 in.
Bolsters, body ..built-up steel Motors, four....West. 101-B
Car trimmings..Solid bronze Registers International
Control....K-35, single end Roofs Monitor deck
Couplers.. mall. iron pockets Seats..H. & K. Long. rattan
Curtain fixtures Trolley poles....12-ft. poles
Curtain Supply Co. Trolleys..... Standard O-50
Curtain material...Pantasote Trucks..... Deck sash
Fenders Hunter Ventilators..... Mahogany veneer
Gears solid Headlinings
Gongs, one.....14 in.
Hand brakes, Peacock, Horizontal wheel

All power and exposed light wire will be run in conduit.

TRADE NOTES

American Bridge Company, New York, will erect a plant at Gary, Ind., to have a capacity of 10,000 tons of fabricated steel per month.

Milwaukee Car Manufacturing Company, Milwaukee, Wis., will spend about \$15,000 for a building as an addition to its erecting shops.

Thomas Robins has been elected president of the Robins Conveying Belt Company, New York, N. Y., to succeed E. M. McIlvaine, resigned.

Q M S Co., Plainfield, N. J., has removed its New York offices from 90 West Street to Hudson Terminal Building, 30 Church Street.

Robert W. Hunt & Company, Chicago, Ill., state that their European agent, W. L. Cooper, who has been making his annual trip to the United States, sailed for London on Nov. 10.

J. G. White & Company, Inc., New York, N. Y., announce the opening of a branch office in the First National Bank Building, Chicago, Ill., in charge of Charles T. Mordock as manager.

McClintic-Marshall Construction Company, Pittsburgh, Pa., received a contract from Osgood, Bradley & Sons, Worcester, Mass., for a new power plant, in which about 1500 tons of structural steel will be used.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has begun work at its East Pittsburgh shops

on an order for railroad motors for the Long Island Railroad which represents almost \$1,000,000 and calls for 260 motors of 200 hp each.

Goldschmidt Thermit Company, New York, N. Y., announces that the British Corporation for the Survey and Registry of Shipping of Glasgow has sanctioned the use of the Thermit process of repairs to fractured sternposts, lower portions of rudder frames and damages of a similar character.

McKeen Motor Car Company, Omaha, Neb., recently started under its own power three 70-ft. McKeen motor cars to Portland, Ore., coupled together as a train. One of these will be for service on the lines of the Salem, Falls City & Western and the other two will be used in Oregon and Washington by the Oregon Railroad & Navigation Company.

National Brake Company, Buffalo, N. Y., has received orders for more than 1200 brakes during the last 60 days. Of this number 700 are to go to the Pullman Company for installation on the new cars for the Chicago Railways; 165 to The J. G. Brill Company for cars for the Pittsburgh Railways, and 100 cars for the Chicago City Railway. A number of orders from foreign countries were also received.

Metropolitan Inspection Bureau, Fort Dearborn Building, Chicago, Ill., has been formed to engage in practice as inspection engineers. It is prepared to undertake chemical and physical testing, including inspection of cars, car wheels, axles, rails, locomotives, structural steel, lumber, castings and building material. D. W. Schreck, who for several years was with Robert W. Hunt & Company, is connected with this new company, as are also J. W. Jamison and W. H. Doty.*

Westinghouse Machine Company, Pittsburgh, Pa., reports that the first six months of the current fiscal year of the company, which ended Oct. 30, 1909, showed a business volume representing the second largest in the history of the company for a similar period. From present indications it is expected that the next six months will show a still better result. This is due to the fact that business conditions generally are improving, and also because the company has taken several new lines of product within the last year, now fully developed. The company reports that the revival of the electric railway business from the financial depression is the source of many new orders.

Pay-as-You-Enter Car Corporation, New York, N. Y., has recently appointed David Murdoch and A. J. Varrelmann as special representatives. Mr. Murdoch was born in Scotland in 1873 and received his early engineering and business training with several manufacturing companies in Glasgow. He came to the United States about 6 years ago and was for three years sales manager of the Tudor Manufacturing Company. For the past three years he has been associated with street railways under the Stone & Webster management. Mr. Varrelmann is 30 years old and is a graduate in electrical engineering from Worcester Polytechnic Institute. He was connected for a time with the engineering department of the Interborough Rapid Transit Company and later was employed by L. B. Stillwell. While the Brooklyn tunnels under the East River in New York were under construction he had charge of the erection of the electrical and drainage equipment. Before coming with the Pay-as-You-Enter Car Corporation he was employed by the Standard Storage Battery Company.

ADVERTISING LITERATURE

Whiting Foundry Equipment Company, Harvey, Ill., has issued a booklet describing its railroad shop and yard cranes.

Wheel Truing Brake Shoe Company, Detroit, Mich., has published a 20-page booklet in which its brake shoes are described and illustrated.

Western Elaterite Roofing Company, Denver, Col., has issued a folder describing its elaterite paint and illustrating its various applications.

Wicks Brothers, Saginaw, Mich., have issued their November stock list of metal-working machinery of all kinds, which they offer for sale.

Pennsylvania Steel Company and Maryland Steel Company, Philadelphia, Pa., describe their organization and equipment in an 8-page publication.

T. H. Symington Company, Baltimore, Md., has issued a 4-page circular which contains several working drawings of Symington journal boxes for city service.

Cortlandt F. Ames, 315 Dearborn Street, Chicago, Ill., has issued a list of steam and electric railway materials which he handles as manager of sales or selling agent.

Duntley Manufacturing Company, Chicago, Ill., has issued a folder in which its pneumatic car cleaner for cleaning railway cars, stations and office buildings is described and illustrated.

Aluminum Company of America, Chicago, Ill., has issued a publication entitled "Aluminum for Electrical Conductors" which contains 30 pages and is in the nature of a short treatise on the subject.

Cooper Heater Company, Dayton, Ohio, has reprinted and is distributing 13 typical letters from street railway companies expressing satisfaction with the Cooper heater for use on street and interurban cars.

Stewart Hartshorn & Company, East Newark, N. J., has issued the November "Hartshorn's Roller." The publication contains the usual amount of light reading interspersed with reminders of the Hartshorn roller and products.

Ironsides Company, Columbus, Ohio, has issued a circular containing a record of a pinion in use on a closed interurban car of the Columbus Railway & Light Company, Columbus, Ohio, with an Ironsides gear shield as lubricant which ran 239,988 miles.

Graphite Lubricating Company, Bound Brook, N. J., has issued a placard calling attention to its Bound Brook bushings for trolley wheels. Bound Brook bushings are sold in the Central West by the Electric Traction Supply Company, 301-312 Market Street, St. Louis, Mo.

Crouse-Hinds Company, Syracuse, N. Y., has issued a folder in which its type W headlight is illustrated. This headlight is made in three types, plain rim door, gird frame door and door with semaphore lens. The outside diameter of each of these types is 11 $\frac{1}{4}$ in. and the height 14 $\frac{1}{2}$ in., but the depths are 4 $\frac{1}{2}$ in., 7 $\frac{1}{8}$ in. and 5 $\frac{1}{2}$ in., respectively.

Lang Retrieving Trolley Company, Petaluma, Cal., has described and illustrated its Lang retriever for city, suburban and interurban cars operated singly or in trains in a 16-page publication. Letters from the Los Angeles Pacific Company, United Railroads of San Francisco and the Petaluma & Santa Rosa Railway indorsing the Lang retriever are reproduced.

Jeffrey Manufacturing Company, Columbus, Ohio, has issued catalog No. 81 of its conveying machinery, dated September, 1909. The publication contains 368 pages, gives general price lists and descriptions of elevating, conveying and power-transmitting machinery and chains, and is profusely illustrated. It is concluded with an index of Jeffrey chains arranged numerically and a general index.

National Tube Company, Pittsburgh, Pa., has published in pocket handbook form Catalogue H, comprising material manufactured at the Kewanee works of the company. This includes wrought-iron pipe for steam, gas, water and air; cast iron, malleable iron and brass pipe fittings; radiators and heating coils and valves of every description. The catalogue is printed on heavy paper with gold edges and is bound in leather. It comprises 470 pages, and some idea of the variety of products described may be gained from the size of the index, which covers 28 closely printed pages.

Baldwin Locomotive Works, Philadelphia, Pa., have just issued the fourth edition of their catalog on electric motor and trailer trucks. These trucks are fitted with axles and journal boxes conforming to the American Street & Interurban Railway standards and are divided into eight classes, dependent upon their type. Drawings and half-tone engravings of typical examples of each class are presented, with the name of the road for which they were built, the main dimensions and other data. The catalog also includes views of different types of cars, mounted on Baldwin trucks, and an appendix in which are given tables and diagrams of standard wheels, axles and journal boxes, physical tests of materials and a partial list of purchasers of Baldwin trucks. The catalog is being issued in a flexible binder.

NEW PUBLICATIONS

The Prevention of Industrial Accidents. By Frank E. Law and William Newell. New York: 1909. The Fidelity & Casualty Company of New York. Paper, 185 pages. Price, 25 cents.

This pamphlet has been prepared for the information and benefit of the industrial liability policy holders of the company. It is estimated that each year from 30,000 to 35,000 lives are lost in industrial accidents and that 2,000,000 more minor accidents occur annually. A close study of the returns of many liability and accident insurance companies shows that possibly 60 per cent of these accidents are preventable. The pamphlet just issued outlines a few of the many preventative measures which might and should be employed. It is divided into six chapters dealing with steam boilers, engines, electrical apparatus, elevators, wood-working machinery and miscellaneous factory machines.