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Henry W. Blake, Editor.
L. E. Gould, Western Editor. Rodney Hitt, Associate Editor.
Frederic Nicholas, Associate Editor.

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

The Tendency of the Times

An editorial discussion of the Cleveland street railway situation in the *Outlook* of Nov. 7 concludes with this statement: "The unmistakable tendency of the times is, in our judgment, towards municipal ownership, if not municipal operation, of public utilities." While we do not want to be understood as implying that the wish was father to the thought that led to expression of this sentiment it may be opportune to state that the inclination of some popular magazines is to voice opinions on topics of this character which are not well founded on facts. However much municipal ownership theories may be deprecated, it is to the advantage of those who are interested in public utility properties, as well as to all who follow closely any movement effecting good or harm to the community, to know what doctrines receive public support and approval. So far as we are able to observe the trend of affairs, it appears that the municipal ownership movement in this country reached its climax two or three years ago and that tendencies in that direction have not been marked since then, except in Cleveland, where the issue was not distinctly one of municipal ownership. As the brief career of the company in that city showed, the entire fight waged by Mayor Johnson was calculated to place the control of the Cleveland street railway system with a few individuals. It is not necessary now to judge the motives of these men, but it is perfectly plain that rosy promises of good service and low fares were not kept. If, for the sake of argument, it is conceded that a sentiment favoring municipal ownership did exist in Cleveland, it should be admitted as freely that the majority of voters have declared that their preferences have changed. The real tendency of the times affecting public utility properties is not toward municipal ownership, but toward corporate ownership with public regulation. The fundamental desire of the public is for good service, for which a reasonable rate of compensation must be given; such service can be provided better under private than under public ownership.

High Steps vs. Low Steps

A strong plea in favor of low car steps was presented at one of the meetings of the Engineering Association at Atlantic City by a representative of the Ontario Railway & Municipal Board as well as by a prominent physician of Baltimore. The Claim Agents' Association also approved a one-step car as much safer than a car with two steps.

All will agree that it is desirable to make access to a car as easy as possible, and this is a comparatively simple matter with trucks which radiate under the car, especially where 30-in. wheels are used. But with 33-in. wheels which swing under the bottom of the side sills, the distance between the floor of the car and the top of the rail is fixed and can rarely be made less than 41 in., and even if the trucks do not radiate this height is not unusual with easy riding springs. The step problem becomes then one of proportioning this distance in a one-step car into three parts; one the height from the top of the rail to the top of the step, the second from the top of the step to the top of the platform and finally the height from the platform to the floor of the car, provided a drop platform is used. A great

variety of practice exists in dimensions, especially in regard to the division of the distance between the top of the rail and the platform, because 10 in. seems to be about the maximum height of the riser from the platform to the floor of the car. In some cases the first step has been made as high as 19½ in. In other cases the space has been equally divided. The question of the best height will probably always be one of dispute. Theory would indicate, however, that as the first step is always taken with the right foot, and as a person is assisted at this step by having a high hold on the grab handles on the outside of the car, it should be made higher than the second step. Of course, all difficulty as regards height can be overcome if two steps are provided in the passage to the car platform, but, in the opinion of the Claim Agents, this should not be done if there is any way of avoiding it.

Technical Libraries

Many companies have established libraries of technical books for the use of the heads of departments and for all the employees engaged in the work of power generation and distribution. If the books are well chosen, such a collection should prove of great value to the company as well as to the individual members of the force. No single engineer, unless particularly fortunate, can afford to own all of the text-books or even a considerable part of those which are useful in electric railway construction and operation. For this reason a company library has proved most useful where installed, for example, on the Detroit United Railway, where it is kept in the office of the superintendent of power. The "men-in-the-ranks" refer to it frequently for assistance in every-day work and, suiting their convenience, these same men choose books devoted to some special phases of their work and study them. When the department is confronted with a special problem the men who ordinarily use the library and who are interested in their own advancement are given the factors of the problem to be solved and vie with each other in seeking the answer most practicable. A commendable number of men engage in this problem study and rely on the library and on the bound volumes of the technical journals for assistance. This work, or rather study, develops both men and library. When the library does not furnish information on a subject under discussion those in charge are led to decide upon a book which will make the library more complete. So the men and library grow together and the library is the well-used and well-appreciated servant of the employees.

Tendencies in High-Speed Electric Locomotive Design

In probably no other one branch of the art of heavy electric traction are engineers working so much in the dark as in the mechanical design of high-speed electric locomotives. There exist differences of opinion as to the relative merits of three-phase, single-phase and direct current, overhead line or third-rail, voltage and other characteristics of the transmission system, but the engineering details of these broad features are in the main susceptible of accurate determination in advance. Power generation, distribution and utilization in the motors have passed the experimental stage, and the apparatus used is approaching standardization in some degree. The final step, however, which is the translation of the rotative effort of the motors of locomotive units into tractive effort exerted on the drawbar of a following train, involves many unsolved problems when the locomotive is intended for high-speed passenger service. A locomotive weighing more than 100 tons and exerting a drawbar pull of from 30,000 lb. to 40,000 lb. is an entirely different piece of apparatus from a four-wheel motor truck carrying, at the most, 30 tons of weight and having a short, flexible wheel base, with large shock-absorbing qualities in the springs. The truth of the matter is that the mechanics of a locomotive, steam or electric, when running at any but very slow speeds is an entirely unknown quantity. For this reason a comparison of recent designs of high-speed electric locomotives is of much interest, as it shows the general tendencies of design based on experimental determinations of the riding qualities of different types. In the early history of steam locomotives a similar period of experimentation was gone through, but having taken place nearly a century ago, the results, expressed in the essential features of wheel arrangement, position of the cylinders, type of boiler and draft arrangements, etc., are to-day taken for granted, and the disappointments of the early pioneers forgotten.

The first electric locomotives designed and built for high-speed heavy electric traction in the United States were those of the New York Central for use in the electrified terminal zone entering New York. These locomotives were a radical departure in most respects from any steam or electric motive power previously built. They had a long, rigid wheel base with four driving axles and a radial pony truck at each end. The motor armatures were built up solid on the driving axles, while the motor fields were supported on the frame. The driving wheels were only 44 in. in diameter, and were not connected with side rods or by any other means. The original experimental locomotive of this type was fitted with springs on each side of the driving axle boxes to absorb the side shocks. This feature, however, was omitted in the locomotives built later, as it was not thought that it added anything to the riding qualities and was an unnecessary complication.

Following this type came that of the New Haven, with two separate four-wheel trucks carrying a motor on each axle. An attempt was made to relieve the axles of the dead weight of the motor armatures by carrying the armatures on pins set into spring pockets in the driving wheel centers. These locomotives had no guiding wheels of any kind, the entire weight being available for adhesion. The driving wheels of the New Haven locomotives were 62 in. in diameter as against 44 in. in the New York Central locomotives.

The half-unit experimental single-phase locomotive built last year for the Pennsylvania Railroad, and which was tested at very high speeds on the West Jersey & Seashore, is the exact counterpart of the so-called American or eight-wheel type of steam locomotive, long the standard for passenger service in the United States. It has two driving axles with wheels 72 in. in diameter, mounted in the main frame, and a swiveling four-wheel bogey truck in front. The method of supporting the motor armatures on quills mounted in spring pockets in the driving wheel centers is the same as that employed in the New Haven locomotives.

The bogey truck carries 45,000 lb., which is nearly one-third of the total weight.

Since these three types of locomotives were built they have been thoroughly tested, and as a result of the experience gained some modifications have been suggested. The New Haven is remodeling all of its locomotives by the addition of a single pony axle placed in front of the driving wheels of each motor truck. The addition of these pony wheels, which are equalized with the main driving wheels, reduces the adhesion weight somewhat, but has resulted in a marked improvement in the riding qualities of the locomotives. The 12 new locomotives now being delivered to the New York Central have swiveling bogey trucks at each end instead of a radial pony truck, and the side thrust springs on the driving axle boxes have again been applied after being discarded on the experimental locomotive first built four years ago. The General Electric Company has built a high-speed experimental locomotive which is being tested, and which has two separate articulated trucks, each consisting of a pair of pony wheels at each end with two driving axles in the center. The driving wheels are connected with side rods.

These recent developments in the mechanical design of electric locomotives indicate a tendency toward the sacrifice of adhesion weight for better riding qualities. One of the arguments advanced in favor of electric locomotives over steam locomotives some years ago was that the entire weight of the locomotive could be used for adhesion. In the light of the tendency toward the use of guiding wheels this argument no longer has weight.

Theoretically, an electric locomotive having no unbalanced moving parts and exerting a fairly uniform tractive effort throughout each revolution of the wheels ought to be easier on the track than a steam locomotive, which actually lifts its wheels off of the track when running at high speed, due to the unbalanced forces of the rapidly moving connecting and side rods. It has heretofore been assumed that "nosing" of a steam locomotive was due largely to the imperfect balancing, but this same action develops in the case of electric locomotives. A guiding truck of some kind seems to be necessary, but it is still a matter of doubt as to whether it is necessary to sacrifice such a large proportion of the total weight to load this truck sufficiently to hold it firmly to the track. The Pennsylvania locomotive carries nearly one-third of the weight on the bogey truck, while in the new locomotives of the New York Central the weight of the locomotive has been increased 20 tons, all of which is carried by the two bogey trucks, the adhesion weight remaining the same. This reduces the maximum hauling capacity of these locomotives by the amount of this extra weight, which means practically one car.

Purchasing Agents and the Engineering Association

At the Atlantic City convention of the Engineering Association last month, a suggestion was made that an invitation be extended to purchasing agents of electric railway companies to become associate members of the American Street & Interurban Railway Association, and to ally themselves as a body as an integral part of the Engineering Association. This question was again brought up at the meeting of the executive committee of the Engineering Association, held in New York on Monday of this week. The American Association is making a concerted effort in all parts of the country to enroll a large number of new associate members, and the proposal to ask the purchasing agents to become associate members, affiliated directly with the Engineering Association, is in line with this policy of expansion in the membership. The annual conventions are a liberal education for electric railway men in any department, but they have an especial value to purchasing agents, by reason of the extensive exhibits which constitute such an important part of the meetings. The purchasing agents at the present time have no organization of their own, and heretofore small attention has been paid to their needs in arranging the convention programs of any of the five associations. The Engineering Association is the logical body with which the purchasing agents should be affiliated, as probably more than 90 per cent of the purchases of an electric railway system are made for the engineering department. In order to make purchases intelligently it is necessary for the purchasing agent to know the wants of the department using the material bought. A purchasing agent to be successful does not necessarily have an engineering training or experience, but, on the other hand, knowledge of the needs of the engineering department and progress in the art of manufacture of the apparatus used by the engineering department is a valuable asset.

It may be urged that if the work of the engineering department is enlarged to include subjects of special interest to the purchasing agents, in order to encourage their attendance at the meetings, it will be necessary to divide up the work of the Engineering Association into sections, holding separate meetings. This is a situation which does not yet exist, and which probably will not exist for several years to come. For the present, there is ample opportunity for discussing subjects of interest to purchasing agents without segregating their meetings and establishing a precedent for sectionalizing the meetings of the whole association. The work of the standardization committee, as outlined under the rearranged plan of committee work, will make it possible to take up subjects of particular interest to purchasing agents. In the outline of the committee work of the Engineering Association for the coming year, which is printed elsewhere in this issue, it will be seen that the work of the standardization committee is to be confined largely to the collection of data on, and the possible preparation of specifications for three materials purchased in large quantities by electric railways generally. This is the beginning of a very valuable feature of the work of the Engineering Association, and is the natural development of the work of standardization carried on in previous years. Some of the other committees have subjects assigned which will undoubtedly result in the presentation of tentative specifications. If this work of preparing definite standard specifications for material used is continued from year to year, the purchasing agents will find much of interest in the meetings of the Engineering Association, and there should be no difficulty in obtaining from among their ranks a large number of members who will contribute valuable information to the discussions.

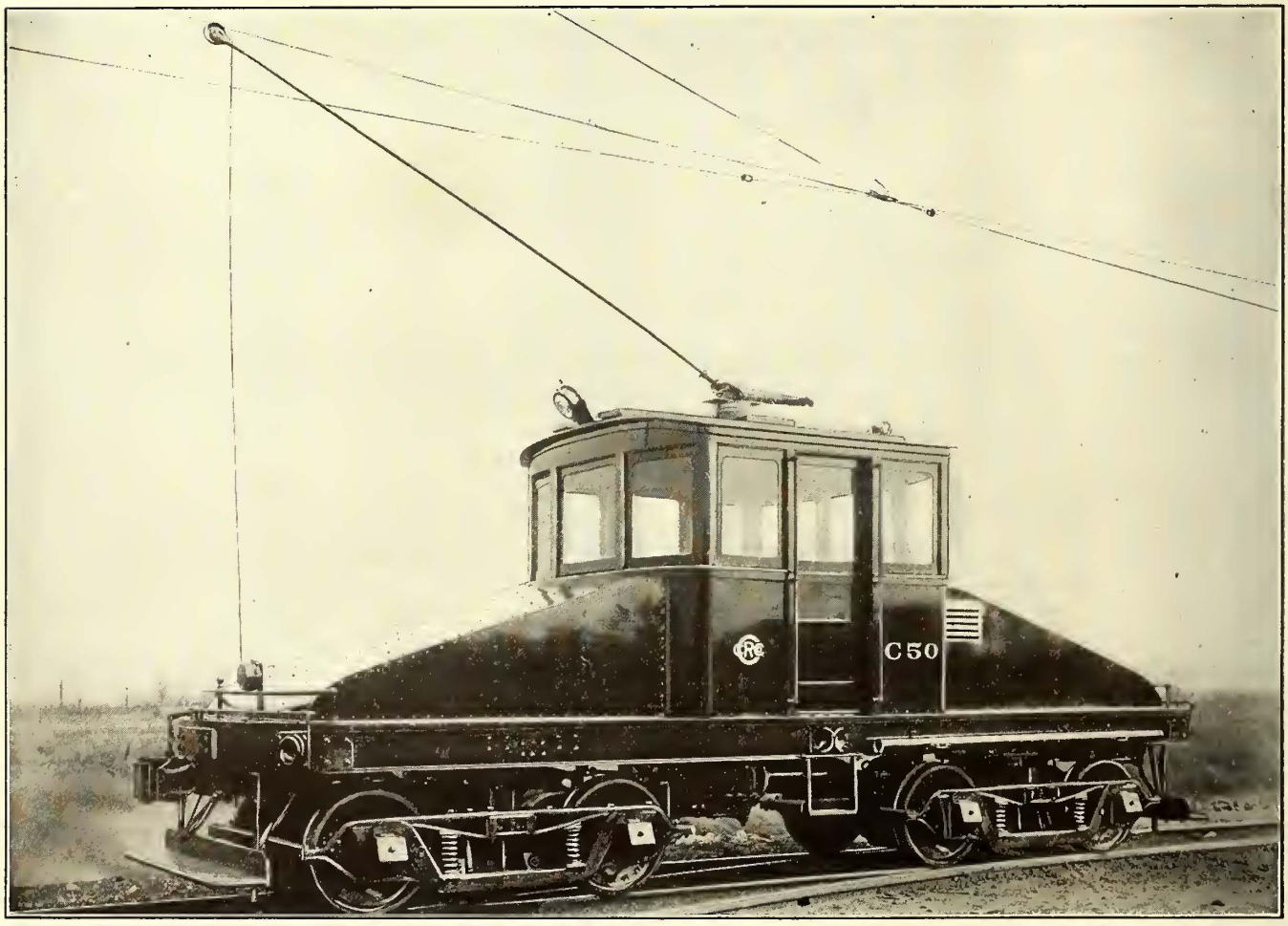
NEW LOCOMOTIVES OF THE CHICAGO CITY RAILWAY

The shops of the Chicago City Railway Company have just completed two 40-ton electric locomotives. These locomotives will be used for switching purposes in the material yards at Thirty-eighth Street and at Seventy-eighth Street and Vincennes Avenue, and are designed to haul trains of from 400 tons to 500 tons at speeds not to exceed 7 miles per hour. Interesting features in the design of these locomotives are the use of an all-steel underframe and a special method of ballasting with cast-iron weights placed under the sloping decks. Illustrations are presented showing the dimensions of these locomotives, their general appearance and the details of the power wiring.

The underframe of each locomotive is built entirely of steel. From bumper to bumper it is 28 ft. long. Each side sill is made of a 10-in., 40-lb. I-beam and the two center sills are 8-in., 25¼-lb. I-beams. The bumpers are 10-in., 25-lb. channels. Between the end sills and bumpers are solid oak fillers which are designed to distribute to the underframing the severe buffing stresses which a freight switching locomotive must withstand. Each end of the locomotive is provided with an M. C. B. coupler head mounted at the standard height of 34½ in. above top of rail. The couplers are provided with lifting unlocking rods extending across the bumpers so that they may be unlocked from either side of the locomotive. The shanks of the couplers are securely anchored to I-beams which transmit the stresses to the center sills and direct to the body bolsters. The coupling strains are absorbed by helical springs. Push pockets are provided at the four corners of the underframe and at the middle point of the side sills directly under the doors in the cab.

The body of each locomotive comprises a cab 8 ft. 10 in. wide over all and 8 ft. 10 in. long, constructed of 1½-in. x 1½-in. x ¼-in. steel angles and sheet-steel sides. The ends of the cab below the windows are made in the form of removable panels and provide access to the spaces under the hoods. A floor of 2-in. oak plank covers the entire underframing. The interior of the cab is lined with sheet steel. Windows are provided on all sides of the cab and in the top half of the two sliding doors. All sash are arranged to drop into pockets formed by the sheet-steel siding.

The two sloping hoods of each locomotive are 8 ft. 2½ in. long by 6 ft. 6 in. wide and under each hood is placed five tons of ballast. On account of the tendency of loose ballast, in the shape of pig iron or scrap material, to shift under severe service, special blocks were cast for ballasting these two locomotives. Accordingly each of the hoods was designed to accommodate two blocks of cast-iron, each block weighing 2½ tons. These blocks are rectangular in horizontal section, but are sloped on the top to fit neatly under the sheet-steel hoods. In this manner 10 tons of ballast are placed on each locomotive. The cast-iron ballast blocks are cored and bolted to the underframing with 1⅜-in. through bolts, which secure the blocks to plates underneath the sills of the underframing. This arrangement of ballast also provides room under one hood for two 16-in. x 48-in. air tanks and under the other hood for the control rheostats. Removable panels within the car afford



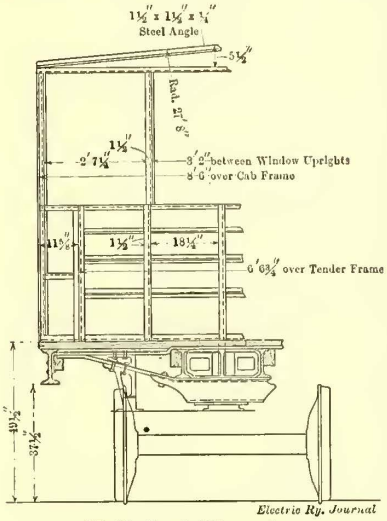
40-Ton Electric Switching Locomotive—Built by Chicago City Railway Company

access to the air tanks and resistance grids under the hoods.

The electrical equipment comprises four GE-73 motors wired two in series and provided with one K-14 E controller. The superstructure of the locomotive is carried on two M. C. B. type trucks. The axles are 5½ in. in diameter at the center and 6 in. in diameter at the gear and wheel fits. Standard 4¼-in. x 8-in. journals are used. To provide for the severe service which these locomotives must withstand they are equipped with M. C. B. full-weight cast-iron wheels; and in order that the locomotives might satisfactorily operate over special work in paved streets the flanges of these wheels were cut down to a height of ¾ in. and the treads were beveled off so that they have a bearing face of 4 in.; the wheels, therefore, do not ride on the pavement outside of the rails. The total weight of these locomotives is 40 tons each. The motors have a gear ratio of 72:16. With 500 volts on the trolley and the motors connected permanently two in series a maximum speed of about 7 miles per hour is obtained when hauling trains weighing from 400 to 500 tons.

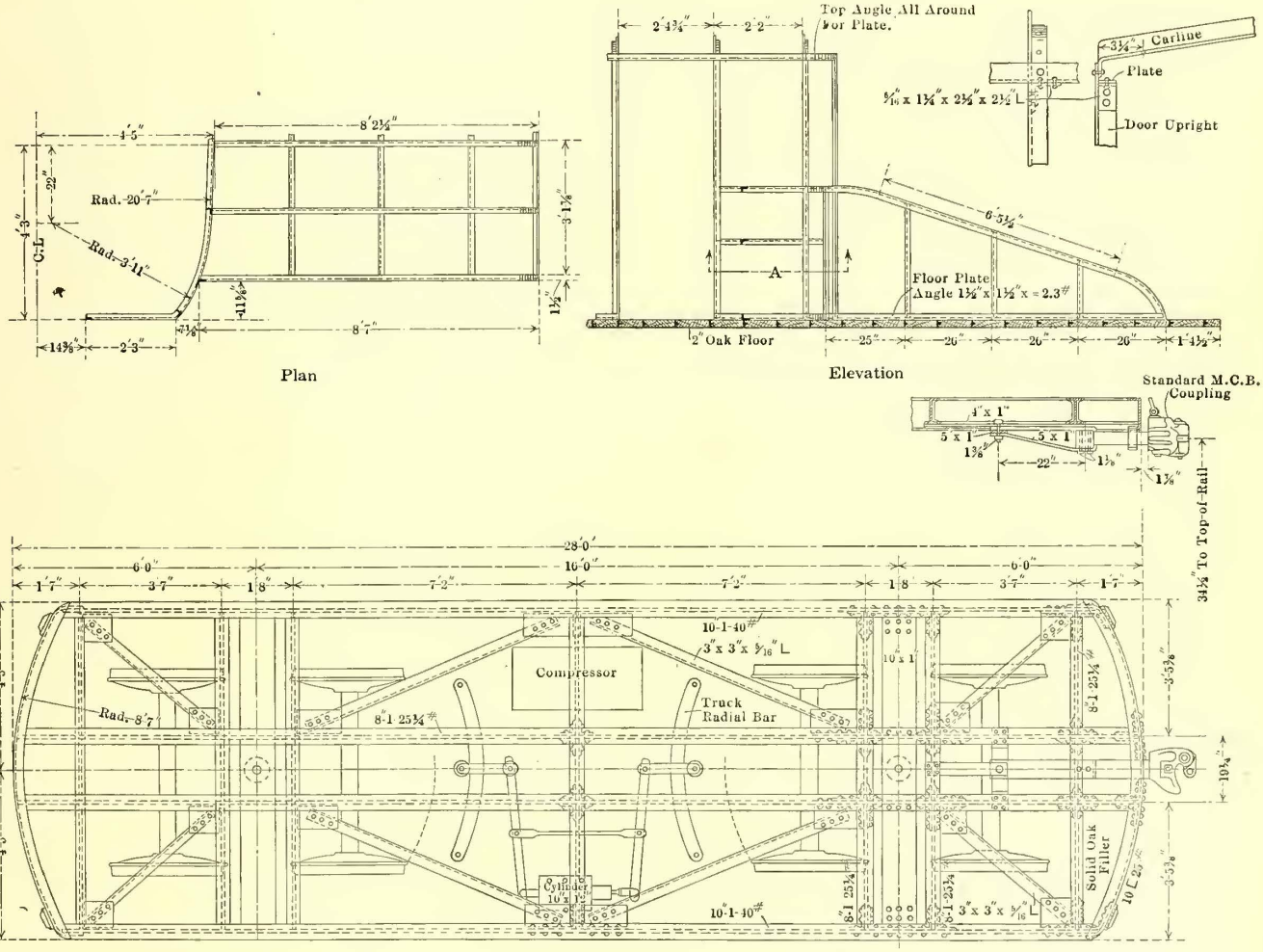
A diagram is presented showing the connections between the trolley circuit, controllers, motors and resistances. It will be noted that there is but one controller in the cab. This is mounted on the center of the floor so that the operator can see equally well in either direction in which the car is carried in iron conduit and the main circuit is fused for 500 amp.

The air-brake equipment includes a Westinghouse locomotive-type engineer's valve and a National BB-2 motor compressor. A Nichols-Lintern air sander and trap serve to distribute sand from four boxes located one at each corner of the locomotive. A special attachment has been provided for the air sander which comprises two valves and operating stems so arranged that the changing of the reverse handle on the top of the controller will properly change the feeding of the air to the sanders and assure that sand will be poured on the rails only in advance of the forward wheels. Each locomotive is lighted by three 32-cp frosted lamps mounted in



Half End Elevation

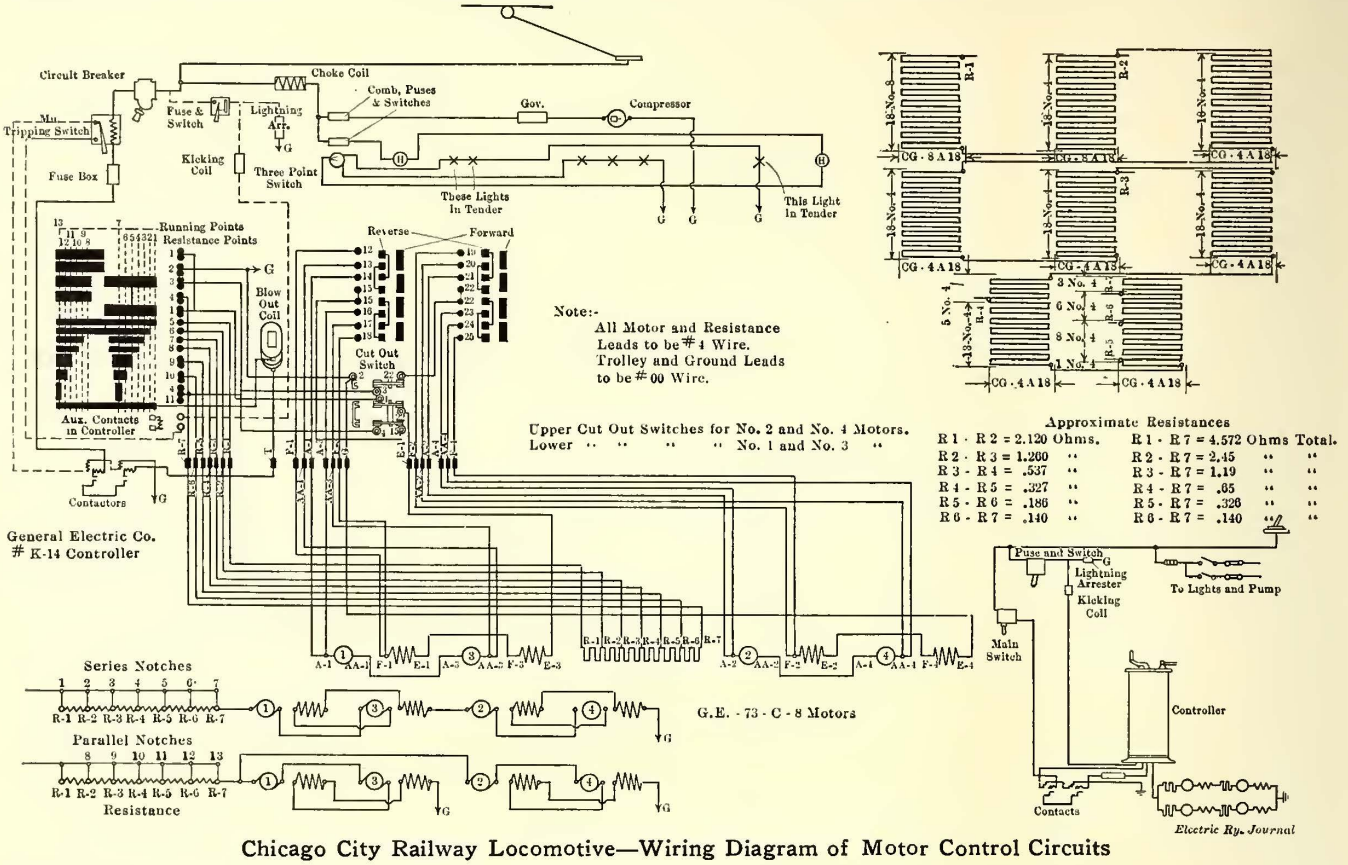
the center of the ceiling directly over the controller and by additional lamps under the hoods. Two headlights are provided for each locomotive and these are so placed on the top of the cab that they illuminate the bumper, the coupler



Chicago City Railway Locomotive—Plan of Underframe and Details of Cab

the locomotive may be running. The contactors, kicking coil, fuse boxes and control switches for the motor circuits are mounted on one wall of the cab, where they are within easy reach of the motorman. All the wiring of

and the track immediately in front of or behind the locomotive. The usual whistle, bell and similar fittings are provided which, together with the careful design of the general features of these locomotives, afford the company switching units that will withstand very severe handling in hauling heavy loads.



Chicago City Railway Locomotive—Wiring Diagram of Motor Control Circuits

OPENING OF THE ST. CLAIR TUNNEL

On Thursday, Nov. 12, a party of 175 railway and press representatives inspected the recently electrified St. Clair tunnel of the Grand Trunk Railway system. The railway company entertained its guests at an elaborate luncheon served on the Canadian side of the river, under which the tunnel extends. An illustrated technical description of the electrification work of the St. Clair tunnel appeared in the Electric Railway Journal for Nov. 14, page 1364.

Following the program, at 1 o'clock on Nov. 12, a special train of five open observation cars bearing the railway company's guests was taken through the tunnel from Port Huron, Mich., to Sarnia, Ont., by one of the new electric locomotives. Ample facilities were afforded for a careful inspection of the locomotives and the power distribution system. On the return trip later in the day the generating station was inspected by the visitors. At the luncheon on the Canadian side the Grand Trunk officials entertained. E. H. Fitzhugh, third vice-president, was toastmaster and first introduced Joseph Hobson. At the time of the building of the tunnel Mr. Hobson was chief engineer of the Grand Trunk Railway. He has since retired and is now one of the company's consulting engineers. Mr. Hobson spoke of the difficulties encountered in building this 6000-ft. subaqueous bore.

Howard G. Kelly, chief engineer, Grand Trunk Railway, outlined the work of electrification, praising Bion J. Arnold for his work as consulting engineer for the railway company.

Mr. Arnold was then called upon and, in responding, discussed the problem of electrification as it had been solved in this instance. He prophesied that much electrification of steam railways would take place in the future. Mr. Arnold gave credit largely to the Westinghouse Electric & Manufacturing Company for the design and successful execution of the St. Clair tunnel electrification work.

Among others who responded to toasts at this luncheon were:

F. A. Sager, principal assistant engineer, the Arnold Company; R. L. Wilson, engineer in charge for the Westinghouse Electric & Manufacturing Company; William McNabb, assistant chief engineer, Grand Trunk Railway; the Mayors of Port Huron and Sarnia; W. E. Davis, passenger traffic manager, Grand Trunk Railway; J. M. Eastwood, Hamilton *Times;* Acton Burrows, *Railway & Marine World,* Toronto.

Although the new system of "strip" tickets was only introduced locally over the Piccadilly, Baker Street & Waterloo and the Hampstead Railways on Oct. 1, they have proved a great success. Up to Oct. 6 more than 100,000 had been issued. The number of tickets sold per "strip" is six, with a reduction in price for the half dozen. As delay in booking on the return journey is avoided, the "strips" mean economy in time and money. Business houses are taking up the "strips" for the use of their messengers, householders for their families, and employers for their workmen. The Underground Company is willing to face the loss on the cheap "strips" if by their use delays at the booking offices can be avoided. The object of the Underground lines is expressed by the words, "No waiting." The lifts work in conjunction with the trains, and the trains run at such frequent intervals that a passenger never has to wait more than a few seconds.

Work will shortly be commenced by the Havana Electric Railway on the extension of several of its lines.

PAY-AS-YOU-ENTER CARS FOR THE THIRD AVENUE RAILROAD COMPANY, NEW YORK

The Third Avenue Railroad Company, of New York, is now equipping the 150 pay-as-you-enter cars which were ordered some time ago from the J. G. Brill Company, as licensee for the Pay-As-You-Enter Car Company. These cars present several variations from others of the pay-as-you-enter design, particularly in the means taken to provide seats on the front platform and the use of removable seats opposite the alternating exit doors. The equipment is also distinguished by the use of center-bearing maximum traction trucks, interpole motors and straight air brakes. The cars are painted red with cream linings.

CAR BODIES

The car bodies are 28 ft. long over the end panels, and 41 ft. 1 in. long over the buffers. The width of the car at the sills over the panels is 7 ft. 2 in., over the posts above the belt rail 7 ft. 10 in., and over all at the eaves 8 ft. 1½ in. The height from the rail to the top of the roof is 11 ft. 2⅞ in.

The side sills are of 4¾-in. x 7¾-in. yellow pine; the end sills and cross bars, of rock oak, respectively 5¼ in. x 6⅞ in. and 3½ in. x 5⅞ in. The side sill plates are ⅝ in. x 8 in., and the end sills also have suitable plates. The flooring is of ⅞-in. yellow pine, while ¼-in. asbestos lumber treated in asphaltum paint and waterproofed is used as a covering for the bottom of the car.

The corner posts are 3¾ in. thick and the side posts 2 1/16 in. thick. These posts and the belt rail are of ash. On concave panels there are also four ⅝-in. x 1¾-in. ash ribs between every two posts. Galvanized truss rods are secured to each pillar.

The steel carlines are forged to the shape of the roof in one piece and bolted to the side plates. The wooden carlines are of white ash. The deck sills, deck plates and concave rails are of yellow pine and the deck posts of white ash. Both decks are covered with poplar boards painted with white lead and linseed oil and covered with cotton duck. The hoods are detachable. The ventilator sash is of breakage and fire resisting wire glass, and is operated with Dayton openers.

The 10 arched windows on each side of the car have drop sash with spring hinged covers over the sash receptacle. They are equipped with Pantasote curtains and Keeler eccentric fixtures. The inside finish of the car for all doors, linings and moldings is silvered white ash. The headlinings are of agasote, and the inside metal trimmings of solid bronze.

PLATFORM CONSTRUCTION DETAILS

The platforms for these double-end cars are each 6 ft. long, and carry a round-end removable vestibule with one center sliding sash and four stationary lights.

The platform end piece is of rock oak 2¼ in. x 14½ in. x 6 ft. 6 in., supported with two 5 in. x 3½ in. x ½ in. angles at the center and two 6 in. x 3½ in. x ⅝ in. angles on the sides. The angles have birch fillers, and are secured to the sills and the end pieces with ⅝-in. diameter bolts. The platform knees are fastened to the end sills by 2½-in. x ⅝-in. plates, which bear directly against the undersides of the knees and have at each end a hole for a 1-in. bolt with a nut underneath the plate. The head of the bolt is countersunk in shape and bears against a 2½-in. x 2½-in. plate let into the top of the end sill, this bolt passing through the end sill and the 2½-in. x ⅝-in. plate connected to the platform knee.

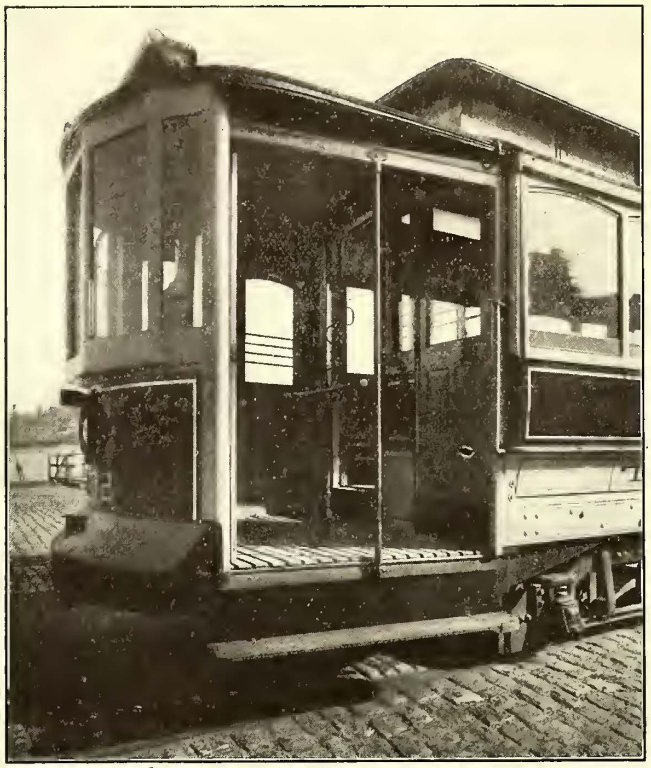
Third Avenue Pay-as-You-Enter Car—Exterior View

The platform flooring is of maple, with a short maple step on the exit side and a long step on the pay-as-you-enter side. The steps go up as the doors are closed. An angle iron bumper is carried on extended knees. On top of this bumper there is a sheet iron guard inclined about 45 deg. to prevent passengers from standing on the bumper. Blocks are inserted under this sheet iron to save the shield from dents.

PLATFORM AND DOOR ARRANGEMENT

Each platform has a double folding door on one side and a single sliding door on the other. When the platform is used by the conductor, the sliding door is locked and the other doors folded against the front vestibule. In this case the rail dividing the incoming and outgoing passengers is in its regular position. Entering passengers take the outer side of the step post and pass into the car through a double sliding door 24 in. wide. The longitudinal seating on the entrance corner of the car is slightly narrowed to facilitate the freedom of passenger movement. Passengers leaving at the rear go through an outward swing-

ing door 24 in. wide, controlled by a Corbin pneumatic check, and can use either the inside grabhandle at the end of the car body or the step post to assist them in alighting. If a passenger leaves by the front end he passes



Third Avenue Pay-as-You-Enter Car—Conductor's Platform with Doors Folded in Back of Curved Bench

through the sliding doors in the car body and thence through the sliding platform door. The swinging body door always is barred at the front end, the longitudinal seating being carried right up to this door by dropping a folding corner seat. When this door is in use as an exit in the rear the seat is folded against the side of the car.

To change the conductor's to a motorman's platform, the folding double doors are closed by pushing them outward until they lock into the guide above. The dividing railing is then pushed up the central post rail over a trigger, which keeps it out of the way of passengers. This clearing of the platform allows a bench to be placed alongside the double door, one end of this bench being connected to a corner platform rail and the other resting on the bar across the exit door. The middle of the bench rests on a triangular strap casting swung over from the platform post rail, to which it is attached. The front end of this bench is curved inward to keep passengers away from the controller and give the motorman greater freedom of movement. The platform can be ventilated by opening the sliding vestibule sash and the swinging sash opposite.

MISCELLANEOUS BODY EQUIPMENT

The car body is supplied with drawbars, bumper blocks, U. S. headlights, signs, gongs and bells.

TRUCKS

The trucks are of the Brill 39-E center bearing, maximum traction type, with 4 ft. 6 in. wheel base, 33-in. diameter rolled steel drivers and 21-in. diameter chilled iron pony wheels. The driving axle is 4½ in. and the trail axle 3⅞ in. diameter. These axles are of hammered steel, with an ultimate strength of from 50,000 lb. to 60,000 lb. per square inch, with an elongation of 20 per cent in 8 in. The journal boxes are of the M. C. B. standard gray iron pattern. The bolsters are of the arch bar type. The bolster top plate is made of a section 6 in. x 1 in., and the bottom plate of a section 6 in. x ¾ in., with a wood filler.

It will be noted from the illustration that the pony wheels are placed forward to reduce the platform overhang.

POWER EQUIPMENT AND WEIGHTS

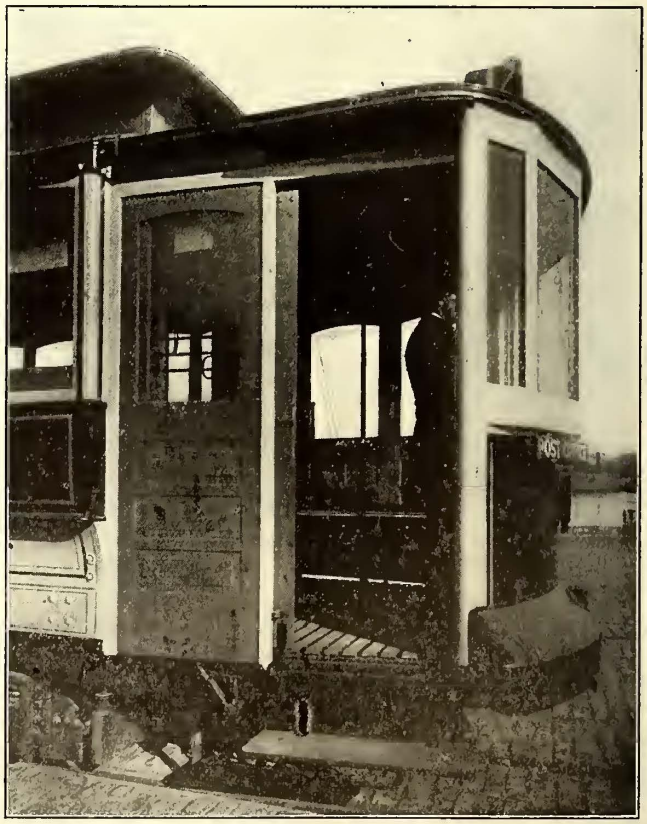
Each truck carries one outside-hung GE-210 motor rated at 65 hp at 600 volts. This motor has commutating poles, and is guaranteed to operate at potentials ranging from 300 to 750 volts, although the normal will not exceed 600 volts. An interesting advantage of this motor from the repair standpoint is the provision for removing the armature shaft without disturbing the armature body. The gearing ratio is 16:69, and the maximum speed 24 m.p.h. K-27 controllers are used with these motors.

The braking equipment consists of Peacock hand brakes for emergency service, and Westinghouse straight air brakes for regular stops. The sand boxes at each end are of the "Dumpit" type.

The approximate weights of the different parts of the equipment are as follows: Car body alone, 15,800 lb.; two trucks together, 10,400 lb.; two motors, at 2850 lb. each, 5700 lb., or, with gearing, 6500 lb.; additional equipment, such as controllers, hand and air brakes, 3000 lb.; total, 35,700 lb.

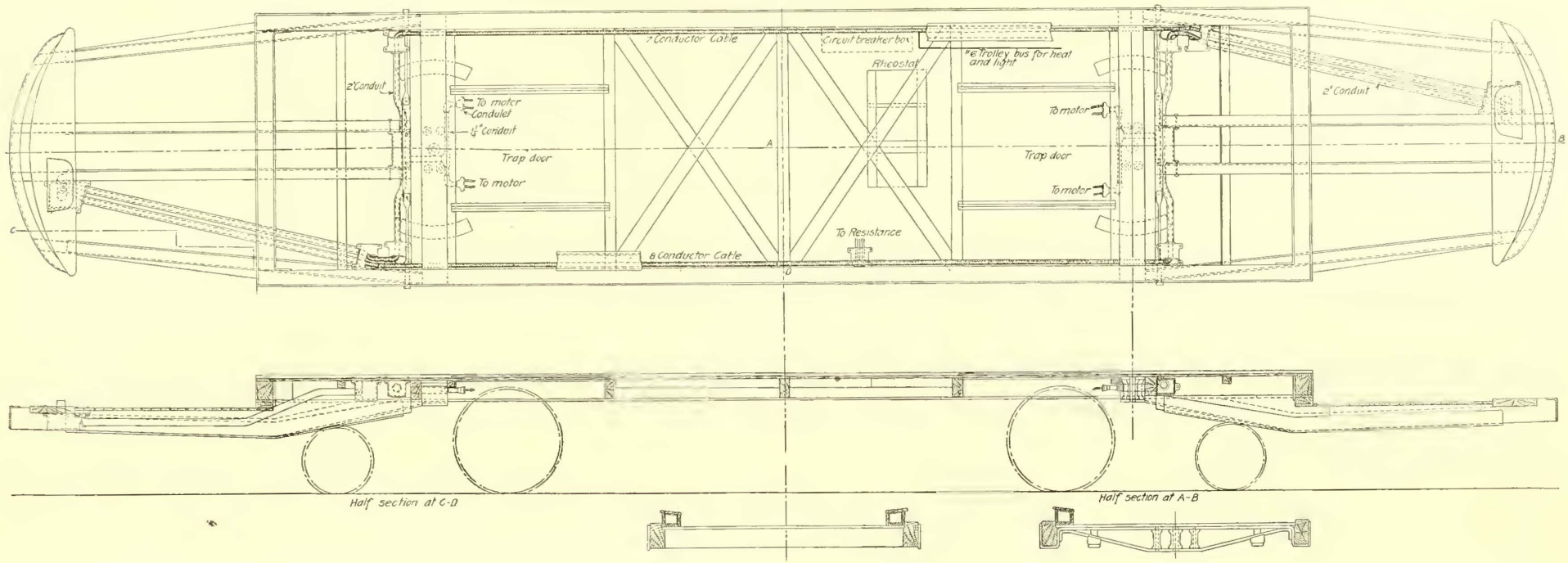
POWER CABLE CIRCUITS

The power cable circuits are carried through conduit from each controller to junction boxes located at each end of the car directly under the cable boxes, which pass longi-

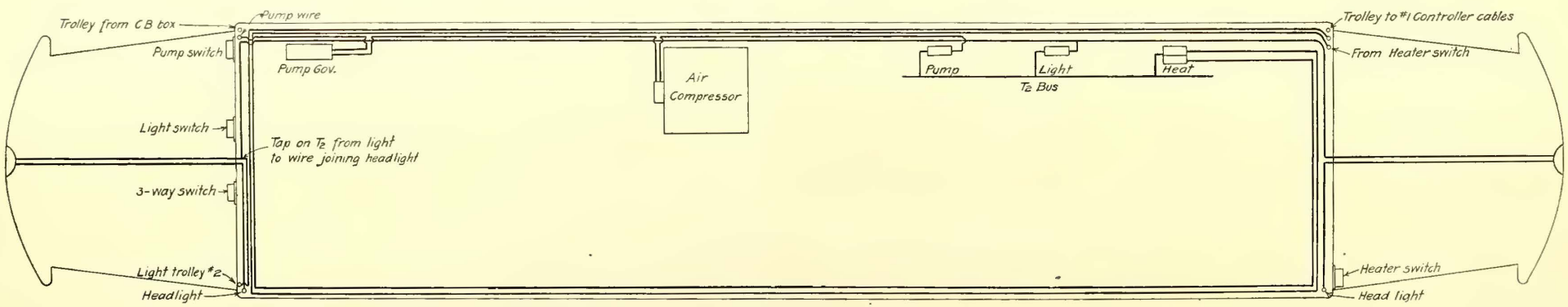


Third Avenue Pay-as-You-Enter Car—Motorman's Platform, Showing Sliding Door Exit and Passenger Bench on Opposite Side

tudinally on each side of the car under the seats, as shown in the cross-section. The taps to the motors and resistances are taken through the bottom of the cable box directly into the junction boxes located under the cable

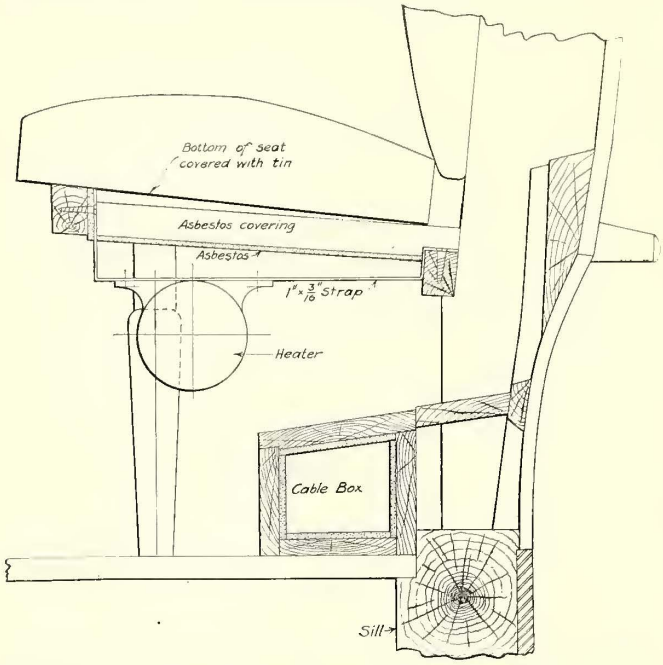


Third Avenue Pay-as-You-Enter Car—Plan and Side Elevation of Underframing, Showing Wiring in Conduit



Third Avenue Pay-as-You-Enter Car—Wiring Diagram of Auxiliary Circuits

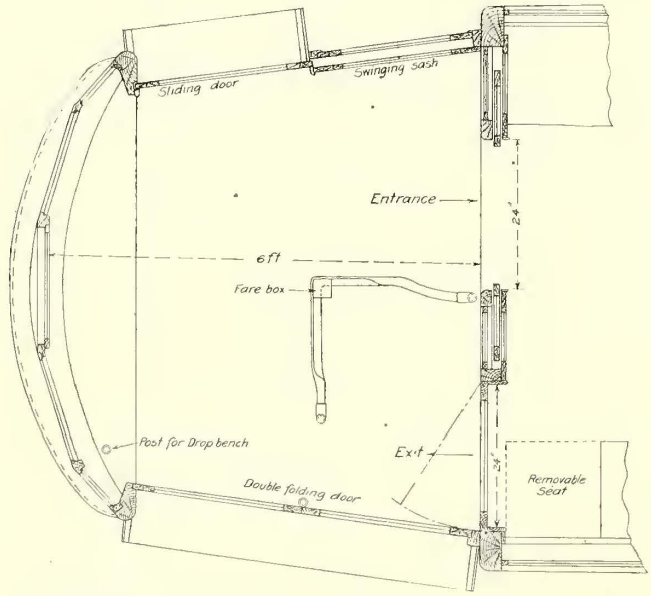
box, and are carried thence through conduit to outlet boxes placed as near as possible to the motor and resistance terminals. No part of the power wiring is exposed between the controllers at either end of the car, except where leads are brought out at outlet points for connection to motors and resistances. All of the conduit and junction boxes



Third Avenue Pay-as-You-Enter Car—Section Through Seat, Showing Heaters and Cable Box

are grounded on the truck frames. The window pockets back of the cable boxes are covered with furring strips, to prevent the entrance of dirt or water.

The following paragraphs are an abstract of the cable specifications, including a reference to the company's prac-



Third Avenue Pay-as-You-Enter Car—Plan of Conductor's Platform

tice of using differently colored braids in the individual conductors of each cable, to facilitated connecting-up, inspection and repairs.

ABSTRACT OF CABLE SPECIFICATIONS

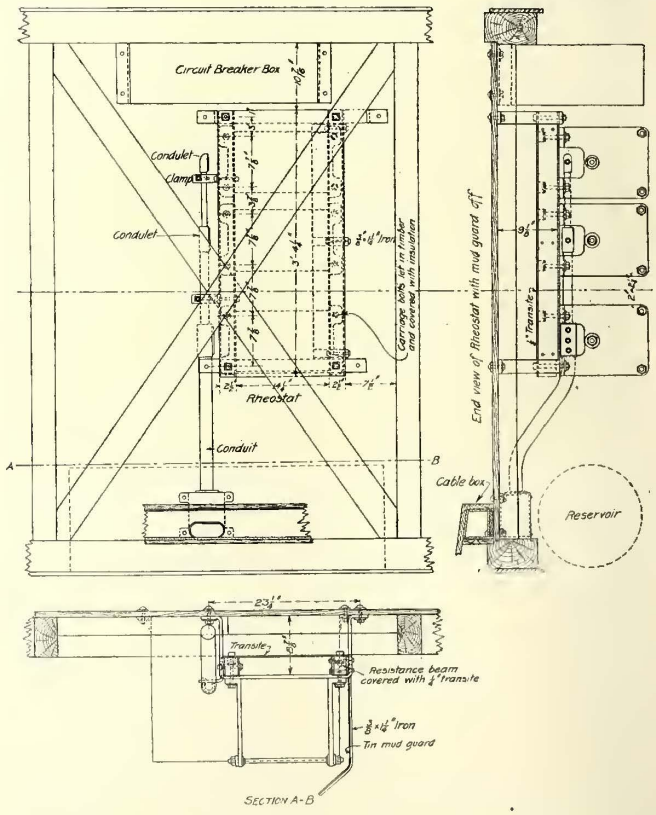
Description.—The cables will be used to make all necessary connections between controllers, rheostats, motors and switches. The maximum outside diameter of each finished cable will be not more than 1¾ in. The cables shall be furnished in the following lengths: 10 lengths, 7 conductors, 780 ft. each, and 10 lengths, 8 conductors, 780 ft. each.

Conductors.—Cable No. 1 shall contain one No. 0 B & S conductor and six No. 2 B & S conductors. Cable No. 2 shall contain one No. 0 B & S, two No. 2 B & S, five No. 4 B & S conductors. Each conductor shall be stranded. Each conductor shall be of soft drawn annealed wire, with a conductivity of not less than 98 per cent of pure copper, Mattiessen's Standard, and shall be provided with a heavy uniform coating of tin without burrs or fins. Each conductor will be continuous from end to end, and there shall be no joints nor splices.

Insulation.—All conductors shall be wrapped with a layer of thin paper over which the rubber insulation shall be applied. The thickness of the rubber insulation at any point for the No. 0 conductor shall not be less than 5/64 in. For any conductors between No. 2 B & S and No. 4 B & S the thickness of rubber insulation shall be not less than 1/16 in.

The insulation shall contain not less than 30 per cent by weight of fine dry Para rubber which has not previously been used in rubber compounds. The composition of the remaining 70 per cent shall be left to the discretion of the manufacturer. Sample pieces of the insulation shall be subject to a stretching test, as follows: Each sample piece shall have a section 2 in. long marked off; the piece shall then be stretched until the 2-in. section shall be elongated to 8 in. without breaking. When the strain is removed the sample under test shall return to within ¼ in. of its original length. The insulation of each individual conductor shall be protected by a substantial cotton braid 1/32 in. thick, treated with an approved preservative waterproof compound.

The color of the braid on each conductor in the cable



Third Avenue Pay-as-You-Enter Car—Details of Motor Compressor Cradle

shall be different from the color of any other conductor in the same cable. All insulation shall be in accordance with the rules of the National Board of Fire Underwriters.

The individual conductors shall be combined in the cable, and the assembled conductors shall then be covered with a cotton braid at least 1/32 in. thick, thoroughly saturated with an approved preservative waterproof compound.

Workmanship and Materials.—All workmanship and materials shall conform with the rules and requirements of the National Board of Fire Underwriters.

MINOR ELECTRIC CIRCUITS

Each car is supplied with 16 Consolidated electric heaters suspended under the seats on two iron bars, as shown in the accompanying sketch. All framing coming in contact with the heaters and all woodwork which may be exposed to heat radiation are protected by asbestos lumber ¼ in. thick. As no panels are used between the seat legs, the heaters are easily accessible from the front.

The light wiring is for 21 16-cp lamps, including the headlights. This was installed by the car builder, and is carried in moldings or conduit, according to location. The No. 14 B & S conductors are designed for 600 volts and have 30 per cent Para rubber insulation, 5/64 in. thick,

Third Avenue Pay-as-You-Enter Car—Interior View of Rear Doors, Showing Space Left Opposite Exit and the Temporary Seat Opposite the Entrance

with braid and flameproof tape, all subject to the approval of the New York Fire Insurance Exchange.

The bell and push-button circuits are supplied with current by a dry cell battery placed in a box under a seat near the end of the car, on the controller side. The side posts are grooved out under capping for wires running up from the passengers' push-buttons.

FARE COLLECTION

No register rods or registers have been installed, as fares will be placed in Brill fare boxes, with a totalizer attachment, as described on page 1166 of the Oct. 16 issue of the ELECTRIC RAILWAY JOURNAL daily.

ENGINEERING

The specifications for these cars were prepared by T. F. Mullaney, chief engineer, under the direction of F. W. Whitridge, receiver, and E. A. Maher, general manager, Third Avenue Railroad Company.

WORK OF THE ENGINEERING ASSOCIATION IN 1909

The executive committee of the American Street & Interurban Railway Engineering Association met on Nov. 16 at the office of the secretary of the American Street & Interurban Railway Association, 39 West Thirty-ninth Street, New York, to outline the work of the Engineering Association for the coming year. Those present were: Paul Winsor, Boston Elevated Railway; J. W. Corning, Boston Elevated Railway; F. H. Lincoln, Philadelphia Rapid Transit Company; W. J. Harvie, Utica & Mohawk Valley; L. L. Smith, Chicago & Milwaukee Electric; E. O. Ackerman, Columbus (Ohio) Railway & Light Company, William Roberts, Northern Ohio Traction & Light Company; Martin Schreiber, Public Service Railway, and H. H. Adams, New York City Railway, past president of the association. The only member of the committee absent was W. H. Evans, International Railway Company, Buffalo.

The first business considered was the appointment of a committee to meet with a committee of the Accountants' Association in order to ascertain if possible what information the engineering department should be able to obtain from the accounting department and what information the accounting department needs to have from the engineering department. This information and data are required not only for the use of the department heads of any one road for studying their own problems, but also for making comparisons with other roads. On motion the president of the Engineering Association was instructed to appoint a committee of three to meet with a similar committee of the Accountants' Association.

At the Atlantic City convention last month W. J. Harvie moved that an effort be made to have the purchasing agents of member companies affiliate with the Engineering Association as associate members. This question was brought up again at the committee meeting and Mr. Harvie moved that his original suggestion be extended to include the purchasing agents of non-member companies as well. This motion was carried and the secretary was instructed to make an effort to enroll as associate members purchasing agents of both member and non-member companies.

The president read a letter from a manufacturing company asking the privilege of reprinting in a catalog that part of this year's report of the committee on maintenance and inspection of electrical equipment, relating to the recommended practice for testing motor brushes. On motion the secretary was authorized in the future to sanction the publication of matter from the committee reports and discussions at the convention provided that the matter to be published and its connection with the other text be furnished to the secretary for his approval before publication.

The executive committee then took up the selection of subjects for the convention next year. Under the new arrangement of committee work there are five standing committees on standards, power generation, power distribution, way matters and equipment. The committee on standards was instructed to prepare standard designs for motor gears and pinions and to carefully consider the standards adopted in previous years with a view of recommending any changes which might seem desirable. It was also instructed to collect data and if possible to make definite recommendations on specifications for wrought iron for brake rigging and other parts of car equipment, material for axles and rubber-covered wire. The committee on standards will also have referred to it all recommendations included in the reports of other committees which refer to recommended practice or standards of equipment.

The committee on power generation was instructed to consider carefully the subjects of flue gas analysis and steam meters on which preliminary reports were made this year and also to take up a study of exhaust steam turbines with special reference to the results obtained in practice with existing installations and the limitations of working with this type of auxiliary prime mover.

The committee on power distribution was instructed to consider the rehabilitation and disposal of condemned lead-covered cables, conduit manhole construction for underground distribution cables with special reference to the manner of laying the cables and racking them in the manholes, and also the general subject of rail bonds and bonding methods. In considering this latter subject the committee was instructed to investigate recent developments in methods of bonding and the results obtained with the existing types of bonds.

The committee on way matters was instructed to devote most of its energies during the coming year to the preparation of an exhaustive report on the subject of T-rail in paved streets. It was pointed out that a summary of all of the data on this subject would be of especial value in influencing city engineers and civic bodies in favoring T-rail construction. The committee was also instructed to consider the subject of specifications for rails of special composition and collect data on existing specifications for open-hearth and manganese steel rails with a view of making at least a preliminary report on this important subject. The third subject for the consideration of this committee is the proper spreading of gage of rails on curves. The committee was instructed to collect data on this subject. It will also consider, if time permits, the question of economical maintenance and the general subject of rail joints.

The committee on equipment was instructed to prepare a report on the subject of car body weights as affecting operating costs. The subject of the second report to be made by this committee is impregnating motor coils for both fields and armatures. The committee was also instructed to report on recent developments in lightning arresters as applied to the protection of cars and the current progress in control apparatus.

The secretary was instructed to confer with the Fire Underwriters' Association and endeavor to have that association collect in book form extracts from the National Electrical Code relating to car house and car wiring specifications.

The president, Mr. Winsor, announced that he would appoint the members of these five standing committees at some later date. It was his intention to appoint if possible one member of the executive committee on each of the standing committees in order that the executive committee could keep in close touch with the other committees. It was also suggested that the secretary prepare and distribute to the members of the association a list of the committee members and the subjects to be considered, with instructions as to how the member companies could best assist the committees in the preparation of their reports.

The committee then went into executive session and discussed the subject of the relation of the Engineering Association to the American Street & Interurban Railway Association.

The Congress of Argentine Republic has authorized the extension into Buenos Ayres of the La Plata-Avellaneda electric railway.

RECEIVERS APPOINTED FOR THE MUNICIPAL TRACTION COMPANY OF CLEVELAND

Warren Bicknell, president of the Cleveland Construction Company, and Frank A. Scott, secretary and treasurer of the Superior Savings & Trust Company, of Cleveland, were named as receivers of the Municipal Traction Company and the property of the Cleveland Railway Company on Nov. 12. This action is the result of the suit brought in the United States Circuit Court by the Central Trust Company, of New York, as trustee under mortgages securing $8,000,000 underlying bonds of the Cleveland Railway Company. The announcement of the names of the receivers followed a decision reached late the previous afternoon, when the court said that a receivership was the only solution of the trouble into which the companies had been drawn.

Up to the time the case was called on Thursday afternoon the week had been occupied in taking testimony on the question of the solvency of the Municipal Traction Company before Circuit Clerk Belford as master commissioner. Judge Tayler read all the testimony that was produced with the exception of that taken on Wednesday morning.

D. C. Westenhaver, attorney for the Municipal Traction Company, stated that the fact that the lease of the Cleveland Railway was the most valuable asset owned by his company, was brought out in the testimony given on Wednesday morning, but the court said that if it should be decided that the lease had failed the testimony on that point would be of no avail. Judge Tayler asked Mr. Westenhaver to what extent the company was under legal or moral obligations to redeem stock sold through the free stock exchange. Mr. Westenhaver said that about $30,000 had been paid already and, although the company might not be legally liable, it had been the practice to redeem the stock when it was presented for that purpose.

Judge Tayler said that the Municipal Traction Company had obtained all that anybody conceived right in fairness to all. Since it had been decided that the franchise had been invalidated by a vote of the people, he said that it followed that the lease had been terminated. This, he said, was not final, but formed a basic fact in the suit for a receivership.

Mr. Westenhaver said that the company had about $80,000 assets when it entered into the agreement with the Cleveland Railway Company. Then he said he was not a mind reader, but could make a pretty good guess as to what the court would do. With this view in mind, he called attention to the fact that the decisions regarding some of the points were not final and mentioned the vote on the franchise, the validity of the lease and the rights of the various parties as to the restoration of their properties. He said further that the mortgagee had a claim prior to the creditors.

The court stated that all that would be done by the receivers must be done without disturbing the status quo of the properties and merely to preserve the rights of all the parties. Former Judge Sanders, chief counsel for the Cleveland Railway, was then asked to waive any claim to a forfeiture of the lease by virtue of the receivership. He replied that when the time arrived his clients would be able to prove their rights to the property irrespective of the receivership. Before reading the decision Judge Tayler said he did not intend that his decision should have a larger result than merely the preservation of all rights and that the order would be set aside if the waiver of this

condition is not kept in good faith. The decision of the court follows in full:

DECISION OF THE COURT

This discussion, gentlemen, has proceeded in such a way as to indicate what the court's views were. I do not know that I am called upon to say anything more, but it is probably due to counsel in the case that I should submit the few reasons which have been running through my mind why a receiver ought to be appointed here.

The facts in this case, as I find them, so far as necessary for the determination of the immediate question are as follows:

The complainant is the trustee of certain mortgages, securing over $8,000,000 of bonds. One of these mortgages, for over $2,000,000, covers the Cleveland City Cable Railway lines, aggregating some 30 or 35 miles of single track, or about one-eighth of the entire system.

The defendant, the Municipal Traction Company, is the lessee of the Cleveland Railway, the owner of all the lines. Except as lessee, it has practically no assets. Besides the traction system itself, it came into possession, as lessee, of certain other assets, and assumed certain obligations of the lessor company. It has been operating the system for a little more than six months, and manifestly has earned no appreciable amount above interest on the bonds of the lessor company and rental to the lessor itself. I think it quite apparent that the necessities of the situation are such that it has in these six months sustained a heavy loss. Only a most careful inquiry into the character of the betterments claimed to have been made and into the large number of accounts of the lessee would justify even an approximate estimate of the extent of this loss.

The refusal of the Municipal Traction Company to comply with the request of the Cleveland Railway to submit to it duplicate vouchers and journal entries referable to payments made under section 6, article 3, that is, the guarantee fund, while not affecting the final fact as it may appear in truth to be, yet makes necessary an examination of every one of these items or vouchers before we can know how it ought to have been charged.

Besides this loss from operation there is also the loss derivable from the obligation to pay par and accrued interest on all stock sold under the guarantee. This may be much, or little or nothing—according to circumstances.

It is fair to say that the mere fact of 3-cent fare is not the only cause of this result, or that it demonstrates that when the public has fully adjusted itself to pay-enter cars that rate of fare might not be sufficient to pay the fixed charges. An answer to that question is not necessary to a determination of the question here presented.

The lessee company no longer has a right to remain in possession of the leased property; the lessor, the Cleveland Railway, is apparently entitled to possess a part, if not all, of it. This is not an action to put the lessor back into possession; up to this time it is merely a proceeding brought to protect the rights of the bondholders, whose property rights are paramount to the rights of the stockholders of either the lessor or lessee company.

So far as the bondholders are concerned, we behold the spectacle of a lessee in possession, with no right to the possession, of the mortgaged property, refusing to yield up possession, and with no actual enforcible responsibility to anyone for any wrong it may do to the leased and mortgaged property; for, by whatever theory we construe the figures which these books may disclose; whatever allowance may be made for betterments; if we strip the Municipal Traction Company of the credits which it has merely because it is lessee, that is, credits which, in the last analysis, belong to the Cleveland Railway, and charge against it its manifest liabilities, it has no assets at all, or none of any significance.

Certainly, there is no substantial claim that it has created a real surplus from the operation of this property. Under all the circumstances it could not be expected to do so. If it had the right to remain in possession of the leased property, we would have a somewhat different situation, although that might not change the ultimate rights of the bondholders.

Now, under these circumstances, what are the rights of the parties? A financially irresponsible tenant—in the sense in which I have used this term—holding over its term and refusing to return the leased property to the lessor; a mortgage for over $2,000,000 on a small part of the leased property coming due next July; the mortgage entitled to a lien on the net earnings as well as on the corpus of the property; the franchise to operate on the streets involved in that mortgaged property expiring next year, with the result that the property covered by the mortgage may be sold as scrap—at least, it will have no other right in the streets than as scrap.

I have heard it claimed, indeed, as a matter of law—though not in this proceeding—that it did not even have that right. It is no answer to this to say that the probabilities are that it will bring a fair price from the successor to the franchise. That is, perhaps, true; but that does not justify a permission to a company of no financial responsibility, which has no right at all to the possession of the property, to continue in its possession and operation, harassed, as it would be, all the time and from every quarter. Every instinct of right, it seems to me, protests against such a proposition.

It is peace, not war, which we must seek. Possession of this property was taken rightfully, but it is withheld wrongfully, and, so far as the legal rights of bondholders or other creditors are concerned, it is here to be dealt with in the same way as if it had been violently and unlawfully seized and operated.

It is not necessary, in coming to this conclusion, that I should opprobriously characterize the acts or any of the acts of the officers of the Municipal Traction Company. I see no ground for it. The truth does not require or justify it. The development of the facts here, while showing many irregularities, does not produce in me a change of mind from that which induced me to vote for this ordinance and to regret its defeat.

But the net result is chaos—manifest chaos—as to all parties interested in this property; and this includes the Municipal Traction Company as well as all other interests.

I dismiss as unimportant the question as to whether the $2,000,000 mortgage, through the after acquired property clause or the consolidation proceedings, attaches to any other property. If we assume that to be a fact, we are at once involved in the complication resulting from the necessity to consider in that connection the rights of the other mortgages.

FINANCIAL IRRESPONSIBILITY

Now, besides the financial irresponsibility of the Municipal Traction Company, disassociated from its lesseeship, there is ground for the argument that it is practically so even on the admitted facts. Its claimed solvency as lessee depends, among other things, on the betterment items in its accounts, but these are unavailable unless stock of the Cleveland Railway can be obtained for them. This they cannot obtain because stock cannot be sold at par. How could it be expected that that stock would sell at par with the situation as we find it, wholly regardless of the merits of the controversy?

And so as to the liability for guaranteed Forest City Railway and Cleveland Railway stock. Whether that contract is legal or illegal is unimportant in this respect, because it is claimed to be, as it in fact would seem to be, a moral, if not a legal, liability. It may be assumed that an effort will be made to be faithful to this moral obligation.

In the mass of facts developed in this hearing, we learn that the Municipal Traction Company has paid out, on account of that guarantee, about $30,000, thus giving a preference to some stockholders of the Cleveland Railway over other stockholders.

I can see one way, and only one way, by which that guarantee obligation can be kept and at the same time keep faith with the creditors of the Cleveland Railway, and of the Municipal Traction Company, and that is, by appreciating all the stock of the Cleveland Railway to its par value. As long as the Municipal Traction Company remains in possession of the property, without the right of possession, its obligations to these guaranteed stockholders will increase in amount in direct proportion to its inability to meet them. Indeed, under the present conditions, no values can be constant and no creditor can be secure.

With peace and patience and justice, with an impartial administration of the property in the interval, while all rights are being declared and enforced, I do not doubt that values will be restored in popular esteem, and that all—the public, the owners of the property and creditors—will come fully into their own.

A claim is made that no action ought to be taken until all the parties in interest are restored to their several rights as they existed prior to the execution of the lease, and especially that the property of the Forest City Railway be restored to it. This question must, of course, be ultimately answered; the rights of all parties interested must be declared and enforced. It is manifest that at this moment no restoration can be made to anyone—no more to the Cleveland Railway than to the Forest City Railway. What we are now concerned about is, how to so preserve the property as to protect everybody and give no undue advantage to any one.

In coming to a conclusion that a receiver ought to be appointed no final right of any one is determined. This necessity is nowhere more cogently stated than in the

reasons set out in the bill filed by the Forest City Railway, which was evidently prepared by Mr. Westenhaver or his firm, and is now vouched for by Mr. Winthrop, both of whom appear here in the attitude of opposing, from the standpoint of the Municipal Traction Company, the appointment of a receiver.

It seems to me that it is only pursuing a course whereby this property which is so vigorously contended for is withdrawn for the time being from the possession of those conflicting parties who claim it, and administered absolutely for the benefit of all concerned, that a final adjustment will be made of the controversy, and this adjustment, it is hoped, will result in such a public grant to the owner or owners of the property as will return absolutely nothing more than a fair interest on the actual investment, while the people, still retaining their sovereignty over the public highways, will receive the best possible service at the lowest possible cost; and when that occurs, as surely it will if wisdom prevails, those who have for years fought for it will have their reward.

DISAGREEMENT ON FORM OF ORDER

The attorneys disagreed as to the form of order which the court should issue in the receivership. James H. Hoyt, attorney for the Central Trust Company, of New York, presented a form to the court, but exceptions were taken to it by the opposition. After arguing matters for a short time the court asked the attorneys to get together and agree upon a form of order, as he wanted to get the matter closed as soon as possible. The court decided that, inasmuch as other companies had been allowed to file intervening petitions, the order should include all the properties operated by the traction company. It was also announced that the court could give preference to labor, supply and material bills over others.

The receivers were directed to manage and operate all the street railway properties, subject to the orders of the court, and to conduct the business in such manner as would, in the judgment of the court, produce the best results. They are to exercise the authority and franchises and discharge the public duties pertaining to them; preserve and protect the property in proper condition and repair, so that it may be used safely and advantageously and so that the rights of all parties and of other persons in interest may be preserved unimpaired and unaffected until the final determination by the court as to such rights; protect the title and possession, secure and develop business, appoint, employ and discharge and fix the compensation of officers, attorneys and employees; make payments and disbursements such as may be necessary and proper in conducting the business and in preserving the rights of all the parties to the suit and all other parties interested; operate the system in such a manner as to preserve the rights of the public; collect the rents, income, toll, issues and profits of the roads, make appropriate payments for the ordinary expenses of operation and maintenance and to do any and all other things necessary to continue the operation of the system and conduct the business as authorized by the court. The officers, directors and agents of the Municipal Traction Company are commanded to deliver all the property covered by the order to the receivers and that company and the Cleveland Railway Company, as well as all other persons, are enjoined from interfering with the receivers' management. The receivers each gave bond in the sum of $100,000.

Mr. Scott being absent at the time, Mr. Bicknell took formal possession of the property late on Thursday afternoon. On Friday the receivers issued a statement in which they said:

In all matters of importance the policy of the receivers will, of course, be determined by Judge Tayler. Under the direction of the court the receivers will take such action as may be necessary to conserve the property, and, if possible, to improve the service. Indeed, the convenience and accommodation of the public are regarded as of the utmost importance.

While a receivership is naturally of public interest, the present receivership is of special interest to the public, and this is fully recognized. There are many matters of detail which are important, but which cannot be acted upon until the receivers have had an opportunity to become fully acquainted with the conditions confronting them.

QUESTIONS OF SERVICE AND FARE

The management under the receivership will aim first to give good service over all the system, after which the question of fare will be taken up. Until some conclusion is reached the fare will remain as it is. It is possible that experiments will be made with various rates of fare to ascertain what will be best when a final settlement is reached and the matter comes to the City Council. However, there is a general belief that whatever rate of fare is adopted will be for the entire system, and that the zone idea will not be entertained.

The receivers found about $80,000 cash on hand and something like $300,000 in the banks, including that which had been tied up by injunction. They placed all the cash in banks and the watch that has been kept over the treasurer's office in the Electric Building since the receipts have been kept there was removed.

A conference was held with Mayor Johnson and President du Pont, of the Municipal Traction Company, on Friday morning and later Mr. Bicknell met the district superintendents and discussed various matters. A visit was then made to the office of the Pay-Enter Fare Box Company with a view to considering the use of the boxes with pay-as-you-enter cars. A trip was also made on one of the cars, so that the advantages of the car and the use of the box might be studied.

Evidence was presented before Master Commissioner Belford in relation to the solvency of the Municipal Traction Company. As the attorneys for the company had made the claim that the lease still held, notwithstanding the defeat of the franchise, if it were defeated, they contended that the assets were sufficient to cover all liabilities. Attorneys for the creditors asserted that the company possessed little that was not turned over to it by the Cleveland Railway and that most of the charges to betterments and, therefore, capital account, were in reality expenses chargeable to the income from operation.

Witnesses admitted in many cases that errors had been made in the distribution and that much of the work charged to betterments should have gone to other accounts.

TESTIMONY REGARDING FARE BOX

A great deal of evidence concerning the manufacture of the du Pont-Johnson fare box was presented. L. W. Blyth, an accountant for the creditors, testified that J. B. Tanner, auditor of the Municipal Traction Company, had informed him that, although money had been paid to the fare box company, there were no invoices and, so far as known, no written contract. Mr. Blyth also said Mr. Tanner informed him that the boxes were to be furnished to the Municipal company at cost, but that it was difficult to tell at the time what the cost was, so no invoices had been prepared. The items comprising the charges found were for 50 boxes and the vouchers showed that $20,000 had been paid to the company by the Municipal company.

F. C. Alber, assistant to President du Pont, testified that the Municipal Traction Company was paying for the experimental work on the boxes and that the fare box company was practically a part of the Municipal property.

Mayor Johnson stated on the stand that he and Mr. du Pont had commenced work on the fare boxes six months or more before the lease was entered into with the Cleveland Electric Railway, and had made some experiments and built some models. The idea of the present fare box was suggested by Mr. du Pont, he said, but important improvements had been made since then and later boxes had been made on the revised plans. Mr. du Pont had applied for a patent, but none had been granted yet.

Mr. Johnson said an arrangement was made to manufacture the boxes, the Municipal company furnishing the money. Afterward a company was organized with a capital stock of $10,000 to make the boxes. The incorporators were clerks in a law office. Some patents had been purchased and some inventions made by the company. Mr. Johnson said that the Municipal company was to have the full benefit of the work that was being done without royalty or patent charge or any charge for profit. He said that the contract between the Municipal company and the fare box company was a verbal arrangement understood by all. It was agreed that all the cost of producing boxes, including the expense of experiments and the cost of tools and models, should be paid by the Municipal company in the bill for the boxes and there was to be no other charge or profit. The cost of tools, he said, should be paid by the traction company.

Mr. Johnson said that as nearly as could be ascertained the first 50 boxes cost $300 to $350 each, including patterns, experimental work and tools. The completion of the first 100 boxes would reduce the average to $250 or $275 each. He said he thought as the work progressed the average cost would be proportionately smaller.

Attorney Westenhaver said that $20,000, for which vouchers exist, had been charged as a betterment.

Mr. Johnson stated that pay-enter cars equipped with these boxes would effect a saving of $750,000 a year if used on the entire system.

Under cross-examination, Mr. Johnson stated that if the fare box project had been a failure the Municipal company would have lost the expenditure for the experiments. If it proved a success the Municipal company would have had the boxes free of any expenses on account of royalties or patents.

As a result of the use of pay-enter cars on the Payne-Bridge line, Mr. Johnson said that the gross earnings had increased between 15 per cent and 17 per cent. He argued that the road was getting this advantage from the money that it had put up for the initial expense incurred in originating and perfecting the box.

Loftin Johnson, the Mayor's son, appeared on the pay-roll of the fare box company at $150 a month and expenses. Mayor Johnson said that his son's duties had been to travel and see what other companies were doing in the use of fare boxes.

Mr. Alber testified that a loan of $43,000 by Ben T. Cable had been paid. Mr. Johnson testified that in July or August the traction company had redeemed $25,000 stock which stood in Mr. Alber's name, but belonged to Mr. Cable.

On Monday of this week it was announced that the business of the Depositors' Savings & Trust Company, Mayor Johnson's bank, had been acquired by the First National Bank and the Cleveland Trust Company. The former will take the commercial accounts and the latter the savings accounts. When this bank was opened in 1906 it was supposed that it had been established for the purpose of aiding in financing the low-fare traction companies.

RAILROAD CROSSINGS*

BY W. C. SPARKS, SUPERINTENDENT OF ROADWAY, INDIANA UNION TRACTION COMPANY

The maintenance of railroad crossings is a subject in which general managers and engineers of interurban lines are very much interested. Owing to the recent building of interurban lines it has generally fallen by contract to the various traction companies to construct, install and maintain their crossings with the steam lines. With some of the larger interurban properties which also operate city systems the question of maintenance of railroad crossings has become an important item and is an expense which must be considered by the management. On some of the larger systems it is almost equally as important as the question of tie renewals.

The growth of interurban lines has been rapid and there are now being operated 50-ton electric cars instead of 12-ton cars at speeds increased almost in proportion. This increased weight of interurban cars together with the greatly increased tonnage of locomotives, increased weight and carrying capacities of steam cars, increased length of trains in proportion to the increase of tonnage of locomotives, have caused much trouble in maintaining track crossings under the constant hammering of such service.

CONSTRUCTION

Generally speaking, there have been developed and are now in use two types of railroad crossings, namely, the built-up crossing and the manganese steel or hard center crossing. The built-up type of crossing is in general use by interurban lines at crossings with steam roads. A few points which should be considered in building a crossing of this type are:

First.—Great care should be exercised in the measurement of the crossing, special attention being given to the reading of the angle, gage and compromise joints and their drilling.

Second.—Easer and guard rails should be of the same section as the running rails and should be full section of rail.

Third.—Where the rail section permits bolts should not be less than 1 in. in diameter and preferably 1⅛ in., applied with proper lock nuts.

Fourth.—If the crossing is to be run over at high speed both by steam and interurban cars, easer rails should be installed in both tracks. Short easers on the interurban rail will suffice, but on the steam rails the easer rails should extend at least 15 in. beyond the first joint and such joints should be supplied with rolled steel fillers.

Fifth.—Rolled steel fillers should be used at intersections and at points where easer rails extend beyond joints.

HARD CENTER TYPE

This type of crossing was designed to prevent the hammering and battering down of the crossing at flange-way intersections. It generally consists of rectangular manganese plates at the intersection of flange-ways. Some manufacturers, however, have made designs which carry the manganese plate on the steam rails from intersection to intersection. The excessive cost of this type of crossing has prevented many interurban roads from using it. The cost of the hard center type, as a rule, is about two to three times the cost of the standard built-up crossing, the cost depending upon the angle of the crossing. The first

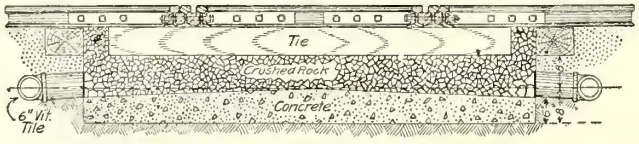
*Paper presented at the Central Electric Railway Association meeting, Nov. 19, 1908, at Lima, Ohio.

cost of the manganese type seems so great that, as a rule, most companies decide to purchase the standard built-up type. For experimental purposes, in May, 1907, the Indiana Union Traction Company installed two crossings of this type at a location which was in almost constant use by the steam road at a cost about double that of built-up crossings. They have now been installed nearly two years and there is no perceptible wear at the flange-ways. At the present time they look to be good for at least 10 years longer or about four or five times the life of the standard crossing.

INSTALLATION

Nothing affects the life of a crossing of any type more than the method of installation.

There are different opinions as to the kind of ballast which should be used as a foundation for crossings. Some companies use gravel; others use crushed stone; while others are in favor of concrete. On the lines of the Indiana Union Traction Company crushed stone is used almost entirely for crossing foundations. The stone beneath the ties should be at least 18 in. in depth and thoroughly bar tamped. About two years ago, for experimental purposes, the writer put in foundations for two crossings of concrete made of gravel, the mixture being one part cement to five of gravel. The concrete foundation extended 12 in. below the bottom of the crossing timbers and was carried



Section Through Proposed Foundation for Standard Crossing

up to the top of the ties. Within one year after the placing of the new crossing on a foundation of this character it was necessary to install new easer and running rails on the steam track. The concrete foundation had proved to be too rigid and the constant hammering of the steam cars soon battered the running and easer rails on the steam track to pieces, thus proving that in all railroad crossings there should be a certain amount of elasticity. Many steam roads also object to concrete because of the damage to their rolling stock.

The plan which the writer would suggest at this time for consideration and discussion consists of both concrete and crushed stone and is as follows:

The excavations for the foundation material should be 24 in. deep. At the bottom of this excavation there should be installed 8 in. of concrete so shaped that proper drainage can be procured. Upon this concrete base place 8 in. or 9 in. of crushed stone to receive the crossing timbers. The stone should be not less than ¾ in. nor more than 2 in. in diameter and thoroughly tamped when the crossing is brought to proper surface. Fine stone should not be used, as it cements together and prevents proper drainage. By this method the concrete not only serves as the foundation, but acts as a partition, so to speak, between the earth and stone, and thus prevents the mixing of the earth and stone. The crushed stone acts as a cushion for the crossing and gives the elasticity desired. The writer has never used the above method for installing crossings, but expects to experiment along this line during the coming year.

Another important feature to be considered in the installation of a crossing is the question of drainage. All crossings should be drained with at least a 6-in. pipe with sufficient fall to keep it clean at all times. Large pieces of crushed stone should be placed over the end of the drain so that it will not become clogged. A well-drained and a dry foundation is necessary for the successful and satisfactory maintenance of any crossing.

Crossing timbers should be of white or burr oak and should be 7 in. thick, 9 in. wide and of the length required. In case of right angle crossings 10-in. x 12-in. timbers should be placed beneath the running rails of the traction company's track. This allows the steam track to be laid on the cross-ties and also affords a means for spiking the running rails of traction line. A tie plan should be furnished to the foreman in charge of the installation of the crossing. Wherever possible the use of crossing plank should be discontinued and crushed stone should be used. This affords an opportunity not only to keep the crossing tightened at all times, but prevents vehicles from using the tracks as a driveway. This refers to crossings on streets and highways. In many instances it has been possible to get the municipal authorities to agree to the use of crushed stone instead of planking, and in almost every instance they are pleased. An effort along this line is time well spent.

MAINTENANCE

All railroad crossings should be examined by the section foreman whenever he passes over them and once a week a thorough examination should be made. Special instructions should be given track men to see that the bolts in the crossing are kept tight at all times, as the life of a crossing is materially lengthened by keeping it tight.

At points where crossings are protected by interlockers the tower man should be supplied with a stock of bolts for the crossing and should see that bolts are tightened daily.

Drains should be inspected and kept open. Crossings should be kept in good line and surface at all times, as the damage done to a low crossing is much greater than if it were in good line and surface.

Maintenance costs of crossings can be materially reduced and the life of the crossing lengthened by the installation of new running and easer rails in the steam tracks before the crossing gets into too bad a condition. By careful and accurate measurement of the rails of the old crossing and plans made of the work in detail any machine shop which has a planer can make the running and easer rails at a cost of $40 to $50 per set. This price can be materially reduced if work can be done in the company's shops.

On the Indiana Union Traction Company's lines at many locations where the crossing is run over at high speed for both lines duplicate crossings have been supplied. While one is in service the other is taken to the shops and overhauled and repaired. It is then taken to the crossing location and stored for emergency use. The crossings are not allowed to become too badly worn before they are exchanged. This permits having the crossing in the shop at the time new easers and runners are made, which is quite an advantage, as it allows all new parts to be machined and fitted together before taking the whole crossing to its location. This has proved an economical method of maintaining standard built-up crossings, but the writer does not believe it to be as economical as hard center crossings.

In conclusion the following points should be emphasized for the economical maintenance of railroad crossings:

First.—For interurban crossings with steam lines hard center crossings should be used, especially at high-speed points.

Second.—Keep the foundation dry.

Third.—Keep the bolts tight.

Fourth.—Frequent inspection by roadmasters.

POSSIBILITIES OF HANDLING UNITED STATES MAIL AND THE COMPENSATION PAID BY THE GOVERNMENT*

BY C. M. PAXTON, GENERAL MANAGER, DAYTON & TROY ELECTRIC RAILWAY COMPANY

Most of the lines represented in the Central Electric Railway Association have now been in operation for a number of years, and may be said to have reasonably developed the passenger, freight and express possibilities in their respective territories. Attention is being turned, therefore, to the transportation of United States mail as an additional source of revenue. Nearly all of the lines represented are already handling some mail in locked or closed pouches to points inadequately served by the steam lines, and are familiar with this method. The writer will therefore consider the subject in a general way and endeavor to show what opportunity, if any, exists for the handling of mail on interurban lines in a manner approaching the present steam railway mail service.

Unquestionably, the interurban lines in the Middle West are physically able to render great service to their various communities in facilitating and expediting the transportation of mail matter, and yet the volume of matter they transport outside of cities is altogether negligible. There may be a variety of reasons for this, but chiefly it is due to the insufficient compensation which has heretofore been allowed by the Government for this class of service, which has prevented a united effort to secure through and local mail routes on electric lines.

The rates authorized for the transportation of mail on electric and cable railways are as follows:

Closed Pouch Service.—Two thousand miles or less, $150 per year; 2000 to 3500 miles, $175 per year; 3500 to 5000 miles, $200 per year; 5000 to 8333 miles, $250 per year. More than 8333, 0.03 cents per mile.

Postal Car Service.—Inside length of car or apartment, 5 to 20 ft.; rate per mile run for independent car or apartment in same is 3.75 cents to 13.50 cents; rate per mile run for trailer car or apartment in same is 1.87 cents to 7.50 cents.

Should the department deem it necessary to authorize service in a car more than 20 ft. in length, the rate per foot for the excess above 20 ft. would be limited to one-half the rate per foot of length between 16 and 20 ft.

The rate per mile run for a car 16 ft. in length being 12 cents, and for a 20-ft. car being 13.50 cents, the rate for a 40-ft. car would therefore be but 17.24 cents per mile run, which is entirely too low to justify its operation. Evidently with this in mind Congress, in making appropriations for the service of the Post Office Department for the fiscal year ending June 30, 1908, provided that the Postmaster General might, in his discretion, pay not to exceed one cent per foot per mile for electric railway cars and apartments used in the transportation of mail where the quantity of matter to be transported was large and the number of exchange points numerous, but stipulated that for service of more than 20 miles outside of cities the rate paid should not exceed the rate paid for service on steam railroads. It is evident, therefore, that the Postmaster General is in position to exercise his discretion relative to the payment which is made to electric lines for the transportation of mail up to one cent per mile per foot length of car, and basing their figures on a car which measures from 30 ft. to 40 ft. inside, the majority of lines would accept this compensation as fair, inasmuch as it approaches the revenue to be derived from the operation of independent freight and passenger cars. Whether or not one cent per foot per mile is sufficient compensation to warrant the surrender of an apartment in a passenger car to the mail service exclusively is a somewhat difficult question, and one which could not be answered without duly considering the extent to which such an arrangement would interfere with other branches of the business.

It will be observed that the Postmaster General is permitted to use his discretion in fixing the rate per mile per foot length of car at one cent under certain conditions only, and where these conditions obtain he is still restricted to the extent that he must not pay more for the service if the route extends more than 20 miles outside of a city than is paid for service on steam railroads, and it is therefore necessary to investigate the compensation being received by steam roads before arriving at any conclusion as to whether or not the revenue to be derived from the transportation of mail is adequate for the service performed.

There seems to be a preconceived idea existing in the minds of the general public that the steam railroads are overpaid for the transportation of mail for the Government, but an unprejudiced investigation would indicate that this is not true, and quite recently a committee composed of the mail representatives of a number of Western and Southwestern railroads met in conference with the Postmaster General at Washington and called to his attention certain desired changes in rates which they believed should have the favorable consideration of the Congress.

Payment to the steam railroads is based on the average weight of matter handled per mile. For instance, if the average weight handled on any route is 200 lb., the rate is $42.75 per mile per annum; if 1000 lb., $85.50; if 1500 lb., $106.87, and so on. If the volume of matter can be handled in a compartment of a passenger or baggage car, there is no further compensation, but if the service requires the operation of an entire car especially for the mail, there is a further consideration for the equipment. If the service calls for a 40-ft. car, the railroad receives $25 per mile per year over and above the payment made on a basis of weight, and so on up to $40 per mile per year for a 60-ft. car.

The weights for which payment is made are determined perennially by weighing the matter transported for a certain period and determining the daily average per mile of route, which then holds good until the next perennial mail weighing period.

In view of the fact that the transportation by mail of electric lines must not exceed in cost transportation by steam roads, it is obvious that the department would cause the matter handled by an electirc line to be weighed for a period, and the cost on a basis of weight would, if less than one cent per mile per foot length of car, be the basis for settlement. If, on the contrary, it exceeds one cent per mile per foot of car, then payment would undoubtedly be made on the car mileage basis, with a view to securing the service at the lowest rate. Thus, the maximum possible revenue is established at one cent per mile per foot of car, with the minimum possible revenue depending altogether on the volume of matter which might be handled, and which is therefore not ascertainable in advance. This uncertainty as regards compensation will undoubtedly operate to retard the establishment of through mail car routes on electric lines until some basis for compensation is provided which will make it possible to approximate revenue in advance. Referring again to the recent conference between representatives of various railroads and the Postmaster

*Paper read at the Nov. 19 meeting of the Central Electric Railway Association held at Lima, Ohio.

General, it is worthy of note that in support of their contentions the railroads submitted a report of compartment mail car earnings on roads aggregating 35 per cent of the total railway mileage in the United States, and the amounts shown were claimed to be inadequate for the reason that the space which has to be set aside for the handling of mail cannot be utilized for other transportation purposes, and, furthermore, is wholly out of proportion to the weight of matter handled. It was further set out that after deducting the fare of postal clerks, at a rate of 2 cents per mile each, the revenue was so reduced that the handling of mail in compartment cars was unprofitable, and they sought to obtain the passage of necessary laws to enable them to collect payment for space provided in compartment cars as an extra transportation facility, aside from and in addition to the revenue derived from the actual transportation of mail matter. They also sought to secure annual instead of perennial weighing of mail and adjustment of pay. It is obvious that favorable action on these items by Congress would very materially increase the steam railroads' gross earnings from the operation of compartment mail cars.

The writer has not had time to secure figures relative to the car mile earnings of independent mail cars on steam roads, but the fact that there is no serious complaint from the railroads may be taken as an indication that the revenue they are deriving from this class of service is reasonably compensatory, as the payment which is made for equipment, in addition to the payment for matter transported, would indicate.

If we assume a daily average weight of 1500 lb. of matter, a 40-ft. car would earn about 36 cents per car mile, which compares very favorably with 1 cent per mile per foot of car. On a basis of weight a 10-ft. compartment carrying a daily average of 200 lb. of mail matter would earn slightly over 11 cents per mile run, thus exceeding by a small margin the maximum revenue of 1 cent per mile per foot of car, but the desirability of compartment car service is dependent upon whether or not it can be handled without interference with other branches of the business.

It would seem that as a general proposition good mail routes over electric lines or combinations having sufficient geographical advantage over existing steam routes to insure a considerable quantity of matter would develop into very satisfactory sources of revenue for the lines interested and an improved service for the department.

It is now two years since the last mail weighing period, and consequently it will be two years before the mail is again weighed. As the last weights apply without change for two more years, and as the department ever has an eye for economy, it is doubtful if any move would be made toward establishing new routes until just prior to the next mail weighing, but as the proposed establishment of a new route calls for an extended investigation, it would be well for those who anticipate taking this matter up to do so without undue delay, in order to accomplish as much as possible in advance of the establishment of the next mail rates.

TEST CAR AT WORCESTER

The Worcester Polytechnic Institute's test car No. 1907 has recently been equipped with a set of autographic recording instruments, by means of which it is possible for one operator to plot curves showing every detail of the operation of the car upon which the apparatus is mounted. These curves include values of speed, accelerating rate, braking rate, coasting rate, current (both for individual motors and total for the car), voltage of the line, voltage on any individual motor, volts drop in accelerating resistance, air brake pressure, or any other value for which a curve of instantaneous values, plotted against time or distance ordinates is desired. This apparatus was designed and constructed by A. T. Childs, of the electric railway department, under the general supervision of Prof. Albert S. Richey. The car-testing equipment also comprises a complete set of wattmeters, by means of which measurements may be taken of the power consumption of the car, individual motors, air pump, heaters or lights. One of these wattmeters is equipped for making measurement of the heating value of the current taken by the car motors, which is the value that limits the capacity of the motor. All of this apparatus may be used either in connection with car tests on the institute's car, or it may be quickly shifted to any other electric car upon which it may be desired to run such tests of efficiency or capacity. Experimental and instrumental work in electric car testing will hereafter be a part of the regular work in senior and post graduate electrical courses. Last week the first of these regular runs was made over the lines of the Worcester Consolidated Street Railway, the test being made by Messrs. Finneran and Spencer, post graduate students, under the direction of Mr. Childs. Similar runs will hereafter be made weekly, a different pair of students having charge.

SINGLE-PHASE RAILWAYS IN AMERICA AND EUROPE

The accompanying tables, which have been prepared by the Westinghouse Electric & Manufacturing Company, give a complete summary of the single-phase electric railways in America and Europe. The tables are reprinted from a souvenir pamphlet prepared by the Westinghouse Electric & Manufacturing Company for distribution at the opening ceremonies in connection with the inauguration of electric traction through the St. Clair Tunnel of the Grand Trunk Railway System, which took place on Nov. 12.

On the North American continent there are in operation or approaching completion 28 roads operating with single-phase alternating current. The equipment on 19 of these roads has been furnished by the Westinghouse Electric & Manufacturing Company, and the equipment of the other nine has been furnished by the General Electric Company. Thirteen of the 28 roads are designed for interchangeable operation with direct current and single-phase alternating current. The a.c. line voltage used varies from 1200 volts on the Westmoreland County Traction Company to 11,000 volts on the Erie Railroad, the New York, New Haven & Hartford and the Denver & Interurban Railway. Only two of the 28 roads operate with 15 cycles, all of the others using 25 cycles. The total mileage of the American roads is 966.5, the total number of cars in service 246, the total number of locomotives in service 64, and the total power of motors on motor cars and locomotives aggregates 137,320 hp. Of this, 81,100 hp is installed on motor cars and 56,220 hp on locomotives.

In Europe, the European Westinghouse companies have installed single-phase equipment on 10 roads aggregating 150 miles of track. The Siemens-Schuckert Werke, Berlin, has installed single-phase equipment on 11 roads, aggregating 131.5 miles of track. The Allgemeine Elektricitäts Gesellschaft has made installations on nine roads,

STATISTICS OF SINGLE-PHASE RAILWAYS IN NORTH AMERICA

Name of Road	Length (Miles) of Line Electrified	Equipment: Cars No	Cars Motors	Locomotives No.	Locomotives Motors	Type of Control Used	Line Characteristics: Voltage	Cycles	Electric Service Started
Westinghouse									
Indianapolis & Cincinnati Traction Co.	116	25	4–100	..	.....	Unit Switch	3300 550	25 D.C.	Dec. '04
Westmoreland County Traction Co.	7	4	4–50	..	.....	Hand	1200	25	Mar. '05
San Francisco, Vallejo, Benecia & Napa Valley Ry. Co.	34	2 8	4–75 4–100	..	.....	Unit Switch Hand	3300 2200	25 25	June, '05 July, '05
Atlanta Northern Traction Co	18	8	4–50	..	.....	"	3300	25	Aug., '05
Warren & Jamestown Street Ry. Co.	22.5	6	4–50	..	.....	"	2200	25	Sept., '05
Long Island Railroad Co.	5	6	2–50						
Spokane & Inland Ry. Co.	115	21	4–100	0 8	4–150 4–175	Unit Switch " "	6600 550	25 D.C.	Nov., '06
Erie Railroad Co.	34	6	4–100	..	.....	" "	11000	25	Dec., '06
Fort Wayne & Springfield Street Ry. Co.	21.5	4	4–75	..	.....	" "	6600	25	Jan., '07
Pittsburg & Butler Street Ry. Co.	33	13	4–100	..	.....	" "	6600 550	25 D.C.	May, '07
New York, New Haven & Hartford Railroad Co.	22	4	4–150	41	4–250	" "	11000 600	25 D.C.	July '07
Windsor, Essex & Lake Shore Rapid Railway Co.	28	5	2–100	..	.....	Hand	6600	25	Sept., '07
Grand Trunk Railroad Co. (Sarnia Tunnel)	3.5	..	.....	6	3–240	Unit Control	3300	25	Mar., '08
Visalia Electric Ry. Co.	23	4	4–75	1	4–125	" "	3300	15	Mar., '08
Chicago, Lake Shore & South Bend Ry. Co.	78	24 4	4–125 2–75	..	.....	Unit Switch Hand	6600 575	25 D.C	June, '08
Denver & Interurban Railway Co.	46	10	4–125	..	.....	Unit Switch	11000 575	25 D.C.	June, '08
Hanover & York Street Ry. Co.	20	5	4–75	..	.....	" "	6600 575	25 D.C.	Feb., '08
Shore Line Electric Ry. Co.	12	4	4–75	..	.....	" "	6600	25	Under con.
Maryland Electric Ry. Co.	24	9	4–100	.	.....	" "	6600	25	Apr., '08
General Electric									
Bloomington, Pontiac & Joliet Ry. Co.	19	2	4–75	..	.....	K	3300	25	In operat'n
Toledo & Chicago Ry. Co.	43	7	4–75	..	.....	K	3300 575	25 D.C.	" "
Milwaukee Electric Ry. & Light Co.	59	11	4–75	..	.....	M	3300 575	25 D.C.	" "
Central Illinois Construction Co.	80	20	4–75	1	4–150	M	3300 575	25 D.C.	" "
Richmond & Chesapeake Bay Ry. Co.	15	4	4–125	..	.....	M	6600	25	" "
Anderson Traction Co.	20	3	4–75	..	.....	K	3300 575	25 D.C.	" "
Washington, Baltimore & Annapolis Ry. Co.	60	21	4–125	..	.....	M	6600 575	25 D.C.	" "
New York, New Haven & Hartford R. R. Co.	8	4 2	2–125 4–125	..	.....	M	11000	25	" "
Shawinigan Railway Co.	....	..	.....	1	4–150	M	6600 600	30–15 D.C.	Under con.

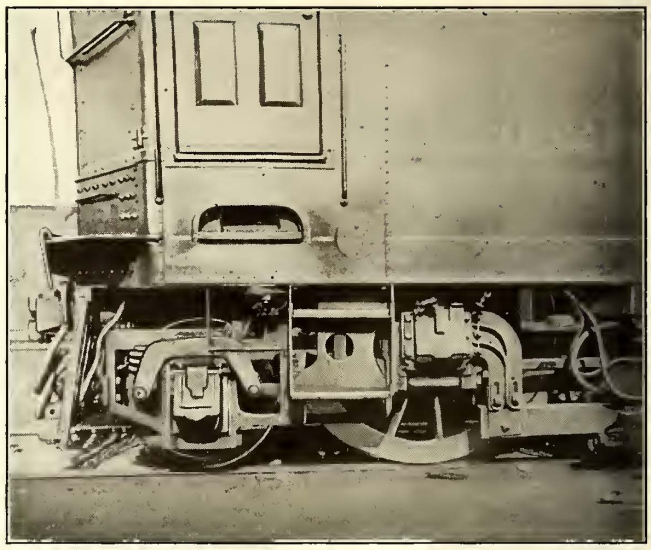
STATISTICS OF SINGLE-PHASE RAILWAYS IN EUROPE.

Name of Road	Length of Line (Miles)	Equipment: Cars No.	Cars Motors	Locomotives No.	Locomotives Motors	Line Characteristics: Voltage	Cycles
Westinghouse							
Brembana Valley Ry.	19	..	.....	5	4–75	6000	25
Swedish State Ry.	7	..	.....	1	2–150	3300 18000	25
Roma Civita Castellana Ry.	33	8	2–40	3	4–40	6600	25
Lyons Tramways	14	15	2–50	..	.....	6600	15
Midland Ry., England	9	1	2–150	..	.....	6600	25
Forenade Elektrisk Aktieboget	.....	1	4–50	..	.....	6000	25
Tramways De Salerne from Salerne to Valle di Pompeii	19	20	2–40	..	.....	6600	25
Thamshavn Ry., Norway	19	1	2–40	4	4–40	6000	25
Trafford Park Ry.	.....	1	4–100	..	.....	3300	25
Tergnier-Aniay (Aisne-France)	20	3	2–40	3	2–40	3300	25
Siemens-Schuckert Werke, Berlin							
Murnau-Oberammergau	14	4	2–100	1	2–100	5500	16⅔
Swedish State Rys.	7	..	.....	1	3–110	20000	25-15
Rotterdam-Haag Scheveninghen	19	20	2–175	..	.....	10000	..
Parma Provincial Ry.	.....	10 8	2–60 1–60	..	.....	.....	..
Midland Ry., England	9	2	2–175	..	.....	6600	25
Seebach-Wettingen Ry.	12	..	.....	1	2–200	15000	25
Roma Civita Castellana	33	4	4–40	..	.....	6500	25
Vienna Baden Ry.	20	14	4–40	..	.....	550	25
Prussian State Ry., Blankencse-Ohlsdorf Ry. (Hamburg) (Also known as Hamburg-Altona Ry.)	16.5	6	2–125	..	.....	6600	25
Royal Prussian State Ry., Oranienberg Experimental Line	1	1	2–175	..	.....	6000	25
Mariazell Railroad	.....	..	.....	23	2–175	6000	..
Allgemeine Elektricitats Gesellschaft							
Royal Prussian State Ry., Blankancse-Ohlsdorf	16.5	54	3–115	..	.....	6600	25
Royal Prussian Experimental Ry., Orienburg	1	1	2–175	..	.....	6000	25
Stubai-Thal Ry.	12	4	4–40	..	.....	2500	42
Borinage Ry.	13	20	2–40	..	.....	600	40
Swedish State Rys.	7	2	2–120	..	.....	6000	25
South London Line, London, Brighton & South Coast Ry.	9	16	4–115	..	.....	6000	25
Niederschoneweide Spindlersfeld Ry.	2.5	2	2–100	..	.....	6000	25
Prussian State Ry.	112	..	.....	..	3–350	6000	25
Berlin Stadt & Ring Ry.	366	..	.....	..	.....	10000	..
Maschinenfabrik Oerlikon, Zurich							
Seebach-Wettingen Ry.	12	..	.....	1 1	2–200 4–250	15000	25
Locarno-Bignasco	17	..	4–40	..	.....	5500	20
Valle Moggia Ry.	17	3	4–40	..	.....	5000	..
Miscellaneous							
Compagnie Generale Parisienne de Tramway	1	1	2–50	..	..	500	25

aggregating 539 miles of track. The Maschinenfabrik Oerlikon, Zurich, has equipped three roads, with a total mileage of 46 miles. In addition to this, the Compagnie Générale Parisienne de Tramway, Paris, has installed one mile of single-phase line. In the case of some of the European railways, the equipment has been furnished jointly by two or more of the companies mentioned, so that the total mileage is less than the sum of the aggregate of each company. Correcting for duplication, the total aggregate mileage of the 27 roads in Europe is 782. A number of different frequencies are represented in the list of European roads. The majority of the roads employ 25 cycles, but one road employs 15 cycles, another a combination of 25 and 15 cycles, and a third 16 2/3 cycles, a fourth 20 cycles, a fifth 40 cycles, and a sixth 42 cycles. The line voltages vary from 20,000 on the Swedish State Railways to 500 on the line of the Compagnie Générale Parisienne de Tramway. The majority, however, employ 6000 to 660 volts.

CHANGES IN NEW HAVEN LOCOMOTIVES

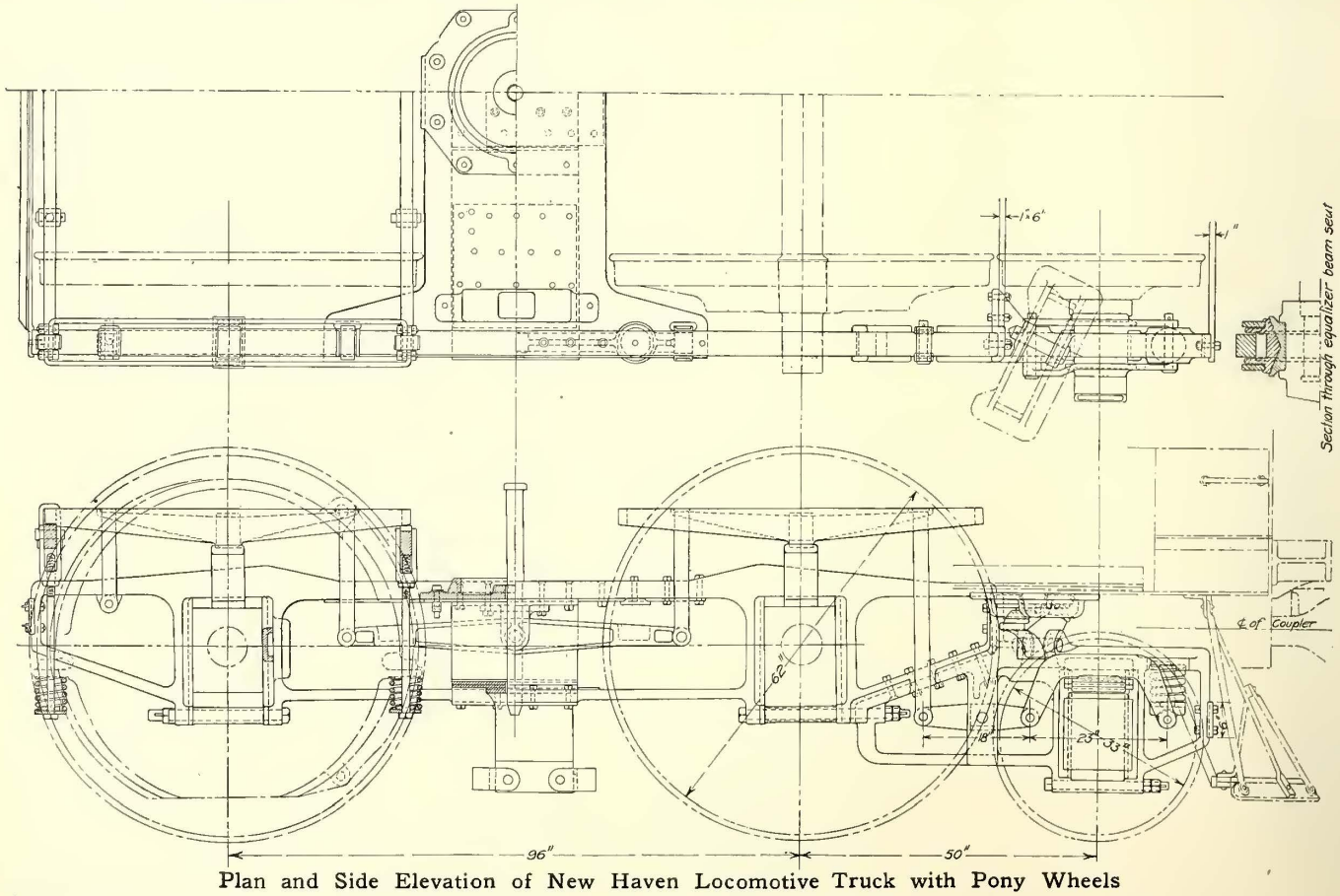
The New York, New Haven & Hartford Railroad has recently modified the wheel arrangement of a considerable number of the electric locomotives in service between Stamford and Grand Central Station, New York, by the addition of a pony truck attached to each of the motor truck frames, and intends to change all of the locomotives as rapidly as can be done. The wheel arrangement of the remodeled locomotives is now represented by the following diagram: o O O — O O o. No important structural changes were required in the locomotive cab or trucks in adding these pony wheels. The main reservoirs, which were formerly mounted under the cab between the pilot and the forward driving wheel at each end, were removed. Three long cylinders 12 in. in diameter, having approximately the same capacity in cubic inches as the four main reservoirs of larger diameter but shorter length which were removed, were placed on the roof of the cab.



Truck of New Haven Locomotive with Pony Wheels

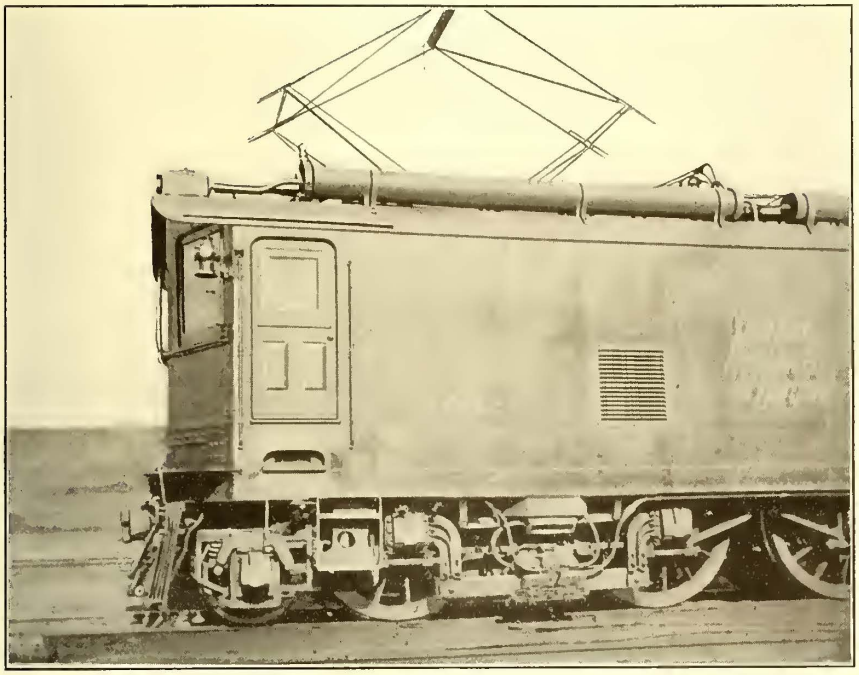
The pony truck wheels are 33 in. in diameter, and are carried in a supplementary or extension frame bolted to the main truck frame. The outer ends of the supplementary frames are cross-connected by a heavy steel brace to keep them square.

The supplementary pony truck frame being rigidly attached to the main truck frame, it was necessary to provide for some radial movement of the pony truck wheels. This is done by interposing a beveled brass wedge over the journal box of the pony truck. The wheels, axle and



Plan and Side Elevation of New Haven Locomotive Truck with Pony Wheels

journal boxes of the pony truck are free to move laterally between the pedestal jaws of the supplementary frames, but in so doing they are met by the resistance of the beveled bearing plate on top of the journal box. When the pony truck wheels move sidewise they lift through the beveled bearing wedge all of the weight carried by the equalizer bars; this tends always to restore the pony truck wheels to their normal central position. The equalizing system of the pony truck is connected to the equalizing system which was formerly used on the motor trucks, but some modifications have been made in the original parts. In the illustration, immediately back of the third-rail shoe fuse box, can be seen an equalizer bar hung from levers extending over the journal boxes of the main driving wheels. It will be noted that coil spring seats are formed on this equalizer bar. In the original construction coiled springs were interposed between the top bar of the truck side frame and this equalizer bar on each side of the fuse box. These springs have been removed and the journal box equalizer bar on the forward motor axle has been extended out, and to its outer end has been attached a hanger, which can be seen in the center of the circular opening in the step riser. A pivoted lever connects this hanger with the pony truck journal box equalizing lever, which in turn is confined at its outer end by a small coil spring bearing against the top bar of the pony truck frame. In this manner all the wheels on one side are equalized. The brake rigging of the motor trucks has not been modified in any way, as the pony truck wheels are not braked.



New Haven Locomotive with Pony Wheels, Showing Main Reservoirs on Cab Roof

The road from Berchtesgaden to Hangender Stein, in Switzerland, is now operated by electricity, energy being obtained from waterfalls. There are two 450-hp turbines, each driving a 1000-volt d.c. generator. Energy is supplied to the motor cars from two trolley wires and each car is provided with two 63-hp three-phase motors with four main poles and interpoles. Still another Swiss road, from Salzburg to Berchtesgaden, will be operated by single-phase current at 10,000 volts. A third road, from Salzburg to the frontier, will employ direct current at 800 volts.

ASSOCIATE MEMBERSHIP IN THE AMERICAN STREET & INTERURBAN RAILWAY ASSOCIATION

The secretary of the American Street & Interurban Railway Association has prepared a small pamphlet entitled "Why You Should Become an Associate Member in the American Street & Interurban Association," which is being distributed to electric railway officers of both member and non-member companies, and to all of those who are interested, directly or indirectly, in electric railway development. The pamphlet contains a number of arguments for joining the association as an associate member, and concludes with an invitation to every one interested to make application for such membership. An associate membership costs $5 a year and brings with it the right of participating in the meetings of any of the affiliated associations, together with a cloth-bound copy of the proceedings of the Engineering and Transportation & Traffic Associations, and such proceedings of the American Association which are printed and generally distributed. The pamphlet contains a list of the associate members at present enrolled and an application blank, which may be filled in and enclosed with the first year's annual dues. The secretary has also sent to associate members of the association a circular letter announcing that the dues for the year ending Sept. 30, 1909, are now payable, and informing the members that at the 1908 convention there was formally adopted a design for an official badge or pin to be worn by associate members. A reproduction of the design of the pin is printed on the circular. It is about ½ in. square, and displays prominently the initials of the American Street & Interurban Railway Association across the center, with the letters A, E, C and T in the corners, representing the Accountants', Engineering, Claim Agents' and Transportation & Traffic Associations. In general appearance, material and construction, the pin is similar to the pins of the national engineering associations. It is made of solid gold, 10 k., 18 gage. The face is of blue enamel, and the lettering and general outline of the design are in raised gold. The first of these pins will be ready about Dec. 1. They will be numbered serially on the reverse side, and will also be inscribed with the name of the owner. The price is $3, postage and registry fee prepaid. The purchase of the pin is not obligatory on the part of associate members, but undoubtedly a large number will be sold.

Harper's Weekly for Nov. 7 contains an article by Edward Hungerford regarding the Cleveland situation. The article is entitled "A 3-Cent Utopia That Failed." The author reviews the situation from 1901 until the referendum vote was taken, on Oct. 22, 1908. The article says that one cannot easily talk theory to a man hanging by a strap in a crowded car and running an imminent chance of suffocation, and concludes that for this reason Mayor Johnson's promises of better service—in the future—of new cars, new express runs and the like went to naught in view of poor service offered in the present.

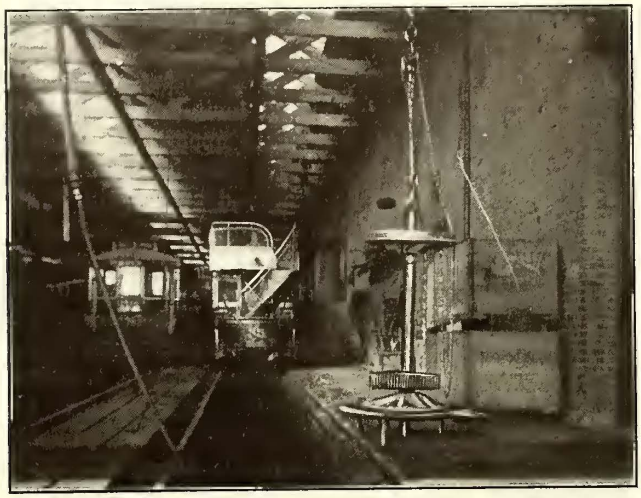
COMMUNICATION

GAS BURNER FOR HEATING TIRES

Christchurch Tramway Board
Christchurch, N. Z., Sept. 17, 1908.

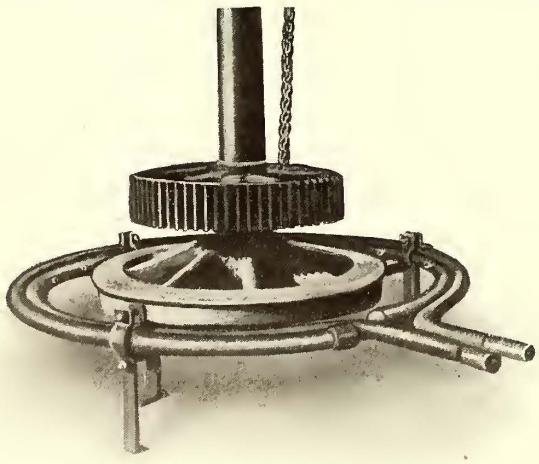
To the Editors:

Your issue of June 13, 1908, describes a gas burner for heating tires, which is used in the shops of the Aurora, Elgin & Chicago Railway Company. I enclose herewith photographs of apparatus designed by our car-shed foreman for the same purpose, and it will be seen from the following figures that the results obtained by it are far ahead of those of the apparatus which you describe:



Gas Burner Mounted in Car House with Serving Hoist

Shrinking on Tires.—One pair tires, 33 in. external diameter, 28 in. internal diameter, can be heated in 25 minutes, using 30 cu. ft. of gas at 7s. 6d. per 1000 cu. ft.; cost of gas, 2.7d. or 5.4 cents; cost of labor, two men, 25 minutes, at 1s. per hour, 10d. or 20 cents; total cost, 12.7d. or 25.4 cents. One pair tires, 20 in. external diameter, 15 in. internal diameter, can be heated in 25 minutes, using 15 cu. ft. of gas; cost of gas, 1.35d. or 2.7 cents; cost of labor, two men, 20 minutes, 8d. or 16 cents; total cost, 9.35d. or 18.7 cents.



Gas Burner for Heating Tires

Removing Wornout Tires.—The 33-in. tires can be removed after using gas for four minutes at a cost of 0.5d. or 1 cent; cost of labor, two men, for 15 minutes, 6d. or 12 cents; total cost, 6.5d. or 13 cents; 20-in. tires, above described, can be removed at approximately the same cost.

In heating new tires the two are placed over the heater at one time. The heater used for shrinking on is slightly different from the one shown in the photograph, as it has vertical instead of horizontal burners.

Briefly described the burner consists of an air pipe and gas pipe, each 1½ in. internal diameter. The burners are formed of short lengths of ¾-in. pipe screwed into the gas ring. The air under pressure is led by ¼-in. pipes through the center of the ¾-in. pipes. The air is obtained from an ordinary blacksmith's rotary fan. Two sizes of burners are used, one for each size of tire. The large size has 12 burners and the small 6.

S. Symington, Engineer.

THE KEYSTONE AIR SANDER TRAP

The accompanying illustration shows the Keystone air sander trap recently designed by the Electric Service Supplies Company, this being the type furnished the Chicago Railways Company for its new cars. This air sander trap is shown in connection with a box or hopper containing a supply of sand which is generally installed underneath the car floor. Sand is blown out of the trap by air pressure taken from the brake system and controlled by a valve placed above the motorman's brake valve or at any other convenient location. The valve referred to is made both single and double, the former being used where only the air sander is installed and the latter or double valve being used when both the air sander and the pneumatic gong or whistle or both are used.

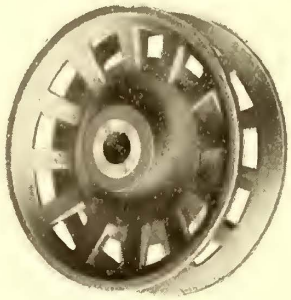
Air Sander Trap

The weight of the sander is supported by shelf *D*, which is part of the trap casting and permits only a limited amount of sand in the bottom of the trap in front of the blow pipe *G;* thus the sand is prevented from packing. Ventilation is secured by means of a pipe *H* which projects from the trap under the shelf and extends through the car floor, thus avoiding collection of moisture in the sand. The rubber gasket *C* makes a waterproof connection between the trap and the car floor; while wire screen *B* prevents large pebbles or foreign matter from getting into or clogging up the trap.

Owing to the general practice of locating the trap below the car floor, it is common to build a wooden hopper *A* to fit under the car seats or to be placed at any other convenient point inside the car. A large removable plug *E* for cleaning purposes is provided at the bottom of the trap. The exhaust pipe *F* is threaded to receive wire or canvas hose.

A NEW SLEET WHEEL

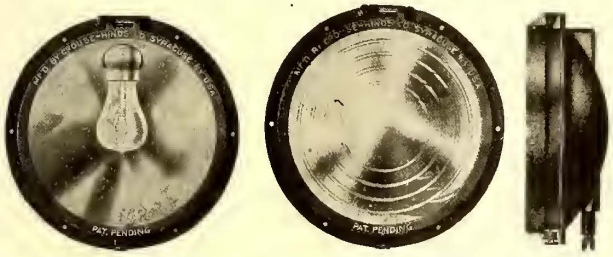
The accompanying illustration shows the sleet cutting trolley wheel made by the United Copper Foundry Company, 634 Huntington Avenue, Boston, Mass. The wheel is made of a special tough copper metal, which, it is claimed, will not burn or rough up as it contains none of the more fusible metals commonly included in copper castings. It also differs in its design from other wheels used for similar purposes in that it has a narrow strip of metal running around the tread. This assures at all times that the wheel has a good contact with the wire and reduces the amount of arcing to the minimum, saving wear on both the wheel and the overhead construction. A much longer life is claimed for this wheel than for any composition wheel in the market.



A New Sleet Wheel

INCANDESCENT HEADLIGHT FOR CITY CARS

To meet the demand of city railways for a headlight that shall project as little as possible beyond the dash of the car, so as to protect it in case of collisions between cars or collisions with vehicles in the street, the Crouse-Hinds Company, Syracuse, N. Y., has recently placed upon the market a full line of flush incandescent headlights arranged to set into the dash. The case and door rim are of heavy cast iron, with a substantial hinge and spring catch. The door is hinged at the top and closes by gravity. The headlight has a parabolic reflector, spun from highly polished heavy sheet aluminum. A simple means is provided for attaching the lamp socket, which allows the use of lamps of various sizes and shapes. By means of the adjustable socket attachment the lamp can always be adjusted to the focal point of the reflector. The headlight is provided with three types of doors—a plain door with glass unprotected; a grid door, which has iron ribs protecting the glass, but in no way diminishing the amount of light; and a semaphore lens type. The accompanying illustrations show a front and side view of the headlight with plain door; also a front view of the headlight with semaphore lens. The new flush type headlight was exhibited at the Atlantic City convention, where it attracted considerable attention. The company offers to send a headlight to any railroad, free of charge, for 30 days' trial.

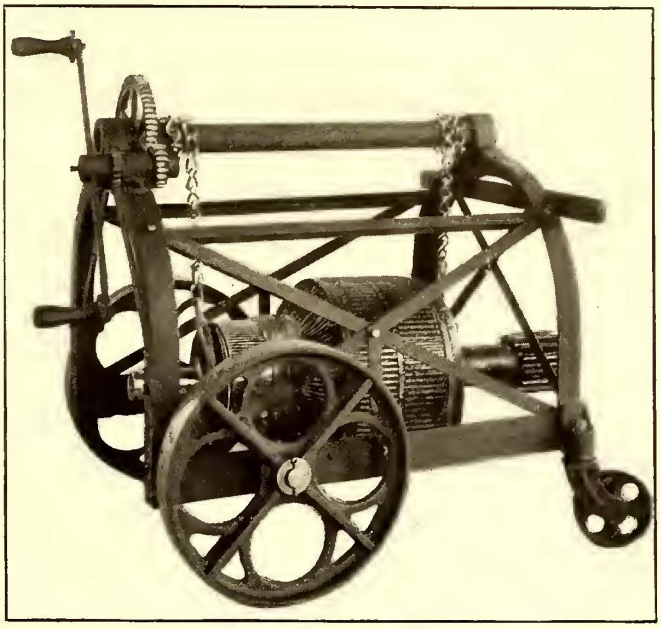


Headlights with Plain Door and with Semaphore Lens Door

The Hastings (England) Tramways Company has refused to run its cars on Sundays owing to the condition imposed by the city that Sunday receipts shall not be taken into account should the city desire at any future time to purchase the road.

IMPROVED ARMATURE TRUCK

Another car barn appliance, which is made by the Device Improvement Company, Hanover, Pa., and has been recently modified and improved, is the self-contained Peerless armature truck shown in the accompanying illustration. The hoisting mechanism of the device is part of the truck. The truck can be run over the armature to be handled by the tongue over the casters, as the front end has only short braces which clear any railway motor armature in use. To raise the armature, the chains are lowered, the hooks placed over the ends of the shaft, and the dog thrown into engagement with the ratchet and the handle revolved until the armature is raised far enough from the floor to insure clearance. As the back gear ratio is large, the heaviest armatures can be raised easily. The armature is then ready for transportation to the point of destination, the steering being accomplished by the tongue over the casters. Contrasted with the usual practice in moving armatures which necessitates the services of several men and planks, blocks, etc., the truck saves labor, time and material, and the armature is not subject to any risk of damage in transportation. The front wheels of the new truck are larger in diameter and of wider face, and are located nearer the center of the frame than in the old trucks, so that they take about 80 per cent of the weight of the armature, and the teeth on the back gearing are larger and heavier. The hooks and chains are also heavier and stronger. The elevating drum is of 2-in. extra heavy pipe. The truck is made of cast iron and steel adequately braced.



Improved Armature Truck

It was thought, says the *Review of the River Plate*, that before the end of the present session of Congress the question of tubes in the city of Buenos Ayres would have been settled, and that at least the concessions applied for by the Western & Amalgamated Railways would have been sanctioned. Such, however, was not to be the case, as it has been resolved by a large majority to shelve the question until next year. This is a bad outlook for the city, which is not in a position to carry out the work, while the railway companies are, and the conditions that they offered to the Government were satisfactory to the community.

News of Electric Railways

Boston & Western Electric Railroad Files Petition for Certificate of Public Exigency

The Boston & Western Electric Railroad has filed with the Massachusetts Railroad Commission a petition for a certificate of public necessity regarding the building of its proposed interurban electric railway between Waltham and Marlboro, Mass. The plans of the company are an outgrowth of those of the Boston, Waltham & Western Electric Railroad, which have been pending before the commission for 15 months. At the request of counsel for the Boston & Western Electric Railroad the board has refrained from issuing an order in this case, as the change in the name of the company and the association of additional persons with the enterprise made it desirable from the point of view of the promoters to present a new petition. The original petition was filed with the board on Aug. 23, 1907, with an estimate of the cost. Briefs were later filed when public hearings were held on the project. The location of the line has been modified slightly since the original plans were made public, although the length and cost are approximately the same as before. The railway as now proposed will extend from the western terminus of the Newton Street Railway on upper Main Street, Waltham, through Weston, Wayland and Sudbury to Main Street near Howe Street, Marlboro, with a branch from the main line in South Sudbury to Main Street, Maynard, a distance of about 22.5 miles. The capital stock of the company is $500,000. The estimated cost of the revised route is:

Engineering and inspection	$11,890
Right of way	29,300
Grading	585,475
Bridges, culverts and trestles	92,093
Ties	37,778
Rails, 80-lb. T	98,934
Track fastenings	14,486
Frogs and switches	3,200
Ballast	41,212
Track laying and surfacing	31,410
Fencing	20,825
Cattle guards, crossings, etc	1,697
Electric power transmission	105,585
Power station, 40 ft. x 90 ft. building, 1000 kw	107,110
Cars, four cars, 100-hp motors	62,000
Telephone line, 7.5 miles at $150	3,600
Total	$1,246,595
Contingencies 10 per cent	124,660
Cost of road	$1,371,255

The directors of the company are Fred T. Ley, Springfield; P. P. Adams, Waltham; Harold A. Ley, Springfield; Morris H. Barnett, Springfield, and F. R. S. Mildon, Marlboro. The counsel for the company are Powers & Hall, Boston. The line will serve a population of 50,000 people living in a section of the State located between the Boston & Maine Railroad and the Boston & Albany Railroad.

Program of the Meeting of the A. S. M. E.

The twenty-ninth annual meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies Building, New York, on Dec. 1, 2, 3 and 4.

On the evening of the opening session, after the presidential address, an informal reception will be held in the auditorium, which will afford the very pleasant opportunity of meeting old friends from all parts of the country, and making new ones. On Wednesday evening "Aeronautics" will be the subject of a non-technical lecture by Lieut. Frank P. Lahm, of the United States Signal Service. Moving pictures of the aeroplane in flight will be thrown on the screen, and a description of its working principles given. On Thursday evening the annual reception will be held. The members and guests will be received by the president, the president-elect and ladies, and other officials of the society.

Six professional sessions will be held, two of them simultaneously with other sessions. There are several papers on miscellaneous subjects of pertinent interest, and an entire session will be devoted to the problems and development of gas power; at another session steam and power plant papers will be considered; and machine shop practice and experimental data will each have a separate session.

The headquarters will be established in the foyer on the first floor of the Engineering Societies Building, in charge of S. Edgar Whitaker. The meetings committee, composed of Charles Whiting Baker, chairman; Willis E. Hall, William H. Bryan, L. R. Pomeroy and Charles Edward Lucke, will be in charge of the convention.

The program follows:

Dec. 1—Opening Session, 8:45 p.m.

The President's Address.

"The Conservation Idea as Applied to the American Society of Mechanical Engineers," by M. L. Holman.

Dec. 2—Professional Session, 9:30 a.m.

Annual business meeting. Reports of the council, tellers, and standing and special committees. New business may be presented at this session.

PAPERS

"The Engineer and the People," by Morris Llewellyn Cooke.

"Aeronautics," Major George O. Squier, Acting Chief Signal Officer, U. S. A.

This will be the first presentation of the subject of aeronautics before a national engineering society in America.

Dec. 2—Professional Session, 2 p.m.

PAPERS

"A Method of Obtaining Ratios of Specific Heat of Vapors," by A. R. Dodge.

"The Total Heat of Saturated Steam," by Dr. Harvey N. Davis.

"Fuel Economy Tests," by C. R. Weymouth.

"An Automatic System for Firing Fuel Oil," by C. R. Weymouth.

Lecture on Aeronautics at 8:15 p.m.

Lieut. Frank P. Lahm, of the Signal Corps, U. S. A., a member of the aeronautical board, will deliver an illustrated lecture on "Aeronautics," which will be found interesting to every member and also to the ladies.

Dec. 3—Professional Session, 9:30 a.m.

PAPERS

"Efficiency Tests of Milling Machines and Milling Cutters," by A. L. DeLeeuw.

"Metal Cutting Tools Without Clearance," by James Hartness.

"Interchangeable Involute Gear Tooth Systems," by Ralph E. Flanders.

"Durability of Gears in Electric Railway Service," by Norman Litchfield.

"Industrial Photography," by S. Ashton Hand.

Professional Session, 2 p.m.

PAPERS

"Articulated Compound Locomotives," by C. J. Mellin.

"Liquid Tachometers," by Amasa Trobridge.

"Training Workmen," by H. L. Gantt.

"An Averaging Instrument for Polar Diagrams," by Prof. W. F. Durand.

"Salt Manufacture," by George B. Willcox.

Dec. 3—Gas Power Section—Simultaneous Session, 2 p.m.

Business meeting.

"Reminiscences of a Gas Engine Designer," by L. H. Nash.

"Possibilities of the Gasoline Turbine," by Prof. F. C. Wagner.

The reception at 9 p.m. is to be held in the Engineering Societies Building. The president and president-elect will receive the members and guests in the auditorium. Dancing will follow the reception and will continue throughout the evening on the fifth floor. Supper will be served from 10 until 12 o'clock. Cards of admission will be required from all members and guests, and can be procured at the registration desk.

Dec. 4—Professional Session, 9:30 a.m.

EXPERIMENTAL DATA

"Physical Properties of Carbonic Acid and the Conditions of Its Economic Storage for Transportation," by Prof. R. T. Stewart.

"The Slipping Point of Rolled Boiler Tube Joints," by O. P. Hood and Prof. G. L. Christensen.

"Tests on Friction Clutches for Power Transmission," by Prof. Richard G. Dukes.

Proposal to Ratify Westinghouse Readjustment Plan

A special meeting of stockholders of the Westinghouse Electric & Manufacturing Company has been called for Nov. 24, 1908, to take action upon the following matters: 1. The increase in number and the classification of the board of directors, in accordance with the Act of the Assembly of the Commonwealth of Pennsylvania, approved June 17, 1887. 2. The adoption of new by-laws or the amendment

of the present by-laws of the company in such respects as may be deemed necessary to carry into effect the "modified or substitute plan for the readjustment of debt" of the company, heretofore adopted by the board of directors, and in such other respects as may be deemed advisable. 3. The election of a board of directors. 4. The election of a proxy committee. 5. The consideration of the "modified or substitute plan for the readjustment of debt" of the company, which has been adopted by the board of directors, and the adoption of such resolutions as may be necessary to carry said plan into effect. The special meeting of stockholders of the company, heretofore called for April 29, 1908, to take action upon an increase of the capital stock of the company, and adjourned from time to time, will also be held at the office of the company at East Pittsburg on the same date. A circular addressed to the stockholders on Nov. 11 by Charles A. Terry, secretary of the company, says in part:

"The modified plan for the readjustment of the debt of the company will require approximately $14,200,000 of new assenting stock of the company, to be issued to holders of the merchandise debt and bank debt and to stockholders who have subscribed for new stock in cash. Of the present authorized assenting stock of the company $12,500,000 is reserved against the convertible gold bonds of the company, and $23,940,000 is issued, leaving only $9,560,000 unissued. It is therefore necessary to increase the authorized capital of the company, and at that meeting of stockholders it is proposed to authorize $10,000,000 of additional stock, the increased stock to have all the rights, priorities and privileges of the present assenting stock of the company.

"The arrangements finally approved by the various committees involve the election of a board of 16 directors, which is to be classified into four classes of four members each, the term of the first class expiring at the date of the next annual meeting of the company, July 28, 1909, and that of the other classes in one, two and three years from that date respectively.

"It is also proposed, in compliance with the plan, to constitute a proxy committee to remain in existence for five years.

"The necessary amendments to the by-laws to effectuate these requirements of the plan, and also other amendments dealing with the future management and direction of the operations of the company will be placed before the stockholders for adoption at the meeting, at which, or an adjournment thereof, the new board of directors and a proxy committee will be elected."

Grooved Rail Question at Columbus.—Residents on McDowell and Mound Streets, Columbus, have asked that these thoroughfares be paved, saying they cannot wait until the suits are settled, which have been brought to test the authority of the city to dictate the kind of rails to be used.

Strike in Rome, Ga.—The union employees of the Rome Railway & Light Company, Rome, Ga., went on strike on Nov. 7, and the city was practically without car service and light on Nov. 8. On Nov. 9, however, the places of the strikers were filled and the full complement of cars was placed in service.

Manhattan Railway, New York, N. Y., Elects Directors.—At the annual meeting of the Manhattan Railway, New York, Dumont Clarke was elected a director to fill the place of G. P. Morosini, deceased, and Frank J. Gould was elected a director to fill a vacancy. The old officers and the members of the executive committee were re-elected.

Rochester Railway Employees' Association Annual Ball.—The ninth annual ball of the Rochester Railway Employees' Association was held at the Hotel Seneca, Rochester, N. Y., on Wednesday evening, Nov. 18. There was a large attendance and the affair was very successful. The proceeds from the sale of tickets will be devoted to the general relief fund of the association.

Port Arthur Commission Must Vacate.—The Ontario Railway & Municipal Board has granted an order to compel the local commission at Port Arthur, Ont., which has control of the Port Arthur Electric Street Railway, to surrender its powers to the new joint commission, of which two members were appointed by Port Arthur and two by Fort William, and the fifth by the Ontario Railway Municipal Board.

Rights Granted for Monorail Road in New York.—The Public Service Commission of the First District of New York has granted permission to the American Monorail Company, of which Bion L. Burrows is president, to change the motor power of the City Island Railway between Bartow Station on the New York, New Haven & Hartford Railroad and Belden Point, City Island, to electricity and to equip the road for operation on the monorail system.

New York Public Service Commission Concludes Fender Tests.—The series of tests of fenders and wheel guards conducted by the Public Service Commission of the First District of New York at Schenectady and Pittsburg has been concluded. At Schenectady 35 devices were tested on the experimental track at the works of the General Electric Company, and at Pittsburg 33 devices were tested on the experimental track at the works of the Westinghouse Electric & Manufacturing Company, making a total of 68 devices tested.

Transfers in Seattle.—The City Council has no authority to revoke the franchise of the Seattle, Renton & Southern Railway, because it refuses to issue transfers on the basis provided for in the grant to the Seattle Electric Company, according to the statement of Scott Calhoun, corporation counsel. The Seattle, Renton & Southern Railway has signified its willingness to give transfers according to its own plan and according to the terms of its own franchise. The corporation counsel holds that in doing this the railroad is within its rights.

New Subway for New York.—The commission appointed by the appellate division of the Supreme Court of New York to pass upon the plans drawn by the Public Service Commission of the First District of New York for the proposed Broadway-Lexington Avenue subway from the Battery to the Bronx has filed a report with the court in favor of the route advocated by the commission. When the court issues its permit the plans will be submitted to the Board of Estimate of New York for approval. Should that body agree to the route the Public Service Commission will advertise for bids and award the contract for the construction of the road.

Suit to Annul Agreement Between City and Company in Philadelphia.—Contending that the agreement between the city of Philadelphia and the Philadelphia (Pa.) Rapid Transit Company is unconstitutional and prejudicial to the city's interests, Elmer E. Brode, through his attorneys, has filed a bill in equity to have the contract annulled. The complaint states that the agreement is unconstitutional in that it authorized a municipal corporation to loan its credit to a private company, and that it should be declared inoperative, because it does not contain the approval of the city solicitor, as required by the Act of June 1, 1885.

Providence Tunnel Opened.—The New York, New Haven & Hartford Railroad opened the new tunnel in Providence, which is a connecting link between the Union Station, Providence, and the company's lines in East Providence, on Nov. 15. The tunnel is designed to increase traffic facilities on the shore line of the company between New York and Boston and afford a direct entrance to Providence for the electric suburban lines from Fall River and Boston. A two-level station will be built in East Providence to facilitate the interchange of traffic between the lines operating to the Union Station, Providence, through the tunnel and the electric railways centering in East Providence.

Regular Monthly Meeting of the New England Street Railway Club.—The regular monthly meeting of the New England Street Railway Club will be held at the American House, Boston, on Thursday, Nov. 19, instead of on the regular date, Nov. 26, which is Thanksgiving Day. Dinner will be served at 7 o'clock to members and their guests. Tickets for the dinner can be secured from the secretary, John J. Lane, 12 Pearl Street, Boston, by members for 75 cents and for their guests $1.25. At 8 o'clock the regular business meeting will be held, after which J. F. Vaughan, engineer with the Stone & Webster Engineering Corporation, will speak on the subject, "The Economic Use of Water Powers and the Trend of Their Development."

Massachusetts Street Railway Association Meeting.—The regular monthly meeting of the Massachusetts Street Railway Association was held at Young's Hotel, Boston, on the evening of Nov. 11. The principal speaker of the evening was J. J. Flynn, Lawrence, Mass., who made an address on "Attractions at Parks; or, How Parks Can Be Made to Return a Profit." Mr. Flynn pointed out the importance of adequate equipment in operating parks, emphasized the value of high-class attractions, and said that in order for a park to be a success it is desirable that the administrative details be removed from the shoulders of the railway officer and the burden sustained by park managers of experience, particularly in the case of theatrical attractions.

Hearing on Proposed Freight Subway for New York.—A hearing was held before the Public Service Commission of the First District of New York on Nov. 11 on the proposed freight subway which the Amsterdam Corporation is seeking to build and which is intended to facilitate the handling of goods between the railroad freight terminals and the points of wholesale distribution in New York. W. J. Wilgus, who had previously explained the plan in detail for the

corporation, considered the objections to the plan, and suggested remedies. Representatives of commercial and civic organizations argued generally for the subway, but objected to some of the locations traversed and suggested extensions to cover outside territories in order to relieve the factory congestion of lower New York. A proposed substitute for the plan of the Amsterdam Corporation was submitted by Charles N. Fowler, who proposed a combined subway and surface road along the west side water front.

Chamber of Commerce of New York to Inquire Into Rapid Transit Situation.—The Chamber of Commerce of New York, at its recent monthly meeting, at the suggestion of A. Barton Hepburn, president of the Chase National Bank, adopted as follows: Whereas, The present rapid transit facilities of New York are insufficient to meet the needs of a rapidly growing population, resulting in increasing congestion of the main arteries of travel; and, Whereas, It appears that the construction of the additional lines of rapid transit that are needed is delayed and obstructed by causes that should be clearly established in order that they may be removed; now, therefore, be it Resolved, That the Executive Committee of the Chamber of Commerce of the State of New York recommends to the Chamber that a special committee of five be appointed by the president for the purpose of thoroughly investigating the conditions now surrounding the question of the construction of further rapid transit lines in New York, and of reporting its findings to the Chamber with such recommendations as the special committee may see fit to make. J. Edward Simmons, president of the Chamber, announced on Nov. 11 that he had selected E. H. Outerbridge, Paul M. Warburg, H. C. Smith, C. H. Kelsey and Marcellus H. Dodge as members of the committee..

Explosion in the Power Plant of the Milwaukee Northern Railway.—On Friday, Nov. 13, about noon, one of the gas holders in the gas engine power plant of the Milwaukee Northern Railway, at Port Washington, Wis., exploded and temporarily put the power plant out of commission. An investigation showed that the explosion was due to the accidental admission of air into the gas holder and the ignition from the producer of the explosive mixture thus formed in the holder. The holder was completely wrecked and the connecting piping was badly damaged, but within 20 hours the piping in the producer house was sufficiently repaired to allow starting up the plant as suction producers by by-passing around the gas holders. The plant is now being temporarily operated in this way and no trouble has been experienced. No damage was done to the producers or to the engines and generators in the adjoining buildings. The force of the explosion was comparatively slight, due to the fact that the gas was under very low pressure at the time. A number of men who were standing within 30 ft. of the holder at the time of the explosion were not injured. Immediately after the explosion all cars on the system were stopped for lack of power, but by evening the entire system was in operation again, with current obtained from the power houses of the Sheboygan Street Railway Company and The Milwaukee Electric Railway & Light Company.

Report on Chicago Loop Improvements.—The report of the committee appointed by the Association of Commerce to consider the question of lengthening the stations on the Loop, Chicago, has been completed. In a letter to the executive committee of the association under date of Nov. 16, it is set forth that no serious objection to increasing the size of the platforms has been found other than the fear that it might encourage a delay in the revision of the present system of loop transportation. After explaining the conferences held with various bodies on the subject, the report continues: "Your committee also made a trip around part of the union loop during rush hours in the evening with representatives of the elevated railways in order to obtain a practical demonstration of the necessity of using these contemplated extensions, and after considering all the points in question your committee unanimously reports as follows: "We find that the proposed extension of the platforms would increase the capacity of the loop from 20 per cent to 25 per cent by allowing the loading and unloading of two trains of six cars each at one time on each track. At present only one train of five cars can be accommodated on each track. The extension platform structures already are built at nearly all stations, and the flooring over would not affect the light of adjoining property to any appreciable extent. We therefore believe that the contemplated extensions should be completed for use at as early a date as possible, thus adding greatly to the accommodation of the general public during the morning and evening rush hours." The report concludes with the statement that "the railroads will be found willing to co-operate in any reasonable proposals."

Financial and Corporate

New York Stock and Money Markets

November 18, 1908.

The stock market continues strong and active. For every day during the past week, in fact for every day since the election, the sales of stocks have passed the million-share mark. This means that the public, after having waited for months, is finally investing, but it does not indicate—as some pessimists assert—that the insiders who have been in control of the market since last spring are unloading. Of course, there have been a few reactions caused by profit taking. These are to be expected. The advance in prices has been so sudden and so marked that the profits of speculators are too alluring to be neglected. One of the striking features of the market is its apparent ability to absorb all of the offerings that are made. Sellers seem to be less eager than buyers. The Street is full of rumors that breed optimism. Vast projects of extension and improvement are talked of on every corner, and both the industrials and railroads give promise of large earnings.

There seems to be no end to the desire of the public for good mortgage bonds. The $20,000,000 of Illinois Central 4s which were offered last week by Kuhn, Loeb & Company were over-subscribed many times. All good bonds are in demand, and the houses which make this character of business a specialty have difficulty in filling orders.

The money market remains cheap, with apparently an unlimited supply in sight. The borrowing demand is stronger than it has been, but it seems to have no effect upon the surplus. The quotations to-day were for call money, 1½ to 2 per cent; for 90-day paper, 3¼ to 3½ per cent.

Other Markets

In the Philadelphia market, Rapid Transit continued to be the most active stock. There is some pressure to sell and the price has receded from the high figures of a few weeks ago. The closing quotation to-day was 21½. Philadelphia Traction and Union Traction were both active at lower prices.

There was little doing in traction securities in the Chicago market, except in the Chicago Railways certificates. In these the principal trading was in Series 2, which was quoted at 46⅛. Series 3 sold for 23⅜. Series 1 has almost disappeared from the market.

In the Boston market Massachusetts Electric, both preferred and common, were the leading traction issues. The former sold at 57 and latter at 12. Fitchburg preferred advanced to 129; Boston Elevated sold down to 126, and Suburban preferred went up to 58.

Union Railways bonds continued to be the active traction feature in the Baltimore market. The 4s sold at 86 and the incomes at 55, and large blocks of each issue changed hands.

Since the appointment of receivers for the Municipal Traction Company and the Cleveland Railway Company, one sale of stock of the latter has been made at 80. This is the first trading that has been done in it for some time. W. B. & A. pooling certificates have vacillated between 8¼ and 9½ for the past week. One sale of Northern Ohio Traction & Light was made at 19½ and several sales of Aurora, Elgin & Chicago were made around 34.

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

	Nov. 10.	Nov. 17.
American Railways Company, Philadelphia	45⅛	46
Boston Elevated Railways	130	126¼
Brooklyn Rapid Transit Company	55⅛	55⅝
Chicago City Railway	a179	180
Cleveland Railway	—	—
Consolidated Traction Company of New Jersey	a70	a71
Consolidated Traction Company of New Jersey, 5 per cent bonds	a104	a104
Detroit United Railway	50	56
Interborough-Metropolitan Company	10½	14⅜
Interborough-Metropolitan Company (preferred)	31⅝	35¾
Manhattan Railway	140	144
Massachusetts Electric Companies (common)	10¾	11½
Massachusetts Electric Companies (preferred)	54¾	57
Metropolitan West Side Elevated Railway, Chicago (common)	a13	a20
Metropolitan West Side Elevated Railway, Chicago (preferred)	a44	a45
Metropolitan Street Railway	*24	31¾
North American Company	a73	73
Philadelphia Company, Pittsburg (common)	41½	41¾
Philadelphia Company, Pittsburg (preferred)	42	42½
Philadelphia Rapid Transit Company	20⅛	21½
Philadelphia Traction Company	89	88½
Public Service Corporation, 5 per cent collateral notes	a98	a97½
Public Service Corporation certificates	a69	a74
Twin City Rapid Transit Company, Minneapolis (common)	93½	95½
Union Traction Company, Philadelphia	49	49⅝

a Asked.
* Last sale.

Assessment of Street Railways of Wisconsin for 1908

The Wisconsin State Board of Assessment has made public the schedule of values of the electric railways of Wisconsin as fixed by the board. In the following table are given the preliminary assessment, final assessment and tax of each company in the State and the percentage of the tax retained by the State and the percentage retained for distribution to the towns, cities and villages through which each operates:

Name of company.	Preliminary assessment.	Final assessment.	Total tax.	15 per cent retained by state.	85 per cent for distribution to towns, cities and villages.
Ashland L., P. & St. Ry. Co.	$140,000	$130,000	$1,497	$224	$1,272
Beloit Traction Co.	70,000	62,000	714	107	607
Chippewa Valley Ry., L. & P. Co.	750,000	590,000	6,792	1,019	5,773
Duluth St. Ry.	900,000	700,000	8,059	1,209	6,850
Eastern Wis. Ry. & L. Co.	750,000	630,000	7,253	1,088	6,165
Green Bay Traction Co.	900,000	775,000	8,922	1,338	7,584
Janesville Street Ry.	40,000	37,000	426	64	362
Kenosha Electric Ry.	200,000	160,000	1,842	276	1,566
La Crosse & Onalaska St. Ry.	18,000	18,000	207	31	176
La Crosse City Ry.	500,000	465,000	5,353	803	4,550
Manitowoc & Northern Traction Co.	145,000	125,000	1,439	216	1,223
Menominee & Marinette L. & Tr. Co.	230,000	215,000	2,475	371	2,104
Merrill Railway & Lighting Co.	180,000	110,000	1,266	190	1,077
(The) Milwaukee Electric Ry. & L. Co.	22,000,000	21,250,000	244,638	36,696	207,942
Milwaukee L., H. & Traction Co.	5,200,000	4,900,000	56,410	8,462	47,949
Milwaukee Northern Ry.	560,000	560,000	6,447	967	5,480
Rockford & Interurban Ry.	325,000	295,000	3,396	509	2,887
Sheboygan L., P. & Ry. Co.	650,000	610,000	7,023	1,053	5,969
Southern Wis. Ry.	675,000	620,000	7,138	1,071	6,067
Twin City General Electric Co.	60,000	40,000	460	69	391
Waupaca Electric Light & Ry. Co.	85,000	80,000	921	138	783
Wausau Street Railroad	70,000	70,000	805	121	685
Winnebago Traction Co.	625,000	590,000	6,792	1,019	5,773
Wisconsin Traction, L., H. & P. Co.	1,025,000	900,000	10,361	1,554	8,807
Totals	$36,098,000	$33,932,000	$390,638	$58,596	$332,042

Report of Boston Elevated Railway for Year Ended Sept. 30

The report of the Boston (Mass.) Elevated Railway for the year ended Sept. 30, 1908, as filed with the Railroad Commissioners of Massachusetts, compares as follows with the previous year:

	1908	1907
Gross receipts	$14,074,696	$13,952,966
Operating expenses	9,454,385	9,647,145
Net earnings	$4,620,310	$4,305,821
Receipts from other sources		58,201
Net income	$4,620,301	$4,364,022
Fixed charges	3,780,247	3,532,743
Balance	$840,063	$831,279
Dividends	798,000	798,000
Surplus	$42,063	$33,279

Capital Stock Assessments in Illinois

The total capital stock assessment made by the board of equalization of Illinois for 1908 is $18,702,148, an increase of $8,092,000 over the assessment for 1907. The total assessment of the 896 miles of interurban and electric railroads is $8,557,631. A year ago the street and electric railways totaled 849 miles and the assessment was $7,852,520. Following is the assessment of these companies for 1908:

Aurora, Dekalb & Rockford Electric Traction Co.	$41,300
Aurora, Elgin & Chicago Railroad	278,332
Bloomington, Pontiac & Joliet Electric Railway	49,311
Chicago, Bloomington & Decatur Railway	101,702
Chicago & Des Plaines Valley Electric Railway	119,909
Chicago & Milwaukee Electric Railway	299,944
Chicago & Oak Park Elevated Railroad	565,056
Danville, Urbana & Champaign Railway	168,978
East St. Louis & Suburban Railway	233,337
Elgin & Belvidere Electric Co.	93,086
Galesburg & Kewanee Electric Railway	41,702
Illinois Central Traction Co.	128,687
Illinois Valley Railway	136,523
Joliet & Southern Traction Co.	77,946
Metropolitan West Side Elevated Railroad	1,819,981
Northwestern Elevated Railroad	1,035,329
Paris Traction Co.	12,504
Peoria, Bloomington & Champaign Traction Co.	97,021
Rockford, Beloit & Zanesville Railroad	44,965
Rockford & Interurban Railway	183,445
Rock Island-Southern Railroad	43,642
St. Louis, Decatur & Champaign Railway	129,463
South Side Elevated Railroad	1,407,228
Springfield, Clear Lake & Rochester Interurban Railway	10,098
Springfield & Northeastern Traction Co.	70,136
Sterling, Dixon & Eastern Electric Railway	57,532
Suburban Railroad	86,491
Chicago, Harvard & Geneva Lake Railway	12,416
Chicago & Southern Traction Co.	98,368
Dekalb-Sycamore & Interurban Traction Co.	21,156

Atlantic City & Suburban Traction Company, Pleasantville, N. J.—The first mortgage bondholders, who bought the property at foreclosure on Oct. 31 for $91,000, will reorganize the company as the Atlantic & Suburban Railway Company. Robert Wetherill, Chester, Pa., is chairman of the bondholders' committee.

Aurora, De Kalb & Rockford Electric Traction Company, Aurora, Ill.—The property of the Aurora, De Kalb & Rockford Electric Traction Company will be sold by John S. Sears, master in chancery, at the County Court House in Geneva, Ill., on Nov. 30. The company operates 30 miles of electric railway from Aurora through Kaneville and Maple Park to De Kalb.

Babylon (N. Y.) Railroad.—The Public Service Commission of the Second District of New York on Nov. 9 heard the application of the Babylon Railroad for consent to issue $400,000 in bonds and to increase its stock from $25,000 to $100,000. One of the purposes for which the bonds are to be issued is to take up $117,000 in bonds issued last September in payment of debts.

Boston & Northern Street Railway, Boston, Mass.—The Massachusetts Railroad Commission has approved the petition of the Boston & Northern Street Railway to issue 7236 shares of 6 per cent cumulative stock at $110 per share, amounting at par value to $723,600, to be applied to liquidate floating obligations.

Boston (Mass.) Elevated Railway.—A formal call for a special meeting of the stockholders of the Boston Elevated Railway has been issued, at which stockholders will be asked to approve an issue of $7,000,000 new stock and determine the price at which the new shares shall be issued. The proceeds of the issue will be used to defray the expenses of building the proposed Cambridge subway.

Camden & Trenton Railway, Camden, N. J.—In the United States Court on Nov. 10 argument was heard on the return of the rule to show cause why a mortgage of the Provident Life & Trust Company, Philadelphia, against the Camden & Trenton Railway should not be foreclosed, and also why a receiver should not be named by the Federal Court to take the place of Wilbur F. Sadler, Jr., Trenton, who was named by the Court of Chancery. Judge Cross adjourned the case for two weeks.

Chicago (Ill.) Consolidated Traction Company.—David R. Forgan and John M. Roach, receivers of the Chicago Consolidated Traction Company, submitted to Judge Grosscup in the United States Circuit Court on Nov. 11 a report in which it is stated that the company is unable to pay interest amounting to $83,390 on the underlying bonds of the company, and that the receivers will be unable to borrow the $400,000 required for improvements in the spring and summer of 1909 unless they are allowed to pledge the net receipts of the company for the retirement of the obligations. The instructions from the court to the receivers were to make the payment in such a way as would bring to its knowledge the identity of the bondholders, that they might be brought into court by committee or in person upon the questions raised. In explaining the case, Judge Grosscup said: "Early in the summer, when an installment of interest on these bonds was coming due, the receivers brought to the attention of the court that, owing to the expenditure toward rehabilitation, under the city ordinances, the earnings were absorbed in operation, maintenance and improvements, and asked for instructions as to the payment of interest. The instruction was to pay the interest, there being no satisfactory showing that the interest charges were not earned. In November another interest payment fell due. But approaching that date another petition was presented setting forth the earnings of the company for the past five or six years, and the expenditures, and asking again for instructions. Here again the showing did not satisfy the court that the interest was not earned, and again the interest was ordered paid."

Manchester Traction, Light & Power Company, Manchester, N. H.—The Manchester Traction, Light & Power Company has been granted permission by the Railroad Commissioners of New Hampshire to increase its capital stock $400,000, the Manchester & Nashua Street Railway to increase its stock $40,000 and the Manchester & Derry Street

Railway to increase its stock $50,000. The Manchester Traction, Light & Power Company proposes to take over the stock of the Manchester & Nashua Street Railway and the Manchester & Derry Street Railway and $275,000 of the stock of the Manchester Street Railway. This will leave a balance of $35,000 for extensions and improvements.

Metropolitan Street Railway, New York, N. Y.—The bondholders' committees representing the general and collateral 5 per cent bonds and the refunding 4 per cent bonds of the Metropolitan Street Railway have appointed a joint committee of four with authority to take the necessary steps to formulate a plan for the readjustment and reorganization of the securities and properties of the Metropolitan Street Railway. The committee consists of Donald Mackay and William P. Dixon, chosen by the bondholders' committee representing the holders of the general and collateral 5 per cent bonds, and John W. Castles and Otto H. Kahn, chosen by the bondholders' committee representing the holders of the refunding 4 per cent bonds. In addition, Alexander J. Hemphill, chairman of the bondholders' committee of the general and collateral 5 per cent bonds, and E. S. Marston, chairman of the bondholders' committee of the refunding 4 per cent bonds, have been designated ex-officio by the respective bondholders' committees to co-operate with the joint committee in its work and conference. The joint committee has been organized as follows: John W. Castles, chairman; Alex. J. Hemphill, secretary, and L. C. Krauthof, counsel.

Mt. Vernon Railway & Light Company, Mt. Vernon, Ohio.—The property of this company, including the street railway, electric light plant and Lake Hiawatha Park, a summer amusement park, was sold at receiver's sale on Nov. 7 to P. B. Chase, Washington, D. C. The consideration is reported to be $40,400.

New York & Queens County Railway, Long Island City, N. Y.—The New York & Queens County Railway has paid the city of New York $325,980, the greater part of which represents arrears in taxes for 10 years prior to 1907 which had been levied on real estate and special franchises.

Norfolk & Portsmouth Traction Company.—This company, through Edward B. Smith & Company, Philadelphia, offers for subscription $50,000 first mortgage 5 per cent gold bonds, due June 1, 1939, interest payable June 1 and Dec. 1. The bonds are part of an authorized issue of $8,000,000, of which $5,720,000 is now outstanding, and are subject to call at 110 and interest on any interest day on 60 days' notice. In reviewing the property on which the bonds are first lien, the company says that its lines in Norfolk, Portsmouth and Berkeley serve a population in excess of 150,000 and gives a comparative statement of earnings for 1907 and 1906, which shows a surplus of charges for 1907 of $127,204 as against $92,244 for 1906.

Northwestern Elevated Railroad, Chicago, Ill.—Representatives of leading interests in the Northwestern Elevated Railroad have taken up the matter of refunding the company's 4 per cent bond issue, which matures Sept. 1, 1911. The present amount of the bonds outstanding is $19,498,000. It is hoped that the larger part of the issue can be refunded by an issue of 4½ per cent bonds.

Old Colony Street Railway, Boston, Mass.—The Massachusetts Railroad Commission has approved the petition of the Old Colony Street Railway to issue 3727 shares of 6 per cent preferred stock at $110 a share, amounting to $372,700, to be applied to liquidate floating obligations.

Second Avenue Railroad, New York, N. Y.—Geo. W. Linch, who was recently appointed receiver of the Second Avenue Railroad by the State Court, took possession of the property of the company on Nov. 12.

Toledo & Western Railroad, Toledo, Ohio.—Toledo and Cleveland banks are said to be purchasing the coupons of these bonds for the company and paying the interest to the holders. This interest was due July 1 and will all be paid in this way before Jan. 1, it is expected.

Toledo Railways & Light Company, Toledo, Ohio.—No steps have been taken to pay the July interest on the 4 per cent bonds of the Toledo Railways & Light Company, it is said, and nothing will probably be done about the matter until the plans being formulated by the committee of bondholders and stockholders are put into effect. Interest on collateral loans and the floating debt has all been paid and the committee has been repaid for the money advanced for the January interest.

Washington Water Power Company, Spokane, Wash.—A special meeting of the stockholders of this company will be held on Dec. 1, 1908, for the purpose of authorizing an issue of $15,000,000, 30 year, 5 per cent bonds, to be secured by a mortgage on all the property and franchises of the company. The capital stock of the company previously authorized is to be increased $1,003,260.

Traffic and Transportation

Metropolitan Street Railway Authorized to Issue Additional Receivers' Certificates.

The application of the Federal receivers for the Metropolitan Street Railway, New York, to sell $200,000 of receivers' certificates and use the proceeds to repair the track of the Fourth and Madison Avenue line of the company, was granted by Judge Lacombe in the United States Circuit Court on Nov. 16. In granting the application, Judge Lacombe said:

"It is true that the Fourth and Madison Avenue line is a leased line, but it is a leased line which is an essential element of the system, being the sole connection with the main entrance to the Grand Central station, and apparently profitable. There is nothing to indicate that the receivers should elect to give up this contract, and the application must be decided on the assumption that it will be beneficial for the system as a whole to operate under the lease. But if the lease is to continue, its covenants must be fulfilled and the road kept in repair, otherwise there will be a breach for which the lease may be terminated.

"That the road is in a condition of great disrepair is manifest and not disputed. Efficient public service cannot be maintained without extensive repairs. Moreover, upon this line are run the new pay-as-you-enter cars, in which for insurance moneys and proceeds of receivers' certificates there is invested more than $1,000,000. This rolling stock is exposed to much more rapid deterioration by being run over a road in such wretched condition. It certainly seems a most short-sighted policy to expose this valuable property to such adverse conditions of operation which may be eliminated by putting the tracks in decent condition."

Through Routes and Joint Rates in New York Before the Courts

Following the action of the New York Public Service Commission, First District, in passing a final order directing the establishment of through routes and joint rates on Nov. 22 by the Metropolitan Street Railway and the Central Park, North & East River Railroad, the matter was taken into court. The vote on the order was four to one, Commissioner Bassett voting, as in the previous instance, in the negative. The order was practically in the same form as the original order, an abstract of which was published in the Electric Railway Journal of Nov. 7, 1908, page 1331. Upon the motion of counsel for the receivers of the Metropolitan Street Railway, Justice Truax, of the State Supreme Court, issued a writ of certiorari on Nov. 11, calling upon the commission to turn over to the court the record of the testimony taken in the hearings on the transfer matter, so that the court might determine whether the commission had jurisdiction. A similar writ was issued by Justice Truax on Nov. 12 at the request of the officials of the Central Park road. The writs were issued on representation of counsel for the companies that the commission was without jurisdiction to issue its order for transfers; that the order confiscates the property of the plaintiff company without due process of law, and, in the case of the Central Park line, that the compensation given the company is less than the cost of service.

Counsel for the commission has started proceedings for the quashing of the writs of certiorari. An application has been made to the appellate division for the dismissal of the writ. Argument on that application will be made, and it is announced that if the decision should be in favor of the commission a $5,000 penalty for each day's violation of the commission's order will be put in force against both companies.

In the opinion of Chairman Willcox, of the commission, who is a lawyer, certiorari proceedings cannot act as a stay against the order. He is quoted as saying that the Public Service Commission was really a legislative body, inasmuch as it was exercising powers which were transmitted to it by the State Legislature, and that to his mind the only way by which the railroad companies could refuse to obey the orders issued by the commission was by proving that the Legislature had not the constitutional right to invest such power in an appointive commission.

The companies have sent formal notification to the commission on the subject. The receivers of the Metropolitan Street Railway stated:

"We have applied for and obtained from the Supreme Court a writ of certiorari to review the action of your board in making the order in question, and pending proceedings thereunder we must decline to accept or obey the terms of said order."

The Central Park line said in its letter: "You are hereby notified that the Central Park, North & East River Railroad Company, through James A. Macdonald, its president, does not accept and therefore will not obey the terms of 'Orders Nos. 815 and 830' of the Public Service Commission."

Increase in Travel Between New York and Brooklyn

The Public Service Commission of the First District of New York and the Bridge Department of New York have filed their joint report for the year, showing the daily average travel between New York and Brooklyn by the ferries, the subway and the bridges. The travel has increased from 163,000 to 182,000, or about 12 per cent, and in both directions was distributed approximately as follows:

	Per cent
Ferries	20
Williamsburg Bridge	23
Brooklyn Bridge	37
Subway	20
Total	100

These are the detailed figures:

FERRIES

	To N. Y.	From N. Y.	Total
On 16 ferries	83,311	81,431	164,742

WILLIAMSBURG BRIDGE

Brooklyn Rapid Transit Company's elevated lines	20,787	24,626	45,413
Brooklyn Rapid Transit Company's surface lines	40,966	43,483	84,449
N. Y. City Railway Company's lines	25,573	22,801	48,274
Promenade	1,967	1,921	3,888
Total	89,293	97,731	182,024

BROOKLYN BRIDGE

Elevated lines	106,097	87,608	193,705
Surface lines	51,355	55,962	107,317
Promenade	4,082	4,711	8,793
Total	161,534	148,281	309,815
Subway	79,438	80,270	159,708

SUMMARY

Ferries	83,311	81,431	164,742
Williamsburg Bridge	89,293	92,731	182,024
Brooklyn Bridge	161,534	148,281	309,815
Subway	79.438	80,270	159,708
Total	413,576	402,713	816,289

The count from which the figures were obtained was made beginning at 2 a. m. on Nov. 5 and ending at 2 a. m. on Nov. 6. This was assumed to be a fair average day.

Campaign Against Accidents in Michigan

The Houghton County Traction Company, Houghton, Mich., is conducting a campaign against accidents, principally through the press. Placards are carried in the cars showing the correct and incorrect ways to board and alight from cars, and advertisements are run in the local papers at Houghton calling the attention of the public to the risks to which they frequently are subject through their own negligence and pointing out the necessity for co-operation in an effort to avoid accidents. In a letter addressed recently to the editor of the Houghton *Gazette*, W. H. McGrath, manager of the Houghton County Traction Company, said in part:

"There is no way to make humanity careful except by education. You can reduce loss of life and limb in American life by rules and regulations and signals and guards, but there is one thing which will do more than all the rest—Education. Faith must be put upon the tireless education of brakemen and engineers on steam railways, and the education of miners and engineers below ground and conductors and motormen and the drivers of wagons upon our streets. And education must be directed also to the general public who, having the American traits, will risk their bodies, sometimes directly by jumping off a train before it comes into a station or sometimes indirectly when they demand speed—always more and more speed for automobiles and trains and electric cars and flying machines.

"And now to go back to the first sentence—it is time to say a word on the subject of violent death and injury. Popular opinion is already educated to the fact of the annual slaughter in the United States. To repeat over and over this fact will not do any good. What we want is a remedy. And if a remedy is to be had it surely may be had best and quickest when corporations and employees and the public will work together—on education.

"There is no reason why they should not work together, for each has a very lively interest in the remedy—in educating each other to avoid the sacrifice of life and limb. And corporations and employees and the public will work for the same purpose in the same generous, human, good-hearted way.

"When a man says that a corporation has no soul it generally means that the man has no intimate knowledge of corporations. The manager of a corporation is probably about like other men. He has a very lively interest in reducing damages in accident law suits; he wants to defend his company against the 'fake' claim that is so often made by the 'ambulance chasing' lawyer with his untruthful client. He feels the irritation of such suits, just as for instance a man would be irritated by being constantly sued by his neighbor for trespassing on the latter's land when he knew all the time that he had never set foot upon it, and knew furthermore that the neighbor was not even trying to tell the truth about it. But the corporation manager is still a good deal like other men. If a child ran in front of one of his cars and was killed you would find the corporation manager forgetting all about selfish interests. And the motormen would be doing the same thing, and so would everybody. And behind this feeling is a reason for corporations working hard to educate their men as we train our men against accidents, and for the motorman and conductor to co-operate with employers and for the public to also put its shoulder to the wheel.

"A start to prevent accidents had better begin, then, right here and now. There is no particular reason why this company should enter this campaign. Travel upon its lines is comparatively safe. It is much safer than steam railroad travel. But we have been wondering why, when something ought to be done, it is not best to start it without hesitation. We have reached the conclusion that we have not done enough when we have trained our men in the prevention of accidents. We know, better perhaps than any one, how careless some of our patrons are. And we believe in accident-preventing education for them just as we believe in accident-preventing education for ourselves.

"Therefore, we are going to take space in the newspapers to show how possible accidents may be prevented. And if we are willing to pay for this space we think the public, who can help in the prevention of accidents, ought to and will be willing to read the information and cautions contained therein. To get this matter together has cost much study and we can promise that none of it is unnecessary. It is all short and sharp. And if it saves one life or one right arm it will have been worth everything that it has cost us in money or the public in time."

Limited Service on Indiana Line.—The Terre Haute, Indianapolis & Eastern Traction Company has established a limited service on its Terre Haute-Sullivan line. The schedule for the 27 miles between the cities is 50 minutes, including four stops.

Collision in New Jersey.—As the result of a head-on collision between two cars of the Public Service Corporation between Somerville, N. J., and Bound Brook, N. J., on the morning of Nov. 11, a motorman was killed and a score of passengers injured.

Pittsburg Railways Increases Pay-As-You-Enter Service.—Pay-as-you-enter cars were placed in service on the East Liberty express line of the Pittsburg (Pa.) Railways on Nov. 12. The Shady Avenue, Frankstown Avenue, Western Avenue, North Highland and East Liberty lines of the company are now all equipped with pay-as-you-enter cars operated under license from the Pay-As-You-Enter Car Company.

Operating Rights in Dispute in Buffalo.—An injunction was issued by Justice Wheeler on Nov. 11 restraining the International Traction Company from interfering with the Buffalo, Lockport & Rochester Railway in operating cars over the International Traction Company's line from Lockport to Buffalo, in accordance with an agreement entered into in 1905. The court order was obtained by the Buffalo, Lockport & Rochester Railway in anticipation of the opening of its line between Rochester and Buffalo within a few days.

New Terminal Station in Columbus, Ohio.—The Columbus, Delaware & Marion Railway no longer occupies the union interurban station in Columbus with the other interurban railways operating into the city. It has recently moved into its new station farther west on Gay Street, which was remodeled for station purposes. The company has leased four lots in the rear of the station and will build a freight station to cost about $10,000. The new freight station will form a 250-ft. extension to the present station,

and will be utilized in handling baggage, express and freight. This will leave the present building for the accommodation of passengers.

More Transfers Discontinued in New York.—Following the formal taking over of the Second Avenue Railroad, New York, by Geo. W. Linch, as receiver, transfers between that company and the crosstown lines operated by the Metropolitan Street Railway were discontinued on Nov. 12. The most important points at which transfers are discontinued in the lower part of the city are at Thirty-fourth Street, Twenty-eighth Street and Twenty-third Street. Police were stationed for several days at the corners during the rush hours. A few persons, ignorant apparently of the changed condition of affairs, protested when called upon to pay the extra fare, but an explanation by the conductor, backed up occasionally by confirmation from a policeman, sufficed to enforce the new rule.

Weekly Meetings of Pennsylvania Railroad Commission.—As long as the present accumulation of business remains to be considered, the State Railroad Commission of Pennsylvania will continue to meet weekly, although the rules of the commission provide for monthly meetings. It is probable that some action will be taken soon on the question of service on the Darby line, in Philadelphia, raised by patrons of the Philadelphia Rapid Transit Company, and a date for a hearing on the question of more frequent operation of certain lines of the Pittsburg Railways will be shortly announced. The recommendations of the commission that riding on front platforms of electric cars be discontinued have been formally accepted by more than 50 companies.

Haverhill & Southern New Hampshire Railway Fare Case Reopened.—On petition of R. L. Wood, Mayor of Haverhill, Mass., the Railroad Commission of Massachusetts has been asked to order a reduction in fare on the Haverhill & Southern New Hampshire Street Railway, a constituent company of the New Hampshire Electric Railways, between Haverhill and Ayers Village. This case was before the board in 1904 and in 1906, and in each instance was decided against the company. In the spring of 1904 the fare between Haverhill and Ayers Village was raised from 5 cents to 10 cents. Following an inquiry based upon the complaint of those affected by the change, the Railroad Commission decided that such increase in fare imposed an unjust burden upon those using the railway between those points, and held that the circumstances under which the 5-cent fare had been originally established warranted the requirement that the company continue the fare, notwithstanding the fact that the enterprise had not yet proved profitable to the stockholders. In deciding the case at that time the Railroad Commission concluded with the recommendation that the company continue the existing fare "for a while longer, recognizing the difficulties in the way of the management and appreciating the energy and ability which mark the present administration of affairs." This the company has done, but after nearly 21 months' experience it feels the necessity of raising the fare, and accordingly has done so. A hearing will be held on Nov. 25.

Hearing on South End Service in Boston.—A hearing was held by the Massachusetts Railroad Commission on Nov. 10 on the petition of the Landladies' and Real Estate Protective Association of Boston in regard to the restoration of stops and the car service in the Tremont Street, Columbus Avenue and Shawmut Avenue district. F. E. Snow, counsel for the company, submitted detailed timetables and traffic counts, with lists of stopping places in the district in question, and stated that the average number of passengers on the Shawmut Avenue line is less per hour than the seating capacity of the cars. Tables which were presented show that the one-way car service per day on Shawmut Avenue is 62 cars, while on Columbus Avenue there are 488 cars per day, one way. On Washington Street there are 1073 cars one way daily between Dudley and Northampton Streets, and 963 cars per day in one direction between Northampton and Dover Streets on Washington Street. Mr. Snow stated that certain stops were eliminated to improve the service. The longest distance which a passenger has to walk to take a car is in only a few cases more than 250 ft. On Tremont Street, between Roxbury crossing and Lenox Street, the running time has been cut from 5 min. to 4 min. through the reduction in stops, and between Lenox Street and the Pleasant Street subway station the time has been reduced from 8 min. to 7 min. On Columbus Avenue, between Northampton Street and Park Street subway, the time has been cut from 12½ min. to 10½ min. On Washington Street, between Northampton and Dover Streets, a distance of about ¾ mile, one minute has been saved through stop reductions. The board took the matter under advisement.

Personal Mention

Mr. William H. Tylee has been appointed general manager of the Laconia (N. H.) Street Railway.

Mr. Frank H. Viele has been elected treasurer of the Laconia (N. H.) Street Railway to succeed Mr. E. P. Hadley.

Mr. George H. Earle, Jr., has resigned as a director of the Philadelphia Rapid Transit Company, having disposed of most of his holdings of stock in the company.

Mr. Howard F. Eaton, for several years with Stone & Webster, Boston, Mass., has been appointed acting manager of the Brockton & Plymouth Street Railway, Plymouth, Mass.

Mr. C. L. Rogers, superintendent of the Milford, Attleboro & Woonsocket Street Railway, Milford, Mass., has been appointed superintendent of the lines of the Rhode Island Company, Providence, R. I., formerly operated by the Interstate Consolidated Street Railway.

Mr. H. D. Murdock, who has been mechanical and electrical engineer of the Indianapolis & Louisville Traction Company for the past year at Scottsburg, Ind., has been appointed superintendent of the company, and the position of mechanical and electrical engineer has been abolished.

Mr. Alexander Allen has been appointed superintendent of the Milford, Attleboro & Woonsocket Street Railway, Milford, Mass., to succeed Mr. C. L. Rogers, who has been appointed superintendent of the lines of the Rhode Island Company, Providence, R. I., formerly operated by the Interstate Consolidated Street Railway.

Mr. C. C. Collins has been appointed general passenger agent of the Western Ohio Railway, Lima, Ohio, to succeed Mr. Charles F. Price, resigned. The positions of general passenger agent and general freight agent have been abolished and Mr. Collins will have the title of general traffic manager.

Mr. Frank S. Cummins, general superintendent and chief engineer of the Des Moines (Ia.) Interurban Railway, has been appointed acting manager of the company. Mr. Harry H. Polk, president of the company, will in the future devote his time largely to the management of the Polk estate, but will retain his connection with the company as president and general manager.

Mr. E. M. Mulholland, who has for some time acted in an advisory capacity to the Murdock interests in the management of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., and other properties, has been appointed manager of the Fort Wayne branch of the Indiana Lighting Company, to succeed Mr. Max Hoffman. Mr. Mulholland formerly managed gas plants controlled by the Murdock interests at Logansport, Peru and other cities in Indiana.

Mr. Frank A. Scott, who has been appointed one of the receivers of the Municipal Traction Company, Cleveland, is secretary and treasurer of the Superior Savings & Trust Company, Cleveland. Mr. Scott began his business career as a clerk in the general offices of the New York, Pennsylvania & Ohio Railroad at Cleveland. Later he became assistant secretary of the Cleveland Chamber of Commerce and then secretary, holding the latter position 10 years. When Col. J. J. Sullivan and his associates organized the Superior Savings & Trust Company, Mr. Scott was chosen secretary and treasurer of the company and has since served in that capacity.

Mr. F. D. Hunt, traffic manager of the Portland Railway, Light & Power Company, Portland, Ore., has had his jurisdiction extended to the Oregon water power division of the company, the position of superintendent of the Oregon water power division having been abolished. Mr. Hunt has been connected with the company since August, 1908. Before that he was connected with a number of the steam roads in the West. He began his railway career in August, 1894, as local freight, passenger and commercial agent of the Blair line, at Clinton, Mo., and from Sept. 1, 1898, until March, 1902, filled the same position with the Frisco system, at Clinton, Mo., and Pittsburg, Kan. Mr. Hunt then resigned to become superintendent, general freight and passenger agent of the Arkansas Western Railway, which position he held until 1905, when he was appointed general superintendent of the Denver, Enid & Gulf Railway, Enid, Okla., with which he remained until December, 1905. Early in 1906, Mr. Hunt entered the service of the Kansas City Southern Railway, Kansas City, Mo., as industrial agent, and shortly thereafter was appointed local freight agent of the company.

Mr. Harvey F. Pearce, who recently resigned as superintendent of public works of Negaunee, to become super-

intendent of the Twin City General Electric Company, Ironwood, Mich., as noted in the ELECTRIC RAILWAY JOURNAL for Nov. 14, page 1398, graduated from the University of Minnesota in 1889. Before Mr. Pearce entered the university, however, he was engaged at odd times on the old Van Depoele system in Minneapolis, and during his vacation periods was employed on the road at Stillwater, Minn. At still another time he was connected with the Aerial road, at South St. Paul, which was designed by Mr. Leo Daft. Upon graduation from the University of Minnesota Mr. Pearce entered the employ of the St. Paul (Minn.) Gas Light Company as wireman, and subsequently went to Duluth, Minn., for the Electrical Engineering Company. In January, 1891, Mr. Pearce became superintendent of the Ishpeming Gas & Electric Company, Ishpeming, Mich. When this company was consolidated with the Negaunee & Ishpeming Street Railway & Electric Company, he was appointed general superintendent and remained in that position until the company was sold to the Marquette County Gas & Electric Company in 1905. For the last three years Mr. Pearce has been superintendent of public works at Negaunee. His experience covers the management of electric lighting and street railway properties, and gas, water, sewers and general engineering.

Mr. Warren Bicknell, who has been appointed one of the receivers of the Municipal Traction Company, Cleveland, was formerly general manager of the Lake Shore Electric Railway, and now is president of the Springfield & Xenia Railway, Springfield, Ohio; president of the Citizens' Railway & Light Company, Fort Worth, Tex., and president of the Havana (Cuba) Electric Railway. Mr. Bicknell was born in Morristown, N. Y., about 40 years ago, and settled in Cleveland when 16 years of age. In 1890 he was graduated from Western Reserve University, and about 10 years ago entered electric railway work in the capacity of auditor of the Southern Ohio Traction Company, which was then under the control of Mr. M. J. Mandelbaum, Mr. Will Christy and their associates. Subsequently he became manager of the Aurora, Elgin & Chicago Railway, but when the Everett-Moore syndicate turned its affairs over to a bankers' committee, Mr. Bicknell was made president and general manager of the Lake Shore Electric Railway. This position he resigned in January, 1906, to become president of the Cleveland Construction Company, which is completing the Youngstown & Ohio River Railway, the Chicago, Lake Shore & South Bend Railway and a section of the Cleveland, Southwestern & Columbus Railway. Mr. Bicknell was recently chosen chairman of the board of directors of the Toledo Railways & Light Company. Mr. Bicknell's appointment as one of the receivers of the Municipal Traction Company will not affect his positions with other companies with which he is associated, as his connection with them is largely in an advisory capacity.

Mr. Walter W. Wheatley, formerly president and general manager of the Mexico Tramways, Ltd., Mexico City, Mex., will, on Jan. 1, 1909, assume the position of general manager of the Metropolitan Street Railway, Kansas City, Mo., succeeding Mr. Chas. N. Black, who resigned from the company more than a year ago to become general manager of the United Railroads of San Francisco. Mr. Wheatley, after resigning from the Mexico Tramways, Ltd., devoted himself to his private interests in Mexico City, where he was a director of the Mexico City Bank, the Mexican Banking Company at Guadalajara, La Latino Americana Mutualista, Compania de Seguros Sobre la Vida S. C., Ltd., and the Mexican Title & Surety Company. Mr. Wheatley was very successful in his management of the Mexican Tramways, and during his incumbency was complimented by the board of directors through Col. Sir Chas. Euan-Smith, K. C. B., E. S. I., chairman of the board, who, on a visit to Mexico, made a thorough inspection of the company's property. When the board transmitted to Mr. Wheatley the resolution commending his management of the property, a draft for $15,000 was presented to him as a substantial token of appreciation. Before becoming connected with the Mexican Tramways, Ltd., Mr. Wheatley was superintendent of the railway department of the Public Service Corporation of New Jersey, and previous to that was connected with the Brooklyn Rapid Transit Company as superintendent of surface lines. Mr. Wheatley has been engaged in railway work since 1875, and before going to Brooklyn was chief train dispatcher and afterwards assistant superintendent of the Buffalo division of the West Shore Railroad. He entered the service of the Brooklyn Rapid Transit Company as division superintendent but was soon made assistant general superintendent, and upon the retirement of Mr. Ira A. MacCormack was made superintendent of all the surface lines. His position with the Public Service Corporation brought under his management all the electric railway properties in Newark, Jersey City, Hoboken, Paterson, Elizabeth, the Oranges and neighboring towns, making in all about 300 miles of track.

Construction News

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

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

FRANCHISES

San Diego, Cal.—The Point Loma Electric Railway, San Diego, through Charles Collier, has filed with the City Clerk a petition for an amendment to the ordinance of the City Council granting a franchise to the company. The company now asks that the measure be made in such a way that it will be privileged to use electricity, gasoline or steam as a motive power, instead of electricity alone as the franchise now specifies. [E. R. J., Oct. 30, '08.]

Harrisburg, Ill.—The City Council has granted a 50-year franchise to the Saline County Traction Company, Danville, Ill., to operate an electric railway in Harrisburg and to connect with adjoining cities. The franchise provides that work must begin within a year and be completed in two years. [E. R. J., Sept. 19, '08.]

Noblesville, Ind.—Wallace B. Campbell, promoter of an electric interurban railway which is to connect Anderson, Frankfort, Noblesville, Lebanon and Crawfordsville, has succeeded in obtaining an extension of three years on franchises in Noblesville and Lebanon. Applications for extensions of franchises have also been made in other cities along the route. [E. R. J., Nov. 7, '08.]

Chanute, Kan.—The City Council has granted the Southern Kansas Railway, Light & Power Company a six months' extension of the time in which to begin work in the city of Chanute on its electric road. R. C. Rawlings, president.

Lawrence, Kan.—The City Council has granted a franchise to the Kansas City-Lawrence-Topeka Electric Railway. This company is composed principally of the following local men: W. R. Stubbs, J. E. Stubbs, A. Henley and C. E. Sutton. [E. R. J., Aug. 8, '08.]

Alexandria, La.—The Board of Alderman has granted a franchise to the Alexandria Electric Street Railway to construct a line out of Levin Street to the Kent property, provided the company maintains its lines on South Lee and Vance Avenues. C. M. Waters, president.

Leslie, Mich.—The Common Council has granted the Michigan United Railways a franchise for a line through Leslie.

Auburn, N. Y.—Mayor Koenig has vetoed the resolution of the Common Council which granted the Auburn & Syracuse Electric Railroad an extension of time till December, 1909, to construct its tracks westward from the present terminus to the city limits. [E. R. J., Nov. 14, '08.]

Springfield, Ohio.—The City Council has passed an ordinance granting to the Washington Traction Company a 25-year franchise. The ordinance was so amended as to provide that the company gives a bond in the sum of $5,000, and after the completion of the road to Washington C. H. an hourly service be maintained.

***Enid, Okla.**—Hamlin Sawyer, Enid, Okla., has applied to the City Council for a franchise to build an electric railway in Enid. The line, as proposed, will run almost straight east from Enid to Breckenridge, Garber, Cropper and Billings.

***Hood River, Ore.**—H. B. Langille, secretary of the Upper Hood River Valley Development League, has applied to the City Council for a franchise for an electric railway in Hood River. An application has also been made by C. A. Bell, proprictor of the Mount Hood Hotel, for a franchise to construct a line.

Chambersburg, Pa.—Both the Chambersburg, Greencastle & Waynesboro and the Chambersburg & Gettysburg Electric Railways have asked permission of the Town Council to build lines traversing the property of the Norland Land Company.

Waynesboro, Pa.—The Hagerstown (Md.) Railway has asked permission to build a line through Martinsburg, W. Va., which will cross the Potomac River at Williams Street.

St. Lambert, Que.—The Montreal & Southern Counties Railway has been granted a franchise to operate a line up St. Denis Street, to and along Glen, Victoria, Green, Notre Dame, Desaulniers and Victoria Streets, to the subway under the Grand Trunk Railroad tracks, and to the southern boundaries of the town limits, subject to certain terms. Upon the acceptance of the terms by the company the by-law will be submitted to a vote of the ratepayers for final ratification. [E. R. J., Nov. 7, '08.]

Blaine, Wash.—The City Council has granted to Joseph Morrison, A. J. Craven and J. W. Rose a franchise for the

construction of the Nooksack Valley Traction Company's line, which will connect Bellingham with Sumas, Ferndale, Lynden and Drayton Harbor. [E. R. J., Nov. 7, '08.]

RECENT INCORPORATIONS

*Chicago, Joliet & Western Interurban Railway, Chicago, Ill.—This company has been incorporated to construct an interurban line from Chicago through the counties of Cook and Dupage, another from Chicago to Joliet and another from Chicago west to such points in the counties of Kendall, Grundy and La Salle as may be agreed upon. Principal office, Chicago. Capital stock, $10,000. Incorporators and first board of directors: C. Fox, Edward Ford, Andrew Rutledge, Jr., Francis E. Hinckley and Stephen A. Cross, all of Chicago.

*Gary, Hobart & Valparaiso Traction Company, Indianapolis, Ind.—This company has been incorporated to construct an electric interurban railway from Gary to Hobart and Valparaiso; also a street railway in Gary. Capital stock, $10,000. Incorporators: James S. Hopkins and H. W. Watkins, Chicago; Francis Y. Keaton, Aurora, Ill., and H. D. Davis, Evanston, Ill.

*Logansport, Frankfort & Indianapolis Traction Company, Logansport, Ind.—This company has been incorporated in Indiana to construct an interurban road connecting Logansport, Young America, Burlington and Frankfort, where connection will be made with lines for Indianapolis. The road will run through a rich country now without railroad facilities. Work is to be begun in the spring. Capital stock, $25,000. The principal office will be established in Indianapolis and a branch office in Cleveland, Ohio. S. H. Blakeslee, chairman.

*Otter Creek Electric Railway, Bennington, Vt.—A bill has been introduced in the House of Representatives by H. B. Varden, Wallingford, Vt., incorporating the Otter Creek Electric Railway. It is the intention of this company to build and operate an electric railway from Rutland through Clarendon, Wallingford, Danby, Mount Tabor, Dorset, Manchester, Sunderland, Arlington and Shaftsbury.

TRACK AND ROADWAY

Berkeley, Cal.—The City Trustees are reported to be considering an offer by the Southern Pacific Railroad to expend $2,000,000 in improvements in exchange for permission to change the motive power of road and extend system in Berkeley. The company proposes to change the road from steam to electricity in the operation of trains of the urban line; it also wishes to extend its line northward from city to Contra Costa County, joining line at North Berkeley. A line to reach campus of the University of California will also be built if permission is granted by the City Trustees.

Los Angeles-Pacific Company, Los Angeles, Cal.—Tunnel No. 1 of the chain of subways to be built by this company was completed Nov. 7. The first tunnel is nearly 950 ft. in length. In the second tunnel it will be necessary to bore about 600 ft. to the exit at First and Hill Streets.

Washington, D. C.—According to the calculations of the district engineer department, permanent street railway lines will be running from all parts of the city to the new Union station by Dec. 1. The Fourteenth and F Street lines will reach the station through Delaware Avenue and C Street northeast, the Thirteenth and D Street line and Brookland lines will come in via Massachusetts Avenue, while the Georgetown lines of the Capital Traction Company and the Anacostia line of the Washington Railway & Electric Company will reach the station by way of First and B Streets southeast, connecting with the F Street line at the plaza.

Fairburn, Ga.—N. V. Perry and Frank Lederle, Atlanta, Ga., have been awarded the contract for surveying a route for the proposed electric railway which is to connect Atlanta and Union City. A corps of engineers started surveying the line on Nov. 13. The distance from Union City to Atlanta is only 17 miles. The officers and directors of the company which will build the line are: W. T. Roberts, president; J. H. Harris, secretary; J. H. Longino, treasurer; Dr. L. M. Hobgood, Dr. J. T. Longino, W. H. McLarin, Dr J. B. Carmical, J. F. Golightly, D. A. Carmical, W. A. McCurry, W. H. Mims. [E. R. J., Sept. 5, '08.]

Chicago (Ill.) Railways.—This company is said to be prepared to proceed with work on the new tunnel in La Salle Street as soon as the city's approval is given. Plans for the building of the tunnel will soon be submitted to Commissioner of Public Works Hamberg for his approval. The new tunnel will be built of concrete and will cost approximately $1,000,000, according to the estimates of the Board of Supervising Engineers which has drawn the plans.

Evansville (Ind.) Terminal Railway.—The branch of this road between Newberg and Evansville is almost completed. A portion of the trolley wire is yet to be strung. It is said that the company plans to have the line in operation by Dec. 1. [E. R. J., July 25, '08.]

Kokomo Western Traction Company, Kokomo, Ind.—Surveys have just been completed and maps, profile, etc., are being prepared for an interurban line from Kokomo, Ind., to Burlington, Ind., a distance of 15½ miles. This company expects to handle all passenger, freight, local and carload, express, baggage and mail from this territory. It has been decided to use gasoline motor cars for passenger, baggage, express and mail, and gasoline locomotives for local and carload freight. C. C. McFann, Kokomo, Ind., president and general manager, states that he is now taking up the financing of the proposition and investigating the different equipment and material adapted to his work, regarding which information and quotations will be appreciated.

Ligonier, Lagrange & Southern Electric Railway, Lagrange, Ind.—The projectors of this company have announced that they will at once begin the survey of a new route, which will run about 5 miles west of Lagrange. Lagrange recently registered a vote against a subsidy in aid of the work. J. N. Babcock, president. [S. R. J., Feb. 9, '07.]

Des Moines & Sioux City Railroad, Lake City, Ia.—M. H. Miller, Fort Dodge, general manager of this company, has announced that the financing of the road has been completed. It is the intention of the company to place surveyors in the field at once. Interests in the company are anxious that the road be an air line between Sioux City and Des Moines, and the road as finally located is 192 miles in length. The maximum grade is 1½ per cent. [E. R. J., Oct. 3, '08.]

Winnipeg (Man.) Electric Railway.—This company will shortly complete the construction of its new Fort Rouge belt line, which is to connect with the line running south and east from Maryland bridge. The heavy rails are laid in concrete from Pembina to Lilac Street along Corydon Avenue.

Mexico, Santa Fe & Perry Traction Company, Mexico, Mo.—The Electric Railway Journal is officially advised that bids for material for the construction of this road are solicited. The line will extend from Mexico to Perry, Mo., a distance of 25 miles. M. Crum, Mexico, Mo., president.

Mexico (Mex.) Tramways.—This company has been authorized by the communications department and by the Federal district government to operate an electric railway, to substitute the mule car line from the Limantour Park, in San Angel, and from Calle de la Primavera in Tacubaya to Mixcoac and intermediate points, which will later be defined, the plans submitted not being complete.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—This company has awarded a contract for nearly $100,000 worth of grading to H. F. Balch Contracting Company, Minneapolis. This work, which is through the hills south of Savage, is the last to make a complete roadbed from the Twin Cities to Northfield, a distance of about 50 miles. It is the heaviest grading on the entire line. This company is building an electric interurban railway from Minneapolis and St. Paul to Dubuque, Ia.

Atlantic City, N. J.—It is reported that an electric railway is to be constructed from Pennsgrove to Pleasantville by a syndicate, headed by Wetherill & Company, Chester, Pa., to connect Atlantic City with Wilmington by a shorter route, including a ferry across the Delaware. It is said that the new road will enter the city over the right of way of the Suburban Traction Company, recently purchased by the Wetherill syndicate for $91,000 at receiver's sale.

New York, N. Y.—Judge Lacombe on Nov. 16 authorized A. H. Joline and Douglas Robinson, receivers for the Metropolitan Street Railway, to expend $200,000 from the proceeds of the sale of receivers' certificates in repairing the tracks of the Madison and Fourth Avenue line.

Schenectady (N. Y.) Railway.—This company has filed certificates of extension of route with the Secretary of State to commence at Ballston and Wallace Avenues in Scotia and extend along Wallace Avenue to Douglass Street to the Boston & Maine Railroad station in Scotia.

Findlay-Marion Railway & Light Company, Findlay, Ohio.—The Board of Trade has announced that of the $100,000 stock assigned to Findlay, $90,000 has been sold. The line will extend from Findlay to Marion, a distance of 48 miles. [E. R. J., Sept. 5, '08.]

Lake Shore Electric Railway, Cleveland, Ohio.—This

company is said to be arranging to erect a new bridge at Fremont, Ohio.

Chatham, Wallaceburg & Lake Erie Railway, Chatham, Ont.—It has been definitely announced that this company will extend its line from Wallaceburg to Dresden and on to Thamesville next summer.

Ottawa (Ont.) Electric Company.—The contract for the concrete work and filling for the widening of the Somerset Street bridge for this company has been awarded to T. McLaughlin, Ottawa, and the steel superstructure will be erected by the Dominion Bridge Company. The new work will give an additional width to the bridge of 16 ft. and will cost about $14,000.

Cumberland Railway, Carlisle, Pa.—This company has increased its amount of bonds to $300,000 and its capital stock to $282,000. W. E. Glatfelter, Balfour, president. [E. R. J., Oct. 31, '08.]

Donora & Eldora Street Railway, Donora, Pa.—This company has awarded the contract for the construction of its road, which will connect Donora with Eldora, a distance of about 4 miles, to Frank Donatella, Pittsburg, Pa. It is announced that work will be begun at once.

Hanover & McSherrystown Street Railway, Hanover, Pa.—This company is said to be relaying its line between these two towns with 60-lb. rails.

Johnstown & Gallitzin Railway, Johnstown, Pa.—A corps of engineers have been engaged for the past several days making a preliminary survey of the proposed line of this company between Johnstown and Geistown. [E. R. J., Sept. 26, '08.]

Pittsburg (Pa.) Railways.—This company is completing the construction of about 12 miles of electric street railway, from its Charleroi line at Castle Shannon to Canonsburg, connecting there with the Washington & Canonsburg Railway, and expects to operate through cars thereon during the latter part of the year, connecting Washington, Pa., and its surrounding community by trolley to Pittsburg, a distance of about 30 miles.

Southern Cambria Railway, Johnstown, Pa.—This company has been given the right to build a number of extensions to its system, among which are included a line to Woodvale Heights, 1½ miles; a branch to South Fork, 2½ miles; an extension from State Street and Shaw Avenue, Clairton, to the Jefferson township line, 1.36 miles.

Richmond, Urbanna & Peninsular Railway, Richmond, Va.—The organization of this company, which was recently chartered to build an electric railway connecting the cities named in the title, has been perfected. The directors have decided, in accordance with the provision of the charter, to issue $300,000 in stock and $500,000 in 40-year 5 per cent gold bonds. John C. Robertson, Chesterfield, Va., president. [E. R. J., Nov. 7, '08.]

SHOPS AND BUILDINGS

Los Angeles-Pacific Company, Los Angeles, Cal.—This company is building a new car house at Sherman. The building will be about 300 ft. x 200 ft., and will have about 10 trucks. Plans have been completed for a new station at Ocean Park. The station will cover the entire lot between Pier Avenue and Marine Street, 200 ft. x 50 ft. Along the front facing the track a colonnade will run to serve as a waiting room during good weather, while on the corner of Pier Avenue the ticket office and an inclosed waiting room will be located. At the Marine Street end will be the express office and the freight receiving room.

Cape Breton Electric Company, Sydney, N. S.—This company has just completed a new blacksmith and repair shop 40 ft. x 28 ft. The company is also making extensive improvements at its North Sydney car house.

POWER HOUSES AND SUBSTATIONS

Pittsburg (Pa.) Railways.—This company is erecting a substation at Castle Shannon containing 2 400-kw motor generator sets, and a substation at Canonsburg containing 3 200-kw rotaries, and a transformer station at the southern terminus of the Mt. Washington tunnel, Pittsburg, for 22,000-volt, aerial high-tension transmission. The equipment of these stations is being supplied by the General Electric Company.

Stroudsburg (Pa.) Passenger Railway.—This company has recently purchased a new water wheel, and at present is installing the machine in its new power station, which is now in the course of erection.

Chicago, Harvard & Geneva Lake Railway, Walworth, Wis.—H. H. Windsor, manager of this company, advises the ELECTRIC RAILWAY JOURNAL that it is expected to install a 250-hp water-tube boiler in its Walworth power station.

Manufactures & Supplies

ROLLING STOCK

Kankakee Electric Railway, Kankakee, Ill., expects to purchase four motor cars.

Rock Island Southern Railroad, Monmouth, Ill., is asking prices on 18 interurban cars.

Rochester Railway Company, Rochester, N. Y., is reported to be planning to purchase four cars in the near future.

La Crosse City Railway Company, La Crosse, Wis., has recently purchased one McGuire-Cummings combination snow sweeper and plow to be delivered Dec. 1.

Forged Steel Wheel Company, Butler, Pa., has been awarded a contract by the Pittsburg Railways Company, Pittsburg, Pa., for 6,000 wheels.

Chicago City Railway Company, Chicago, Ill., has purchased 10 single truck snow sweepers from the McGuire-Cummings Manufacturing Company, Chicago.

Chicago Railways Company, Chicago, Ill., has placed an order for 15 single truck snow sweepers with the McGuire-Cummings Manufacturing Company, Chicago.

Chicago & Milwaukee Electric Railroad Company, Chicago, Ill., has ordered a double truck snow sweeper from the McGuire-Cummings Manufacturing Company, Chicago.

Portland (Ore.) Railway, Light & Power Company has ordered from The J. G. Brill Company 25 pay-as-you-enter cars, which will be constructed at once and put in service next spring.

Milwaukee & Fox River Railway Company is asking through its president, Dr. Brickbauer, Elkhart Lake, Wis., for bids on two interurban cars and equipments for the same.

Meadville & Cambridge Springs Street Railway Company, Meadville, Pa., has installed air brakes upon its interurban cars instead of the magnetic traction brakes, which had been in service for the past five years.

Texas Traction Company, Dallas, Tex., expects to place orders shortly for one combination express and passenger car and one work car. These are the only equipment orders contemplated by this company at present.

Capital Traction Company, Washington, D. C., has just placed an order with the Cincinnati Car Company for 54 cars. Forty-three of these will be pay-as-you-enter cars of city type and 11 will be large cars for semi-suburban work.

Syracuse, Lake Shore & Northern Railroad Company has just ordered seven new cars from the Cincinnati Car Company. They will be for interurban service. The cars will be 55 ft. in length and will be used on the extension of the road between Baldwinsville and Fulton.

Toledo Railway & Light Company, Toledo, Ohio, is building a test car in its shops, the body for which is now ready for the installation of the electrical apparatus. The equipment will include a motor generator set and a complete equipment of measuring instruments.

Nebraska Traction & Power Company, Omaha, Neb., announces through the General Construction Company, Omaha, that all arrangements have been made for purchasing the new cars noted in THE ELECTRIC RAILWAY JOURNAL of Nov. 7, 1908, and other equipment for this line.

Cleveland (Ohio) Railway Company, it is reported, will be in the market for 100 new cars as soon as the present condition of affairs is cleared by the receivers. It is said that Mayor Johnson contemplated the purchase of new equipment some time ago for the Municipal Traction Company, but the matter had to be abandoned owing to financial difficulties.

Saginaw & Flint Railway is in the market for six 55-ft. interurban cars. The order is to be placed contingent on a 30-day delivery. The cars are to have a seating capacity of about 60 passengers, are to have metal underframe, wood bodies, air brakes, four 75-hp motors and steam or hot water heaters. M. Mitshkun, 33 E Street, Detroit, Mich., is purchasing agent for the railway.

Chicago, Lake Shore & South Bend Railway, South Bend, Ind., which, as recently reported, placed an order with the Kuhlman plant of The J. G. Brill Company for 10 large interurban trail cars, advises that these cars will be equipped with Hale & Kilburn "Walkover" seats, which will be covered with Quride car seat covers supplied by the

Picrome Hide Company, Syracuse, N. Y. The Quride covering was specified by the Cleveland Construction Company, consulting engineers for the new road.

Omaha & Council Bluffs Street Railway, Omaha, Neb., has placed in operation the first of the eight cars to be built at its own shops. They will be 44 ft. long over all, 30 ft. body and seating capacity for 44 passengers. The new cars will be of center aisle pattern, with rattan cushioned seats, cherry finish with veneered oak ceilings. The cost of these cars is about $4,500 each. It is the intention of the company to manufacture about 25 of these cars annually.

Seattle Electric Company, Seattle, Wash., has ordered through the Stone & Webster Engineering Corporation 50 motor cars and 10 trail cars. The motor cars are of the single-end California type, 47 ft. long over the buffers. They are mounted on Standard Motor Company's trucks, with 28 ft. truck centers. The wheel base is 6 ft. 4 in. and the wheels are 33 in. in diameter. The motor equipment will be four GE-80 motors, with K-28 J controllers. Air brakes will be used, but the type is not decided. The trailers will be 40 ft. long over all and will be equipped with Standard Truck Company's trucks. The cars are being built by the St. Louis Car Company.

Hudson & Manhattan Railroad Company, New York City, has just ordered from the Pressed Steel Car Company 50 new steel passenger cars to be used in the tunnels under the Hudson River now in operation and the Jersey City tunnels which will be opened in the spring. These new cars will be almost exactly of the same type as those already in use in the Hoboken tunnel. They are to be 48 ft. long and have seating capacity for 44 passengers. They will be equipped with both end and center doors, having wide aisles, ample seats and upright standards throughout the car. Length over corner posts, 38 ft. 2⅜ in.; distance from center to center of trucks, 33 ft. ½ in.; width over belt rail, 8 ft. 11⅛ in.; height from top of rail to top of floor, 3 ft. 9⅜ in.; height from top of rail to top of roof, 11 ft. 11 11/16 in. The Pressed Steel Car Company will build the bodies of these cars and the American Locomotive Company will build the trucks. Contracts for the other equipment have not as yet been let.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y., has ordered from the Cincinnati Car Company eight interurban cars and one snow plow equipment. These cars will embrace many new features. Four of them will be passenger, baggage and smoking cars seating 52 passengers, and the other four will be passenger and smoking cars seating 54 passengers. The principal specifications of the cars follow:

Bolsters, body, 10 in. x 1 in. steel plates
Car trimmings..Persian brass
Couplers, Tomlinson, automatic
Curtain fixtures.....Forsyth
Curtain material...Pantasote
Destination signs, Cincinnati Car Company standard, in each dash
Fenders, Cincinnati Car Company standard wood pilots
Gongs...14 in. each platform
Hand brakes, Cincinnati Car Company, horizontal wheel
Heating system, German, hot water
Headlights, General Electric, Magnetite arc
Interior finish, Mahogany, oak, baggage, inlaid marquetry panels
Markers, at all corners, adjustable brackets
Roofs...Full Empire ceilings
Sanders..Nichols-Lintern air
Seats, Hale & Kilburn, 37 in., mahogany arm rests, covering, plush and leather
Ventilators, Center sash on Hart's ratchets

In addition to the above, these cars will be equipped with Edwards front vestibule window fixtures with drop sashes, nickeline water coolers, Holophane electric ceiling clusters, folding slat seats in baggage compartment and special wire screens at each double window. The cars will have metal frame, art glass, Gothic windows, Knutson Peerless trolley retriever, Edwards balanced vestibule trap doors and window fixtures and boxes for tools and fire-fighting appliances.

TRADE NOTES

Walter B. Snow, publicity engineer, of Boston, has been appointed by Governor Guild a member of the Massachusetts Commission for the Blind.

Railway Steel Spring Company, Latrobe, Pa., has recently ordered from the Arthur Koppel Company, Pittsburg, 50 storage battery cars of 15 tons capacity to be used at its works.

Northwestern Cement Products Association will hold its fifth annual convention in Minneapolis, Minn., March 2-4, 1909. The secretary of the association is J. C. Van Doorn, Minneapolis, Minn.

Robert B. Fuller, who has been the Western representative of the Carborundum Company, Niagara Falls, N. Y., has been made manager of the company, with headquarters at 136 Liberty Street, New York City.

Northern Engineering Works, Detroit, Mich., have changed the location of their Chicago branch office from 405 Monadnock Block to 539 Monadnock Block, with B. C. Wolcott in charge as formerly.

W. T. Van Dorn Company, Chicago, Ill., has perfected the Van Dorn one-piece steel end for cars of all types, and is soon to begin a campaign to introduce the car end on steam and electric railways.

W. G. Brown has resigned the position of vice-president and general manager of the Ewing-Merkle Electric Company, St. Louis, Mo., to associate himself with the Continuous Rail & Safety Switch Company, St. Louis.

W. K. Kenly Company, Chicago, Ill., has been appointed Western representative for the Kalamazoo Railway Supply Company, Kalamazoo, Mich. It will exclusively represent this company in Chicago, St. Louis, Kansas City, St. Paul, Minneapolis, Duluth and Milwaukee.

C. B. Lowery, general manager of the American Creosoting Company, Chicago, Ill., was killed Wednesday, Nov. 11, in a rear-end collision on the New Orleans & Northeastern Railroad. The wreck occurred at Little Woods, 12 miles from New Orleans. Mr. Lowery's home was in Louisville, Ky.

Charles R. Day, formerly with the Midvale Steel Company, has accepted a position as sales agent for the U. S. Metal & Manufacturing Company, of New York City. Mr. Day will give especial attention to the introduction of the Diamond steel pole, for which this company has recently become the agent.

A. M. Kittredge has been chosen president of the Barney & Smith Car Company, Dayton, Ohio, to succeed J. D. Platt, who retires because of ill-health. The other officers are: Vice-president, H. M. Eastbrook; secretary and treasurer, J. F. Keifaber; assistant secretary and treasurer, E. A. Oblinger.

S. F. Bowser & Company, Fort Wayne, Ind., report that there has been a very marked improvement in the inquiries for supplies from railroads. They say that the month of October was the best in the history of the firm. A new building is being completed in order that the facilities of the concern may be increased.

C. H. Spotts, for many years the manager of the paint department of the Joseph Dixon Crucible Company, Jersey City, N. J., has become secretary of The Protectus Company, of Philadelphia. This company has opened an office at 30 Church Street, New York City, which will be in charge of W. F. Swearer and will come under the jurisdiction of Mr. Spotts.

New York Pole Company has been incorporated in New York for the purpose of conducting a contracting business in the erection of telephone, telegraph and trolley poles. The capital stock will be $15,000. The incorporators are Charles E. Roehl, H. H. Hilborn, of Brooklyn, and George M. Gest, New York. The company's main offices are located at 277 Broadway, New York, and branch offices will be maintained at Union Trust Building, Cincinnati, Ohio, and Monadnock Block, Chicago, Ill.

Massachusetts Chemical Company, Walpole, Mass., has recently established new quarters for its Boston office at 185 Summer Street, across the street from its old location at 170 Summer Street. The new quarters are more commodious and better arranged than the former ones, and are equipped with better facilities for handling the growing business of the company. E. W. Furbush, general manager of the company, usually spends his afternoons at the Boston office. Louis O. Duclos, the general sales manager, will make his headquarters at the new offices.

Lord Electric Company, New York, reports that business has been so active it is behind in its orders. These have been coming in so briskly of late that it has not been able to turn out the material fast enough to meet the demands. Its business during the last 90 days has shown a marked increase. Orders have been received from South America, England, Philippine Islands and from nearly every section of the United States for lightning arresters, Earll trolley retrievers and catchers, choke coils, disconnecting switches and other specialties.

Ohmer Fare Register Company, of Dayton, Ohio, has received an order from the Portland (Ore.) Railway, Light & Power Company for equipping with three-fare city registers the 38 new pay-as-you-enter cars for which it has recently contracted. The company has also sold to the Detroit United Railway, of Detroit, Mich., a large number

of its "Time Feature" registers. The company also reports that during the late period of depression its factory was operated to almost its full capacity, and that now since prosperity has returned some of the departments are compelled to work overtime.

St. Louis Malleable Casting Company, St. Louis, Mo., has recently placed on the market a new style patent anchor made of malleable iron. The anchor has two sliding anchor wings, which are held in a folding position by a small wire, in which form it is inserted in an 8-in. hole. The wings are then drawn into the solid earth at the sides of the hole by a tamping bar. The blades give about 30 sq. in. of bearing surface on two sides of the hole. A very satisfactory demonstration of the anchor was made in Chicago last week in the presence of a number of public service officials. R. L. Thayer, traveling sales manager of the company, was in charge of the demonstration.

The J. G. Brill Company, Philadelphia, Pa., has appointed O. L. Williams Pacific Coast representative of the company, with headquarters in the Monadnock Block, San Francisco, Cal., after Nov. 20. Mr. Williams has been connected with the car building business for some time past, his first connection being with the American Car & Foundry Company, in the employ of which he entered immediately following the completion of his college work at Maryland University in 1893. Later he was with the Harlan & Hollingsworth Corporation, but resigned and took an extended vacation on account of ill-health. On his return to business Mr. Williams became connected with The J. G. Brill Company, and resigned from the company to take charge of the car department of Ford, Bacon & Davis. Subsequently Mr. Williams was with the Peckham Manufacturing Company.

General Electric Company, Schenectady, N. Y., reports the following orders for railway apparatus having been recently received: For Seattle Electric Company, Seattle, Wash., 50 four-motor GE-80, 40-hp car equipments; four 1000-kw motor-generator sets, converting 60-cycle, 13,200-volt alternating current into 600-volt direct current, machines to be provided with direct-connected exciters, the switchboard being included in the order; four 1000-kw 60-cycle 13,200-volt air-blast transformers, with blowers. For the Denver City Tramway, Denver, Colo., two 500-kw 25-cycle rotary converters; seven 185-kw oil-cooled transformers. For the Sioux City Traction, Sioux City, Ia., 30 GE-81, 30-hp railway motors. For Washington Water Power Company, Spokane, Wash., 20 four-motor GE-80, 40-hp car equipments; two four-motor GE-73, 75-hp car equipments, with Sprague-General Electric type M control. For Pittsburgh Railways Company, Pittsburgh Pa., one 400-kw direct-connected, engine-driven generator; three 200-kw 60-cycle rotary converters. For Western New York Construction Company, Buffalo, N. Y., eight four-motor GE-204 (75-hp commutating pole) car equipments, with Sprague-General Electric type M control.

ADVERTISING LITERATURE

Southern Railway Supply Company, St. Louis, Mo.—This company has in preparation a very complete and up-to-date supply catalog.

Central Electric Company, Chicago, Ill.—This company has issued a special November price list, which supplements the September list and applies to the company's 1909 general catalog.

Poole Bros., Chicago, Ill.—A new descriptive circular has just been issued by this company showing ticket cases of various sizes and design. Daters, stamps and punches are also included in the price lists.

Trussed Concrete Steel Company, Detroit, Mich.—This company describes its method for carrying on concrete work in freezing weather in a folder just issued. Full instructions are given as to how to prevent freezing and to maintain the full strength of the concrete.

Goldschmidt Thermit Company, New York, N. Y.—An interesting little booklet has just been issued by this company describing "Applications of Thermit in Foundry Practice." It is claimed that by the use of this material a temperature of 5400 deg. Fahr. can be attained in less than 30 seconds.

Standard Roller Bearing Company, Philadelphia, Pa.—A folder showing how the company has grown and how its business has expanded within the past year has been issued. It claims that, notwithstanding its rapid growth, the business is still in its infancy and promises wonderful developments for the future.

National Brake Company, Buffalo, N. Y.—A leaflet published by this company contains rhymes setting forth how dollars would disappear from the railway that did not use the "Peacock" brake. It is a very clever little production. The company reports in this connection that 10 roads have ordered over 3000 "Peacock" brakes since the first of last January.

Western Electric Company, New York, N. Y.—A bulletin issued by this company describes its Victor flaming arc lamps. As flaming arc lamp illumination is an especially live subject at this time, this bulletin is particularly interesting. The special feature of the lamp, as described in the bulletin, is the fact that the regulation is accomplished by gravity instead of by mechanical means.

Westinghouse Electric & Manufacturing Company, Pittsburg, Pa.—A neat little pamphlet has just been issued by this company descriptive of the electrification of the St. Clair Tunnel and the Grand Trunk Railway System. It is handsomely illustrated, and contains much interesting information, including a table of mileage and equipment of all single-phase railways operating in Europe and North America.

Electric Service Supplies Company, Philadelphia, Pa.—"The Keystone Traveler" for November devotes considerable space to a statement of the merits of its "pay-within" type of car. Many of the company's specialties are also described, among which are the Lyon gear case, the Keystone pneumatic gong or bell-ringer, Samson trolley and bell cord, the Automotoneer and the Imperial Mine Incandescent headlight.

Consolidated Car Fender Company, Providence, R. I.—A bulletin of this company shows the results of the tests of its Providence fender at the recent Schenectady fender tests. It is claimed that these tests demonstrated that the Providence fender is a practical life-saving device, and that it is equal to all contingencies of street railway service. The pamphlet is illustrated with views of the fender picking up the dummies that were used at the tests.

Harrison-Walker Refractories Company, Pittsburg, Pa.—A little booklet issued by this company, entitled "What Are Your Lime Kiln Costs?" is full of interesting information about fire brick and the method of building kilns. It is claimed for the bricks made by this company that, while the first cost may be higher than some other brick, their superiority makes them in reality the most economical material. A list of important plants using these bricks is given.

Picrome Hide Company, Syracuse, N. Y.—A neat little booklet by this company describes the virtues of "Quride," a new leather product especially designed for car seat coverings. It is made from hides by a patented chemical treatment, which it is claimed renders them hard and tough yet elastic. It is claimed for the new fabric that it is sanitary because it is non-absorbent and can be freely washed. It is also claimed that its wearing qualities are unusual and that it can be easily handled and adapted to any seat.

Dispatching Signal Company, Fall River, Mass.—This company has just published a handsome bulletin on the "Dispatchagraph" (Hart system). The publication is divided into three parts. The first part describes in detail the operation and principles of construction of the several devices which enter into the use of the system and includes numerous illustrations. The second part contains testimonial letters from railway companies which have found this system to answer their requirements satisfactorily. The third part gives the rules which the Dispatching Signal Company has prepared for use in connection with the operation of this system in electric railway service under different conditions.

Duncan Bond, Denver, Col.—"Jones Beveled Rail Joints" is the title of Catalog A, just issued by this concern. In it are described the Jones beveled rail joints, which consist essentially of rail sections having abutted inclined ends, the ends of the rail being cut off at an angle in the vertical plane. The joint is supported on the tie and the traffic can be in either direction; that is, the joint is suitable for either double or single track. Detailed drawings are presented of the joint and half-tones are shown of track in Denver where the joint is in use. An especially interesting picture is the half-tone of a joint after four years' service in Denver. It is said that in the Jones joint no trouble has been experienced from expansion or contraction or from pounding at the joints.

Jordan Brothers, Inc., New York.—Jordan Brothers have prepared a small pamphlet describing the uses to which the Jordan commutator truing device is being put. This device is furnished with a number of special and standard attachments and methods of driving, and can be applied to practically

any type of motor, dynamo, rotary converter, motor generator, or, in fact, to any electrical machine having a revolving commutator. Commutators can be trued up with this machine while the motor or generator is working under full load without liability of any damages. The pamphlet contains a partial list of the users of the Jordan commutator truing device, which includes some of the largest companies generating power and some of the largest users of electric power in motor drive. Several pages are devoted to testimonial letters from satisfied users.

Crocker-Wheeler Company, Ampere, N. J.—Four interesting bulletins have just been issued by this company descriptive of recent apparatus. No. 106 contains illustrations of a large number of standard switchboard panels, which can be assembled to form a switchboard of any size and capacity. It also contains valuable suggestions as to the instruments and apparatus necessary in switchboards. No. 107 describes the company's well-known line of direct-current lighting and power generators of large sizes, and contains a number of illustrations showing completed installations. No. 108 shows the design of engine for alternating-current generators for central station and industrial plants; a number of installations are shown comprising municipal plants, textile mills, etc. No. 109 describes the small generating sets in sizes of from 2 to 19 kw, which are used for lighting plants for small hotels and apartment houses.

ELECTRIC RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

UNITED STATES PATENTS ISSUED NOV. 10, 1908.

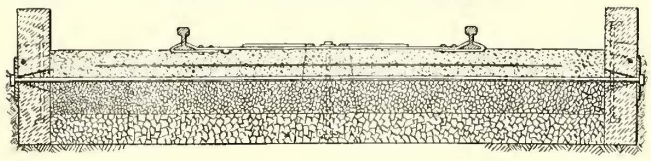
Switch Operating Mechanism, 903,156; Aaron B. Allen, Pueblo, Col. App. filed Jan. 20, 1908. Details of construction.

Railway Roadbed, 903,174; William H. Coffman, Bluefield, W. Va. App. filed July 29, 1908. Comprises a body of crushed stone, track rails disposed upon the upper surface of said body and connected by a tie bar, and a concrete anchor disposed within the body and provided with a connection to the tie bar.

System for Controlling One or More Electric Motors, 903,177; Henry H. Cutler, Milwaukee, Wis. App. filed Aug. 11, 1905. A multiple unit control system for trains having a plurality of solenoid switches or contactors, which are controlled directly by variations of voltage upon the controlling circuits of the train.

System for Controlling One or More Electric Motors, 903,178; Henry H. Cutler, Milwaukee, Wis. App. filed Aug. 11, 1905. Relates to modifications of the above.

Amusement Device, 903,208; William B. Leonard, Chicago, Ill. App. filed July 15, 1908. An endless carrier relating particularly to means whereby the cars may engage and disengage the cable while the same is moving.



Railway Roadbed—Pat. No. 903,174

Rail Joint, 903,315; James C. Rainey, Grove City, Pa. App. filed May 24, 1907. Has a sleeve embracing the base of the rail and the fish plates and having a downwardly extending lug to engage the rail ties. The fish plates have horizontal arms of wedge-shape formation and they are driven into the sleeve from opposite ends.

Folding Step for Vehicles, 903,352; Charles Black, Hawesville, Ky. App. filed July 23, 1908. An auxiliary step for railway cars hinged to swing upwardly and over the stationary step and a lever for actuating the same.

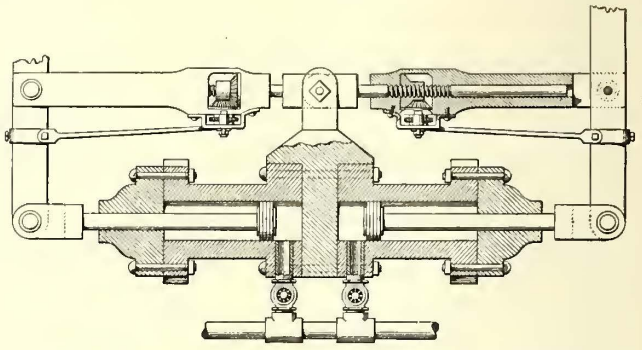
Trolley Pole, 903,366; Seybert D. Fenimore, Folcroft, Pa. App. filed Dec. 4, 1907. The trolley pole is made with a jointed upper section with connections to the operating cord of such a character that the pole is locked against further upward movement whenever there is relative movement of said upper pole section due to the wheel leaving the trolley wire.

Slack-Adjuster for Air Brakes, 903,378; William R. Heironimus, Evansville, Ind. App. filed March 12, 1908. An adjustable fulcrum rod, a brake-operating lever pivoted thereto and connected to the piston, and a rod adjustably connected to the lever so that it may be operatively secured at different points thereof which is adapted for adjusting the fulcrum rod.

Apparatus for Automatically Controlling the Speed of Trains, 903,412; Jens G. Schreuder, Edgewood Park, Pa., and Vibe K. Spicer, Chicago, Ill. App. filed Aug. 3, 1907. Train-control apparatus having a laterally shiftable trip arm, a fluid pressure device for shifting the arm laterally into and out of operative position, and electromagnetic means controlled by the speed of the train and controlling the operation of the fluid pressure device.

Combined Signal and Speed Controlling Mechanism for Railway Trains, 903,414; Jens G. Schreuder, Edgewood Park, Pa., and Vibe K. Spicer, Chicago, Ill. App. filed Aug. 3, 1907. Means for automatically controlling the positions of the track trips or stops and also signal mechanism actuated in connection with the track trips or stops.

Combined Signal and Speed Controlling Mechanism for Railway Trains, 903,415; Jens G. Schreuder, Edgewood Park, Pa., and Vibe K. Spicer, Chicago, Ill. App. filed Aug. 3, 1907. Relates to additional features of the above.



Slack Adjuster for Air Brakes—Pat. No. 903,378

Device for Preventing Spreading of Railroad Rails, 903,485; Joseph Larimee, Mount Vernon, N. Y. App. filed Aug. 28, 1907. Comprises a base formed at each end with an undercut boss, rail engaging blocks seated removably on said base and against the bosses, plates connected with the bosses for upward swinging movement, and securing elements removably passed through the lower edges of the plates.

Rail Joint Supporter, 903,528; Linnaeus Winans, Hood River, Ore. App. filed Oct. 7, 1907. Details of construction.

Electrical Contact Maker, 803,568; John Harry Hart, Memphis, Tenn. App. filed Jan. 20, 1908. A laterally movable spring arm projects across the path of the trolley wheel so as to provide a temporary electrical connection during the passage of the wheel.

Trolley Wheel, 903,698; Edmund J. Fredericks and Dilla R. Fredericks, Ohio, Ill. App. filed Sept. 27, 1907. The trolley wheel is mounted on a bushing with a spiral groove which communicates with cavities in the harp and which supplies oil to the bearing surfaces.

Fastening Clip for Railroad Rails, 903,702; Alfred M. Gaines, Columbus, Ohio. App. filed June 27, 1907. A T-rail fastening device for use with metallic ties, comprising a clamp member having a central portion provided with an opening therethrough rimmed out at the end adjacent to the tie, a bolt adapted to be inserted vertically through said opening to secure the device to the tie, and a flange on the device adapted to overlap the rail, which construction obviates shearing of the bolt by the lateral play of the rail in service.

Signal System, 903,785; John J. Ruddick, Newton, Mass. App. filed May 23, 1908. A complete signal system which will not be disabled by lightning, cross-wires or similar causes. Has means by which the wire or wires which connect the two signal boxes at opposite ends of a block are normally disconnected from the ground so that under normal conditions there is no ground connection at either box which could form a possible path for a lightning charge.

Electric Block Signal System, 903,796; Paul J. Simmen, Oakland, Cal. App. filed Jan. 28, 1907. A system for use in connection with an electric railroad operated by continuous current so that the return circuit for the car current passes through both rails of the track rail.

Railroad Brake Shoe, 903,816; Isaac A. Gibbs, Roanoke, Va. App. filed April 29, 1908. The brake shoe has a vertical recess in its braking face in which is located a spring actuated vibrative sand conduit communicating with the sand-dome of a locomotive and terminating at its delivery end in front of and adjacent to the driving wheel thereof.