Electric Railway Journal

A CONSOLIDATION OF

Street Railway Journal and Electric Railway Review

VOL. XXXV. NEW YORK, SATURDAY, JANUARY 22, 1910 No. 4

PUBLISHED WEEKLY BY THE

McGraw Publishing Company

239 WEST THIRTY-NINTH STREET, NEW YORK

JAMES H. MCGRAW, President.

J. M. WAKEMAN, 1st Vice-President. A. E. CLIFFORD, 2d Vice-President.

CURTIS E. WHITTLESEY, Secretary and Treasurer.

TELEPHONE CALL: 4700 BRYANT. CABLE ADDRESS: STRYJOURN, NEW YORK.

HENRY W. BLAKE, Editor.

L. E. GOULD, Western Editor. RODNEY HITT, Associate Editor.

FREDERIC NICHOLAS, Associate Editor.

CHICAGO OFFICE.....590 Old Colony Building

CLEVELAND OFFICE.....1015 Schofield Building

PHILADELPHIA OFFICE.....Real Estate Trust Building

EUROPEAN OFFICE....Hastings House, Norfolk St., Strand, London, Eng.

TERMS OF SUBSCRIPTION:

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, $3.00 per year; Canada, $4.50 per year; all other countries, $6.00 per year. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving *old* as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

NOTICE TO ADVERTISERS.

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements will be accepted up to Tuesday noon of the week of issue.

Entered as second-class matter at the post office at New York, N. Y.

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

NEW YORK, SATURDAY, JANUARY 22, 1910

CONTENTS.

Indiana Rules Amended

At a conference called by the Railroad Commission of Indiana on Tuesday of this week the Indiana code of interurban rules was amended to make it conform, with a few minor exceptions, to the standard code adopted by the American Street & Interurban Railway Association. The changes made are, in general, modifications in wording designed to make the meaning of rules clear without modifying the practice in any essential particular. The revision of Rules 107 and 162 of the Indiana code is intended simply to cover additional situations not specifically referred to in the old rules. This endorsement of the standard code is most encouraging, and establishes a safe precedent for other State commissions. It will be of great assistance to the industry, as well as conducive to safe operation, to have a recognized standard of interurban rules, and the action of the Indiana commission is a step toward this end.

Employees as Stockholders

It is to the interest of every railway property to have its employees enthusiastic for the advancement of their road. We have in the past called attention to many methods for increasing the *esprit de corps.* These have included "heart to heart" talks, orally or through the medium of attractive bulletins, the award of premiums for good service and the older and more generally followed practice of advancement from the ranks. Still another method is being used by the Fort Wayne & Springfield Railway. This company hires no trainmen unless they will purchase one share of the stock of the company and subscribe for five additional shares. Some of the motormen and conductors hold as many as 30 shares of the company's stock, and every motorman and conductor and every employee who occupies a responsible position is a stockholder. One advantage claimed for this plan is that besides interesting the men in the efficient operation of the company, it confines the service to those who are thrifty. It may occasionally exclude a good man, but the number thus kept out is undoubtedly small and the disadvantage is more than counterbalanced by the fact that shiftless men are not taken on, and a shiftless man is apt to be a careless one. It has also been found that the purchase of the first share of stock almost always instills a desire for the employee to increase his holdings in the company. The prime reason why this means for stimulating loyalty is successful is because each man, as the owner of some stock in the corporation, feels that he is working for his own interest and advancement as well as for that of the company. The management of the Fort Wayne & Springfield Railway, which has followed this plan of requiring its employees to be stockholders ever since the road first was opened, commends the scheme very highly, and emphasizes its commendation with the statement that no accidents have happened that could be attributed to the negligence of the men.

The Improvement of the Single-Phase Railway Motor

The paper read before the American Institute of Electrical Engineers by Prof. W. S. Franklin and S. S. Seyfert is interesting to the designer of railway motors not only because it discusses some possibilities of very material improvement from the spacial standpoint of single-phase motors, but also because of the novel suggestions made to accomplish this result. As the paper in question does not raise directly the rancorous question of alternating current versus direct current operation, we shall gladly let the question alone here, noting only that Prof. Franklin's comment on the existing electrical equipment of the New York, New Haven & Hartford Railroad is very pertinent as coming from an expert and one who has taken no part in the controversy that accompanied the equipment of that road. Prof. Franklin's judgment is that the equipment as it stands meets all the conditions specified by the railroad company, and also that the equipment is somewhat too light, the tractive effort at starting being less than is desirable. This opinion harmonizes with that derived from other examinations of the equipment.

Coming now to the motor itself, it is difficult to speak with assurance of its possible performance because of its radical differences from standard design. The inherent characteristics of the alternating current series motor, from the very nature of its current supply, are such that one must be content with a moderate frequency and must go to very careful construction in order to get good output. The armature of such a machine must be relatively very powerful; special forms of commutating devices must be used to prevent sparking, and the winding design must be very carefully worked out on account of the necessity for a very powerful armature. The first step taken by Prof. Franklin to meet these conditions and to economize space between the wheels is to turn the motor inside out—that is, to build it with a stationary armature and an internal revolving field. Viewed from an electrical standpoint, this is certainly the logical arrangement for a machine of which the armature is to be altogether predominant in the electro-magnetic design. His second step is to remove the commutator, now stationary, together with the high-resistance leads or induction coils, or other anti-sparking devices, from its customary position on the motor and to place it where it can be gotten at more readily, for instance above the motor, revolving the brushes at the necessary speed by means of simple gearing. This step certainly saves a great deal of valuable axle space and permits it to be taken up by the armature and field rather than by their accessories. It also allows the brushes on the commutator to be placed where they can be very readily inspected, an advantage not lightly to be cast aside, even though obtained at the risk of a somewhat complicated brush connection.

As an example of what can be done by this construction, Prof. Franklin gives figures on single-phase motors of the ordinary and of its modified design, each being limited to 30 in. external diameter and to a speed approximately 550 r.p.m. at the full load, the same length of iron and general characteristics of design being used. The results obtained by three independent computors give a gain of nearly 20 per cent for the new design owing to the better arrangement of the material. The new type is slightly heavier than the old, but the weight of the active material per horse-power is slightly less. The efficiency remains about the same, and the power factor is several per cent in favor of the external armature. A design is also given showing the characteristics of a new construction for a 500-hp machine of 50 in. outside diameter and a total motor length of just over 39 in.

In the discussion, considerable doubt developed as to the success of the external commutator in practical service. It seems also that the design would cost for ordinary voltage and speeds considerably more than the ordinary arrangement. But these points could be determined only by actual construction and use.

Training Men for Electric Railway Work

The appointment last week by the executive committee of the Engineering Association of a committee to investigate and report upon the subject of educating engineering apprentices brings three propositions now before electric railway companies for instructing men in electric railway work. The purpose of each plan is different. Two aim to take what might be called raw recruits and by an intelligent and systematic method under competent instruction to train them to take responsible positions, in one case in the transportation department and in the other case in the engineering department. The third plan proposed is for the improvement of men already in the employ of the railway companies. The first and third plans were those proposed by the committee on education of the main association, and the second plan, or that on the training of engineering apprentices, will be taken up by the new committee appointed to consider the subject by the Engineering Association. As the provinces of the three methods are entirely unlike, they do not clash in any particular. In fact, there is no reason why any company could not, with profit, carry on all three at the same time.

It seems to us that there are two underlying principles which must be accepted before progress is made in any one of these proposed plans. The first is that it is just as important to have men of ability and expert knowledge in each of the different departments of an electric railway company to conduct its affairs as it is to have sufficient capital to maintain the physical property and to extend its lines. This being admitted, it seems most logical that the desired results can be obtained much more satisfactorily if undertaken along some systematic plan. The second proposition is that to be of material benefit to the industry at large, this work should be carried on by a considerable number of companies. Otherwise, individual companies, by what might be called predatory tactics, could reap a considerable amount of the benefit of work undertaken by others, and unless the source of supply was constantly being replenished, the industry as a whole would suffer.

We do not mean to say that the requisite amount of experience cannot be secured through the hard knocks of actual experience. This has been the method followed up to the present time, and by a process of the selection of the fittest, capable men have been advanced and are occupying responsible positions with marked ability. There is no reason, however, to believe that this is the most efficient way of accomplishing the desired result, or that in the training of men for electric railway positions advantage cannot be gained from experience in other lines of industry. Large steam railroad companies and manufacturing companies have found it to their advantage both to offer incentives in the way of learning the business to young men and to instruct those already in their employ, and as there are ever-increasing demands in the electric railway industry for men of intelligence, as much incentive, both finan-

cial and in future opportunity, must be afforded in it as in the other vocations if the best kind of men who are now choosing their vocations are to be attracted to the service of the electric railway companies.

Minneapolis Low-Fare Ordinance Nullified

The binding force of a contract between a street railway company and a municipality is defined clearly in the decision of the United States Supreme Court in the Minneapolis case, published in last week's issue. The City Council of Minneapolis passed an ordinance on Feb. 9, 1907, which, if upheld, would have obliged the Minneapolis Street Railway Company to sell six tickets for 25 cents on its Minneapolis lines. On Jan. 3, 1910, the United States Supreme Court, in an opinion delivered by Justice Day, approved the action of the United Circuit Court for the District of Minnesota in enjoining the city from enforcing the ordinance. The Supreme Court based its decision on the ground that the measure impaired the obligation of an existing contract.

While the history of the low-fare movement in Minneapolis and the litigation arising therefrom are familiar to many who are in close touch with street railways, the final decision of the United States Supreme Court emphasizes a number of points which have a direct bearing on the conditions that confront the industry in other cities and it therefore merits careful attention.

The plea upon which the Minneapolis Street Railway secured the injunction preventing the city of Minneapolis from enforcing the low-fare ordinance was that this measure violated the terms of a previous contract passed by the City Council on July 9, 1875, and ratified by an act of the Legislature of Minnesota on March 4, 1879.

This contract gave the company the right for 50 years to charge a fare not exceeding 5 cents for each person carried on any continuous line which might be designated by the City Council or the city, such continuous line, however,, not to exceed 3 miles in length. The contention of the company was that this contract was irrepealable. The position of the representatives of the city was first, a denial of the existence of this contract. They held that the Minncapolis Street Railway Company was organized under such a section of the laws of Minnesota that its charter and consequently corporate life expired 30 years from the date of incorporation, that is, on July 1, 1903. The company contended that it had been organized under another section of the law for a term of 50 years.

Considering the contending arguments on this point, the Supreme Court found that no proceedings have been instituted to inquire into the corporate existence of the company since the end of the 30-year period; that various ordinances have been passed by the city of Minneapolis since July 1, 1903, and that the corporation has continued to act since the expiration of that period.

The court therefore held on this point that the company undertook to organize for 50 years, had continued to act and was so acting at the time of the passage of the ordinance attempting to prescribe a low rate of fare. Disposing in this manner of this aspect of the city's case, the court then examined the original ordinance and the ratifying act of the Legislature to ascertain whether they constituted a binding contract between the city and the street railway for 50 years. The ordinance granted the exclusive right and privilege to the company to construct and operate a passenger railway line. In considering the undeniable obligation which this ordinance imposed upon the city for the full term of 50 years, the Supreme Court takes occasion to emphasize the fact that "contracts of this character are protected by the Federal Constitution from impairment by subsequent State legislation." This bears directly upon the controversy involved in the case under consideration.

From its careful conclusions regarding the nature of a contract in so far as the city is concerned the Supreme Court, however, evidently felt that its duty was to suggest as a corollary another aspect of a contract. It must be borne in mind, the court said, "that public grants of this character are not to be extended by implication and that all that is granted must be found in the plain terms of the act." The decision did not refer in detail to the cases which established this fundamental point, but added that the principle had been announced so frequently and recently in the court that citation was unnecessary. To emphasize again its position on these points the court reiterated that "statutes and ordinances of this character are not to be extended by construction, nor should they be deprived of their meaning if it is plainly and clearly expressed." Later in the decision the court added that language could scarcely be plainer than that in the 1875 ordinance.

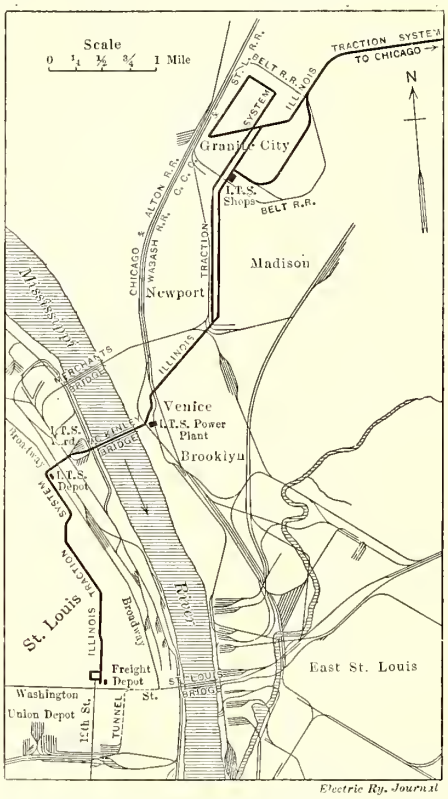
Taking up another point in the array of arguments advanced by the city against the company, the court discussed the contention that the rights granted in 1875 were lost by virtue of the acceptance of an ordinance passed on Sept. 19, 1890, authorizing the company to change from horse to electric operation. The city contended that by this 1890 ordinance, it acquired the right to regulate future rates of fare to an extent unlimited except by constitutional inhibitions against confiscatory legislation. The ordinance of 1875 provided for the use of either animal or pneumatic power for the operation of the cars and prohibited steam cars. But it also stipulated that no propelling power should be continued in use if it should prove to be a public nuisance; and the court held that while the use of electric power as a means for operation was not specifically in contemplation at the time of the passage of the 1875 ordinance, this language indicated that those who agreed upon the conditions of the contract had in mind the probability of progress in the art.

One section of the 1890 ordinance provided that the company should be subject to the conditions of the 1875 ordinance as amended and in force and any other ordinance of the city in force or "hereafter adopted so far as applicable." It was the contention of the city that this clause made the company subject to regulation as to fares. The court held, however, that if it had been intended to change the rate of fare fixed in the 1875 ordinance, it would seem clear that new negotiations would have been opened concerning it and that some definite measure would have been adopted if desirable. The ordinances of 1890, however, did not attempt to repeal the earlier measure, but on the contrary referred to this act as in force. The 1890 measure provided for transfers, but the court added that it did not understand that the acceptance of this regulation had the effect of abrogating the requirement for the fare of 5 cents for a continuous passage.

The decision of the court therefore reaffirms the contract under which the company operates. It serves to strengthen in every way the position of the company during the life of this measure.

IMPORTANT NEW WORK OF THE ILLINOIS TRACTION SYSTEM

The construction program of the Illinois Traction System in 1909 included work of considerable general interest. Most of it was completed by the end of the year according to the plans announced in the Electric Railway Journal for April 3 and April 17, 1909. The principal additions and improvements included the construction of a large bridge over the Mississippi River at St. Louis, the development of a terminal in the heart of St. Louis, the re-equipment of nearly 100 miles of single-phase railroad for operation with standard d.c. apparatus, the construction and purchase of many new cars, expansion of the repair shop plant and the design and foundation work for a 28,000-hp generating station. Good progress was made on the construction of the Mississippi River bridge, but this, of course, is too large an undertaking to be completed in one year. The present article includes a description of the large terminal work at St. Louis; describes the principal features of the new generating station for the southern division of the road; presents the interesting details in connection with the a.c.-d.c. change, and gives accounts of a number of novel operating features which have been developed. Acknowledgment for assistance in the preparation of this article is made to H. E. Chubbuck, general manager; C. F. Handshy, general superintendent of interurban lines, and H. C. Patterson, electrical and mechanical engineer of the Illinois Traction System.



Illinois Traction System—Map of St. Louis and Vicinity, Showing Location of McKinley Bridge and New Terminal

EXTENT OF THE SYSTEM

The Illinois Traction System and the Chicago, Ottawa & Peoria Railway are owned by the "McKinley Syndicate," and include about 550 miles of interurban track, exclusive of running rights over the street tracks of many small city lines owned by the same interests. Reference to a map of the State of Illinois will show that the McKinley interurban lines closely follow a direct line between St. Louis and Chicago. There is a gap of about 15 miles in the electric route at the northern end between Morris and Joliet, and an incomplete section about 40 miles long between Mackinaw Junction and Streator. The preliminary engineering work on these two open sections is now completed and construction work soon will close the gaps, making possible through electric service from Chicago to St Louis.

At the present time the schedules of the Illinois Traction System offer continuous rides between East St. Louis and Peoria, 172 miles, and East St. Louis and Danville, 227 miles. Extending as it does diagonally across that part of the State of Illinois richest in mining and agriculture and serving the center of the State with duplicate north-to-south routes 60 miles long, this railway system has possibilities for developing traffic sufficient to warrant the expenditure of large sums for terminals. For this reason and because of the fine future for suburban development in the territory within 20 miles of St. Louis, the McKinley interests undertook the construction of a bridge across the Mississippi River which would afford a high-speed entrance into the traffic center of St. Louis. With the work under way and proposed, the St. Louis terminal project will require the expenditure of $6,500,000. A map of the route in and near St. Louis is presented.

ST. LOUIS TERMINAL

Briefly, the principal features of the St. Louis terminal project include the construction of 2.5 miles of double-track line on private right-of-way leading from a point on the present system in Granite City, Ill., south to the Mississippi River; the erection of a bridge across the Mississippi River which with its approaches will be nearly two miles long; the development of a large freight terminal at the St. Louis end of the bridge; the construction of a double-track line on 2.5 miles of streets in St. Louis, and the erection of terminal buildings in the commercial center of that city. The increased load occasioned by the St. Louis terminal lines over which 30 local suburban cars will be operated, and the need of power on the southern division of the Illinois Traction System, required the construction of a large power plant near St. Louis. The foundations for this plant, which will have an ultimate capacity of 28,000 hp, have been completed and a large part of the structure and apparatus is under contract. At the close of the year the connecting tracks in Illinois, one main span of the Mississippi River bridge, 850 ft. of the structural steel work on the Missouri side and five miles of single track in St. Louis had been completed.

MCKINLEY BRIDGE

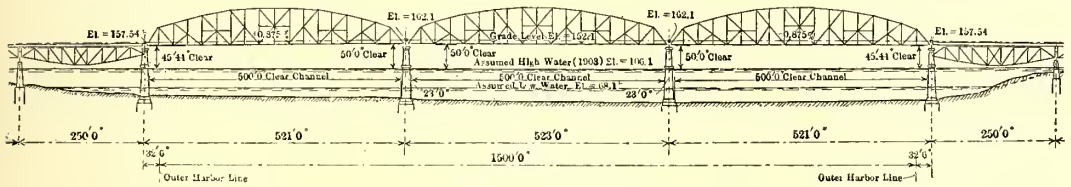
The large bridge over the Mississippi River, which forms the most important link in the St. Louis terminal project of the Illinois Traction System, is designed to have a normal carrying capacity of 10,000 lb. per lineal foot of track and 3000 lb. per lineal foot of driveway. The steel structure includes three river spans, 521, 523 and 521 ft. in length, respectively, two shore spans each 250 ft. long and three shoe spans each 150 ft. long. Structural steel elevated approaches will afford a connecting grade of 1.75 per cent at each end of the bridge. The approach structure on the Missouri side passes over the freight terminal property of 24 acres owned by the traction system, over several steam railroad tracks and St. Louis streets to connect with the street grade 2700 ft. from the west end of the bridge. The steel section of the Illinois side approach is 500 ft. long.

The three river spans of the main bridge are riveted, inclined top chord, through Pratt trusses; the five spans over the shallower part of the river near the shores are riveted deck trusses. The main bridge carries two railroad tracks through a center space 26 ft. 6 in. wide and 20 ft. high in the clear. Two roadways, each 14 ft. wide, are carried outside of the trusses on cantilever brackets at the ends of the through floor-beams. The total width of the bridge over all is 65 ft. and the clearance above high water is 50 ft.; clearance above assumed low water is 84 ft., and the height of the river piers from bedrock to capstones is 150 ft. The masonry of the four large river piers is red granite and Bedford limestone which is backed with concrete. The piers supporting the approach structures on either side are concrete monoliths resting in reinforced concrete piles. All the timber in the floors of the bridge and the paving of the roadways was treated with creosote. The designs for this bridge, which is said to have a larger track-load carrying capacity than any structure spanning the Mississippi River, were prepared by Ralph Modjeska, consulting engineer, Chicago. It is expected that the bridge will be completed and ready for service early in the coming summer. The steel work for the approaches is being furnished and erected by the Strobel Steel Construction Company. The steel work for the river spans was furnished by the Pennsylvania Steel Company and is being erected by the Missouri Valley Bridge & Iron Company.

TRACK WORK IN ST. LOUIS

In St. Louis the interurban tracks leading off the west approach of the bridge extend partly on private right-of-way, but mostly in city streets to a terminal loop at Twelfth Street one block north of Washington Street. This location is about two blocks from the Jefferson Hotel and close to the business center of St. Louis. The terminal loop encircles four city blocks and passes the passenger and express station property now owned by the company.

The total trackage in St. Louis, measured as signal track, is 6 miles and is now ready for use. All track is laid with



Elevation of McKinley Bridge Over the Mississippi River at St. Louis

125-lb., Pennsylvania section No. 273, grooved girder rail, carried on creosoted ties. A concrete foundation, brought to a surface 1½ in. above the tops of the ties, supports a pavement of creosoted blocks which were supplied by the Kettle River Quarries Company, St. Louis. In St. Louis all tracks have a minimum center distance of 12 ft. The curves have a minimum radius of 90 ft. and are so designed that large interurban cars may have ample clearance to pass on them. The trolley wires are supported on steel poles set in concrete.

STATIONS IN ST. LOUIS

The franchise under which the Illinois Traction System will operate in St. Louis permits the handling of trains of "Pullman" and express cars over the entire route. Plans for a large passenger station to be built at the terminal loop in the commercial center of St. Louis are not yet finished, but it is expected that this project will include a large office building designed to permit the use of the first floor as a passenger loading station and waiting room. A freight and express depot is now under construction at the corner of Twelfth and Gay Streets on the terminal loop. This building will include facilities for the economical handling of a large freight and express traffic and its operation will be supplementary to the freight terminal and storage yard located under the west approach to the Mississippi River bridge.

A passenger and freight station is now being erected at the west bridge approach near the intersection of Salisbury Street and Broadway on one of the trunk lines of the United Railways of St. Louis. The building will include ticket offices, baggage rooms, restaurant, etc., on the ground level of Broadway, and loading platforms on the track elevation opposite the second floor. The architectural design will be similar to that of the smaller stations built recently along the Illinois Traction System. The structure, which is to be 65 ft. wide and 150 ft. long, will be built of red paving brick to the water table, buff pressed brick for the exterior walls and will have a red tile roof. The interior finish will be of Venetian oak. Thirty local cars are to be operated between St. Louis, Venice and Granite City, Ill., and the Broadway station will be used largely by patrons of this bridge service. At the track elevation of the station there will be four loading platforms covered with umbrella-type sheds. The baggage and freight-handling equipment of the building will include a freight elevator operating between the street and track levels.

The St. Louis freight yard property, 24 acres in extent and located at the Missouri end of the McKinley Bridge, will be developed as fast as conditions warrant. An incline will first be built with tracks leading from the level of the west approach down to the yards beneath and practically encircling the property. As traffic develops teaming tracks and unloading platforms will follow. The first freight-handling station will soon be erected on this property directly under the approach structure. Track connections with several steam roads are available at this location.

SUBURBAN SERVICE

The proposed bridge service between St. Louis and the densely populated manufacturing center north of East St. Louis on the Illinois side of the Mississippi River will operate over 7 miles of double-track line. It is planned to begin the service with 30 cars now in course of construction in the shops of the American Car Company. These cars will give local service in St. Louis, Venice, Granite City and Madison, Ill., as well as handle the local bridge traffic. The terminals of the local service will be at the downtown station in St. Louis and at the junc-

Illinois Traction System—McKinley Bridge over the Mississippi River, Nearing Completion

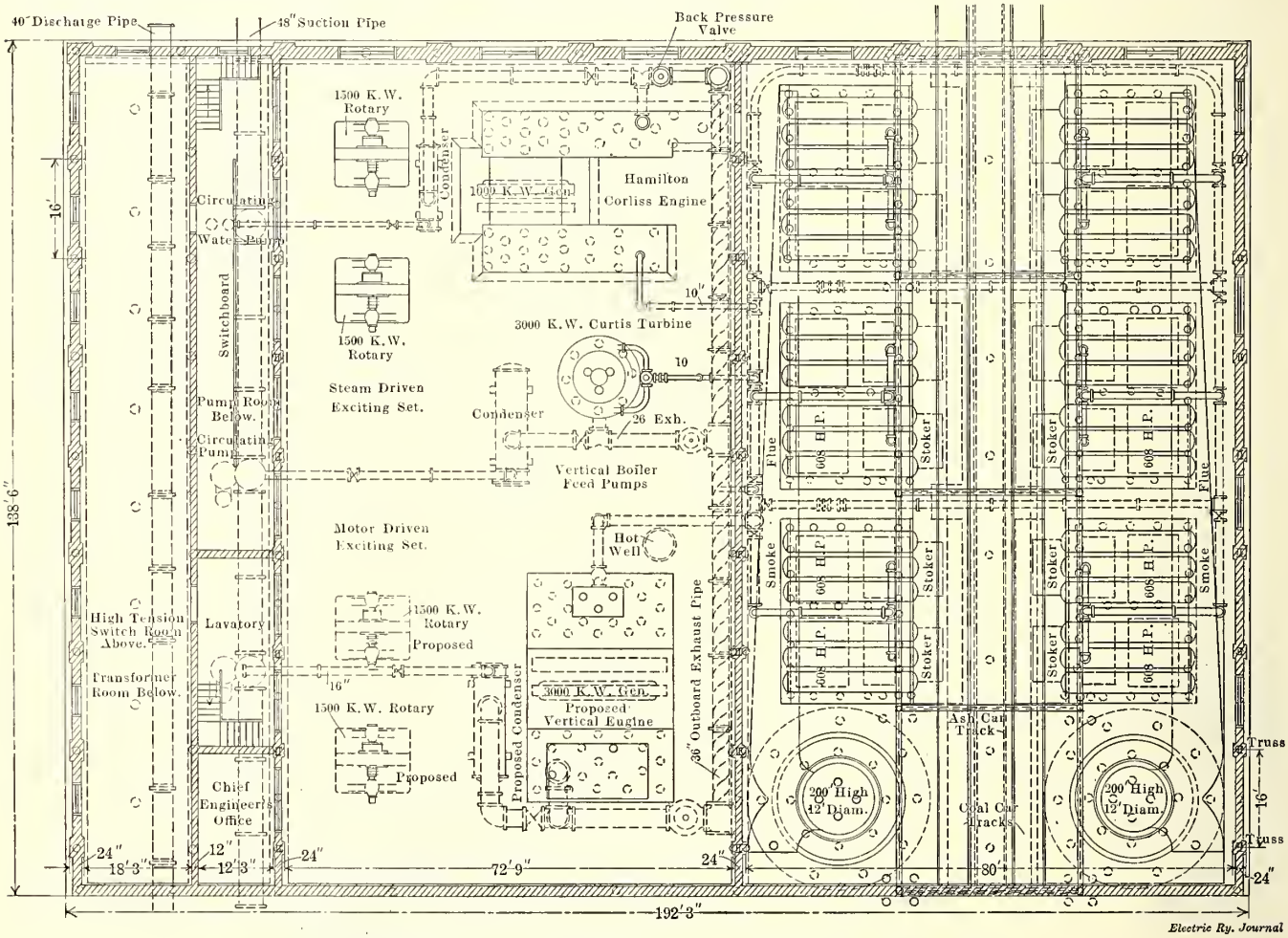
tion of the new bridge cut-off and the old interurban line in Granite City.

NEW GENERATING STATION

Work is now well advanced on the enclosing structure for the large power station at Venice, Ill. Additional generating capacity is needed near St. Louis for the present interurban service, and the local bridge service in and near St. Louis, together with a rapidly increasing lighting load and the probability of building up a commercial service load, called for the construction of a large station. The new plant is designed as one-half of a station with an ultimate capacity of 28,000 hp. The building now under construction is 192 ft. 3 in. x 138 ft. 6 in. in plan. The first section will be subdivided into three main parts, each 136 ft. long. These subdivisions are a boiler house 80 ft. wide, engine-room 72 ft. 9 in. wide, and a transformer and switching section 31 ft. 6 in. wide. The latter section in turn is subdivided into a number of small rooms for the accommodation of the various classes of electrical apparatus and for general service.

Five hundred concrete piles support a foundation floor of concrete 3 ft. thick. The basement side walls are watertight concrete to a point 23 ft. above the basement floor. About 8700 cu. yd. of concrete, in addition to the 500 concrete piles, were used in the foundation work. The concrete piles were supplied by the Raymond Concrete Pile Company, Chicago. Each pile is about 34 ft. long, 8 in. in diameter at the bottom and 20 in. in diameter at the top. In placing the piles a steel casing with a collapsible core is sunk in the ground to the desired depth. Then the core is contracted and withdrawn, the casing inspected for its full length and, finally, filled with concrete. It is estimated that some of the foundation piles at the Venice power station will carry loads of nearly 50 tons each.

The boiler house side of the new station is 162 ft. south of the east end of the new Mississippi River bridge, and the tops of the boiler-house walls will be on a level with the tracks on the bridge. A trestle will connect the railway tracks on the bridge with tracks located above the storage bunkers in the boiler house, thus affording an economical means for handling coal. Fuel may be brought to the plant in trains and the coal cars run into the boiler house and dumped directly into the bunkers without the use of elevating apparatus. The power-plant building is located close to the river's edge and facilities are also available for handling coal by water, should this be desirable. A steel-plate bunker, with a storage capacity of 1400 tons, will extend the full length of the boiler house over the firing aisle. Coal will be fed through gravity chutes and the ashpits are designed to empty directly into cars standing on tracks in the basement. At first six 608-hp John O'Brien water-tube boilers will be installed. These will be equipped with superheaters, to add 75 deg. of superheat, and will be fired by chain grates supplied by the Illinois Stoker Company.



Illinois Traction System—Floor Plan of Venice Power Station

Two self-supporting steel stacks 200 ft. high by 12 ft. internal diameter are being built at one end of the boiler-room. When the intended extension of the plant has been made these stacks will then be in the most efficient location, midway between the rows of boilers.

The present power-generating equipment of the Venice station will include one 1000-kw a.c. unit driven by a Hamilton-Corliss engine with cylinders 26 in. and 52 in. by 48 in., and one 3000-kw Curtis turbine unit. Provision also is being made for the installation of a 5000-kw Curtis turbine generating set. Current for local feeding will be converted by two 1800-kw rotary converters, and provision has been made for the future installation of two additional units of the same size. The engine-room is to be spanned by a 30-ton electrically operated crane.

Condensing water will be drawn from the Mississippi River, 800 ft. distant.

ROADWAY

In the ELECTRIC RAILWAY JOURNAL for April 17, 1909, an extended description of the track and roadway organization of the Illinois Traction System was presented. The work of standardizing the roadway and track structures, as announced in the earlier article, has gone forward during 1909. This work has included the replacing of many timber bridges with steel and concrete structures. The passenger stations also are being standardized. A consistent style of architecture is being followed in this work, and all of the new buildings will be of an attractive ornamental type designed to meet the requirements for years to come.

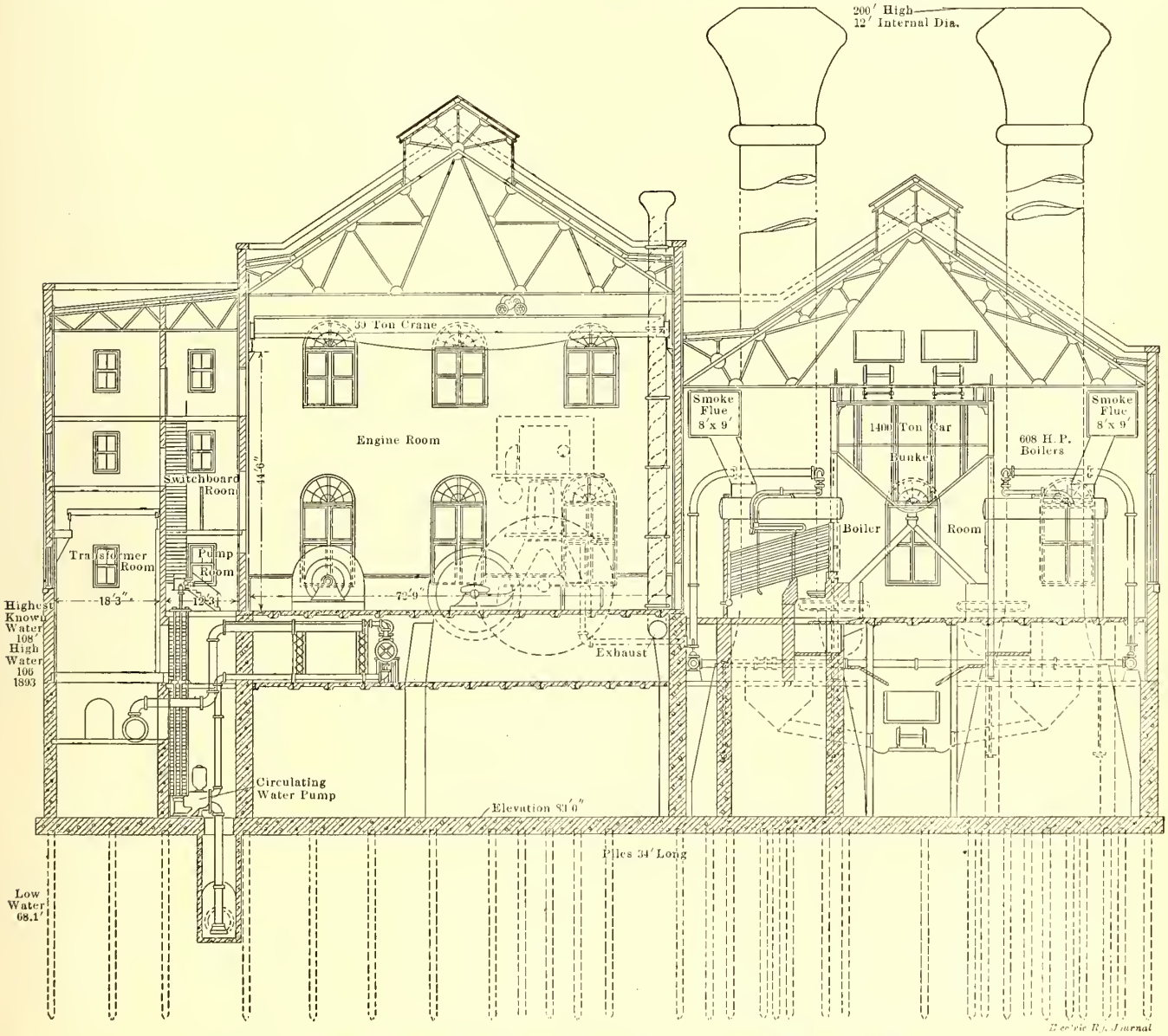
During 1909 the maintenance of way department placed 100,000 new ties in the track. All ties now used on the Illinois Traction System are creosoted according to the process of the American Creosoting Company. Each tie is impregnated with 2½ gal. of oil of creosote. In accounting for this work of replacing ties the cost of the tie itself is charged to maintenance, but the cost of creosoting is charged against construction.

The right-of-way is being improved in appearance wherever conditions will permit. It is interesting to note that one long section of the right-of-way south of Bloomington is leased to a farmer who cultivates the soil between the track of the electric railway and the parallel track of the Illinois Central Railroad. The farmer has a strip of land available for cultivation 175 ft. wide and 4 miles long, on which grain is raised.

ELECTRIC LIGHTING SERVICE

The McKinley syndicate operates electric lighting and other public services in practically all of the large cities served by its railway system. An additional lighting business now is being developed in a number of small towns located within a strip 5 miles wide on either side of the right-of-way. A typical small installation for the town of Glen Carbon, near Edwardsville, has just been completed. This is a mining town located 3 miles from the interurban railway. The traction system has obtained a 50-year franchise to furnish current for residence and commercial use, and a 10-year street-lighting contract for 22 arc lamps. A motor-generator set at a substation on the interurban line supplies 2300-volt, single-phase current over a pair of copper wires leading to the village. The arc-lamp current is handled by a remotely controlled switch located in Glen Carbon. By means of an independent single iron wire connecting this switch with the railway substation, the lights in the village may be turned on or off from the substation without affecting the lighting service.

In Worden, a town of 1500 people located on the interurban line, the railway company has a 10-year contract for 21 lamps. Arrangements are being made to install lighting circuits in the towns of Danvers, Williamsville and Elkhart. Additional towns will be served as fast as suitable arrangements can be made. Wherever current is sold in a small town not located on the interurban line a working arrangement is made with some



Illinois Traction System—Sectional Elevation of Venice Power Station

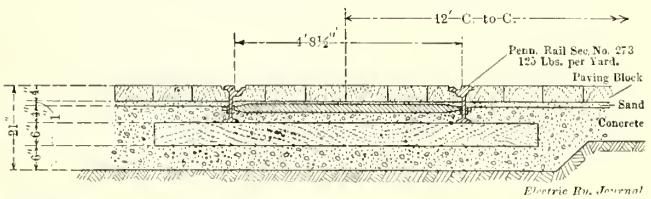
person or company who purchases the current in bulk from the traction company and retails it to the local consumers.

A.C.-D.C. CHANGE

An important part of the engineering work executed in 1909 was the change-over of the system of electrical distribution on 80 miles of track, from 3300 volts a.c. to 600 volts d.c. The principal reason for making this change was to bring about a standardization of current distribution. With the single-phase division of 80 miles connecting with the d.c. division at Bloomington and Springfield, the transportation department frequently was embarrassed in providing equipment suitable for operating over both divisions. The amount of d.c. road and equipment was so large in comparison with the 80 miles of single-phase road and a.c. equipment that conversion of the single-phase division to d.c. operation thus became necessary to facilitate operation.

Conversion of the a.c. lines for d.c. operation has practically done away with three short divisions, thus greatly facilitating the arrangement of schedules and through cars. Before the a.c.-d.c. change was made the schedules provided for running d.c. cars from Decatur north only as far as Bloomington, which was a division point and the connecting point with the a.c. division extending through Mackinaw Junction to Peoria, and from Mackinaw Junction south to Springfield. Now that all of the track is fed with direct current the Decatur-Bloomington service has been extended and trains operate from Decatur through Bloomington to Peoria and from Springfield through Mackinaw Junction either to Peoria or to Bloomington. The running time from Decatur to Peoria, 83 miles, is 3 hours and 10 minutes, equaling the time of parallel steam-road trains.

As built for single-phase operation the electrical transmission



Illinois Traction System—Cross Section of Track Work in St. Louis

system feeding the converted lines comprised a line of three-phase feeders carried on independent poles and a No. 0000 trolley, catenary supported with hangers spaced 50 ft. apart. The single-phase trolley was fed from six static transformer stations. With the conversion for direct-current operation no change was necessary in the transmission system other than making the connections to new rotary-converter substations. The catenary-supported trolley wire has given very satisfactory service for three years, and the only change made in the original construction was the addition of two hangers for each pole spacing of 150 ft.

NEW SIZE OF FEEDER

The current-carrying capacity of the overhead conductor was augmented with a 000000 solid copper feeder. The wire was rolled by the American Steel & Wire Company, and so far 105 miles have been erected. This is said to be the largest order for 000000 solid-drawn feed wire ever placed, and it is thought that the Illinois Traction System is the first to use it for auxiliary trolley feeders. The results with the large wire have been noteworthy. In actual service the 000000 solid feeder seems to provide better current distribution to interurban cars than two 0000 feeders. The large body of copper is slower to heat on a heavy momentary rush of current, and thus the apparent drop is less. Also, the single large wire requires fewer joints and taps than two smaller wires, and the original cost for erection is less.

NEW SUBSTATIONS

The static transformer stations, which formerly supplied 3300-volt current to the trolley wire, have been dismantled and d.c. is now supplied by four new and two remodeled rotary-converter substations. A seventh station will soon be erected.

The north end of the converted division is fed with direct current from power stations at Peoria and Bloomington. The equipment of the large generating station at Peoria formerly included two 750-kw General Electric rotaries. One of these has been moved to Bloomington and installed in the generating station of the local street-railway property and now is being operated there to serve both interurban and city lines. In its place at Peoria an 1800-kw General Electric rotary converter has been installed. The rotary converter at Bloomington receives current from the main high-tension transmission system which is fed from Peoria, 37.7 miles; Danville, 173.8 miles, and Riverton, 82 miles, all of the stations normally being operated in parallel.

One of the newly erected combination passenger and rotary-converter substations is illustrated. The electrical equipment of these stations includes one 300-kw General Electric rotary converter and the necessary transformer and switching equipment for handling 33,000-volt a.c. and 600-volt d.c. The machinery room for these combination stations is 25 ft. 2 in. wide by 49 ft. 6 in. long, located in the center of the building with a waiting-room at one end and a freight-room at the other. The entire structure is 93 ft. 2 in. long over all and of the same interior width as the machinery room. These buildings have concrete foundations and 5-in. concrete floors placed on a filling of cinders.

The walls of the new substation buildings, up to the sill course, are made of pitch-faced, chocolate-colored paving brick; above the sill course the walls are of buff pressed brick. The roofs are covered with red-clay interlocking tile supported on steel trusses with angle-iron purlins. The interior walls of the buildings are sheathed with concrete reinforced with Hy-rib lath, manufactured by the Trussed Concrete Steel Company. Venetian oak is used for the interior finish. The structural materials used in this type of building afford a fireproof structure which is substantial in design and has an especially attractive exterior. A concrete walk serves for a loading platform in front of each station. The cost of such a building is said to be about $5,000.

The conversion of the a.c. lines for d.c. operation made advisable a considerable number of changes in a.c.-d.c. rolling-stock equipment. The details of this work were described in the Electric Railway Journal for April 3, 1909, page 636. Twenty-six cars were re-equipped, each with four GE-205 commutating-pole motors. Since this change was made motors of similar design have been installed on a considerable number of other cars.

SHOP ADDITIONS

The interurban shops of the Illinois Traction System at Decatur were described in detail in the Electric Railway Journal April 3, 1909, page 635. The property on which the shops are located is amply large for considerable expansion of the shop facilities. Part of the plan for expansion is now under way and two new structures parallel with the main shop are nearly ready for use. The new buildings will accommodate the wood mill, foundry, shop storeroom and blacksmith shop. The wood mill and erecting shop building is 300 ft. x 60 ft. in plan and built of brick and tile. A saw-tooth roof provides good daylight illumination throughout the whole interior, which is not subdivided. A gallery along each side increases the space available for storage of patterns, etc. At the rear end of the building the cabinet-shop equipment will be installed on the first floor and a pattern shop on the balcony floor. In the main part of the building an equipment of heavy woodworking tools for car erection will be placed.

The second shop building is a brick and tile structure with a steel-supported roof. This building is subdivided by fireproof cross-walls into a brass foundry, shop storeroom and blacksmith shop. A new oil house and a two-story dry kiln also are being erected. With the completion of the two large new shop buildings considerably more room will be made available in the main building, where general and electrical repair work is done.

ROLLING STOCK

At the present time the rolling-stock equipment of the interurban system includes 77 passenger motor-cars; 10 passenger trailers; 1 office car; 2 sleeping cars; 11 electric locomotives; 16 motor express cars; 5 overhead line cars; 2 work cars; 1 pump car; 36 express trail cars; 4 refrigerator cars; 5 Rodger ballast cars; 402 gondola coal cars; 56 box freight cars; 2 portable substation cars and 1 tool car. The following equipment is now under construction: Thirty 50-ft. suburban cars for the St. Louis bridge service; 2 sleeping cars; 1 private car; 4 combination baggage, smoking and passenger cars; 50 80,000-lb. capacity coal cars; 35 80,000-lb. capacity box cars; 4 caboose cars; 4 express motor-cars; 11 electric locomotives for freight service and 32 express trail cars.

New rolling stock received during the year included 10 interurban passenger cars built by the American Car & Foundry Company; 35 coal cars of 80,000-lb. capacity, built by the Haskell & Barker Car Company; 25 grain cars of 80,000-lb. capacity, built by the American Car & Foundry Company, and 7 passenger trail cars, built by the Danville Car Company.

The Illinois Traction System recently became a member of the Master Car Builders' Association, and, as earlier announced, has completed interchange agreements with the Chicago & Eastern Illinois, Rock Island and 'Frisco systems. It is now necessary for the company to observe the M. C. B. rules for

Illinois Traction System—New Standard Passenger Depot and Substation

interchange of equipment, and the company's cars also are at all times subject to inspection by the representatives of the Interstate Commerce Commission.

TRAFFIC

During 1909 the interurban system of the McKinley syndicate enjoyed a substantial increase in traffic. This increase is due to natural causes and also to improvement in service brought about by faster schedules and by vigorous advertising. The regular schedules out of the Springfield terminal alone now include 106 trains a day. These trains operate over lines extending north to Peoria and Bloomington, east to Decatur, Champaign and Danville, and south to Edwardsville and St. Louis. The Springfield-St. Louis service includes a sleeping car in each direction every night. This sleeping-car service shortly will be extended to include the run from Peoria to St. Louis, 171.3 miles. At present there is no steam railroad through sleeper between these cities.

Two new sleeping cars of improved design are now being built for the Peoria-Springfield-St. Louis service by the American Car & Foundry Company at St. Charles, Mo. The design of these cars includes several novel features originating with H. E. Chubbuck, general manager, and J. M. Bosenbury, superintendent of motive power and equipment, Illinois Traction System. There will be 20 berths in each car, and one distinguishing feature will be windows at the sides of the upper berths. This novelty in design is made possible by the use of a turtle-back roof without a monitor. The sleeping cars now operated between Springfield and St. Louis are equipped with motors, and there has been some criticism of the service on account of noise. For this reason the new sleepers will have heavy M. C. B. passenger-car trucks without motors and will be operated as trailers hauled behind through express motor-cars.

The freight and passenger traffic has shown a substantial increase during the past 12 months. In one item alone, coal, a daily average of 1500 tons is transported. The United States Express Company handles the express business and has messengers on two trains a day out of the larger terminals. The schedules of the express cars are arranged so far as possible to give merchants the maximum amount of time for delivering their outgoing goods to the freight depots. Through express trains operate each way between Peoria and East St. Louis and between Danville and East St. Louis. The latter service is run in connection with the freight service of the Chicago & Eastern Railway, with the trains of which road close connection is made. The growth of freight traffic requires the operation of trains of increased length, and, therefore, the purchase of electric locomotives of large capacity has been necessary. The company now has 11 electric locomotives operating freight trains, and 11 additional locomotives are on order.

The maintenance of way department is engaged in constructing four belt lines around as many cities and these will permit handling long trains over any part of the line without running cars through city streets. These new belt lines are located as follows: Decatur, 5 miles long; Springfield, 6 miles long; East St. Louis, 1.6 miles long, and Granite City, 1.5 miles long. The work of constructing storage yards and connecting tracks at Glover, the junction with the Chicago & Eastern Illinois Railroad, has just been completed. This new track layout permits an interchange of equipment with the steam road.

The Illinois Traction System is under contract to handle 300 tons of coal a day from one mine. Another source of freight traffic is handling grain between widely scattered agricultural centers and the larger terminal cities. To facilitate this grain traffic private concerns have erected grain elevators at several points along the interurban route. One elevator has just been completed near the town of Ospur, on the Illinois Central Railroad, distant about one mile from the interurban line. The new elevator has been built close to the interurban right-of-way. Ample switching facilities provide for handling trainloads of grain. The farmers unload their grain into hoppers on one side of the elevator and then it is raised by electric motor power to storage bins, later to be loaded by gravity into M. C. B. box cars handled by the Illinois Traction System. Applications for sidings for 25 grain elevators, to be built during the coming year, are now in hand.

NEW TELEPHONE LINE

The growth in traffic on all parts of the interurban system has demanded an improvement in the telephone service. Until recently all cars were equipped with telephone instruments and jack boxes were provided at the sidings and other convenient points along the route. These telephone arrangements are now being changed, and instruments are being placed in weatherproof booths at sidings, in addition to the usual substation and passenger-station installations. A new commercial line is being installed. This line will relieve the dispatcher's circuits of considerable business. The commercial wire will cover the entire system and leads will be taken into each of the booths along the route, so that in event of trouble on the dispatching line the commercial circuit may be used. The new commercial-line installation is No. 10 copper wire.

SYSTEM OF DISCIPLINE

Discipline among the trainmen is maintained with a merit system, which is said to be largely responsible for the cordial relations existing between the company and its employees. The system used is an adaptation of the well-known Brown system of merits and demerits, each man being given a credit of 100 marks, against which violations of duty are charged. When an employee has 90 demerit marks he is called before the super-

intendent and warned that 10 additional demerit marks will call for dismissal from service. The board which apportions the merits and demerits is composed of C. F. Handshy, general superintendent of interurban lines; F. L. Richards, trainmaster; W. W. Street, W. Waterson, W. M. Seavers and M. O. O'Connor, assistant trainmasters and local superintendents. This board meets twice a month and passes judgment upon the violation of rules and all meritorious acts performed. Minutes of the meetings of the board are kept, and each employee is notified of any action of interest to him. Protests may be made in writing and the board will then reconsider its decision. An opportunity for final appeal to the general manager is afforded, and each employee has permission to examine his own record at any time. A six months' clear record entitles an employee to 25 credits and a record of 100 merit marks in one year entitles him to a complete new uniform as a reward for good service.

PUBLICITY DEPARTMENT

With a view of increasing the friendly relations with the public, now so highly valued, a separate department of publicity has recently been established. This department attends to the advertising of the service and to the relations with the daily press. Fred G. Buffe, formerly with the Denver (Col.) *News* and more recently with the Peoria *Herald-Transcript,* is in charge of the publicity department. As a means of gaining better publicity, representatives of the daily press frequently are taken over the road so that they may view the new construction and other improvements made. Recently the publicity department published an eight-page insert in 50 different papers located in the more progressive towns in Illinois. In this way 150,000 copies were circulated. The articles making up the eight-page newspaper were illustrated with 55 large half-tone and zinc engravings showing the principal constructional features and stations on the property. There were 43 separate articles on various phases of the McKinley syndicate property, including interesting descriptions of its growth from a road of 11 miles in 1896 to a system of nearly 800 miles in 1909.

INSURANCE ORGANIZATION

All the McKinley public-service companies are united according to contract in supporting the Western Illinois Accident Association, which is operated mutually to receive and disburse the money required for settling accident claims. Each interurban and each street railway company in the McKinley syndicate pays 2 per cent of its gross earnings to the Western Illinois Accident Association. Similarly, the light and gas properties pay one-half of 1 per cent of their gross earnings into the common insurance fund. This fund is held in trust by a board of trustees, which includes the assistant treasurer of the Illinois Traction System, the assistant treasurer of the Western Railways & Light Company, the general manager and the general attorney of all properties.

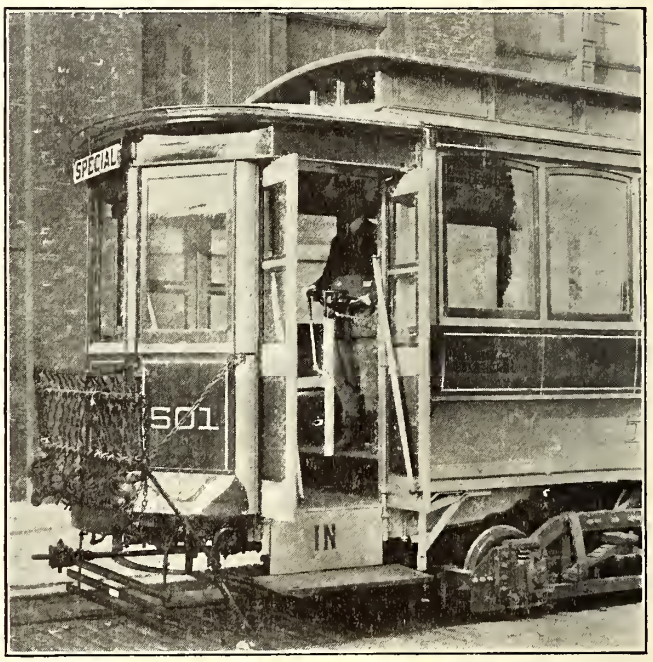
When this method of accumulating an accident surplus had been in effect eight months the fund totaled $60,000. Payments of claims are made out of the fund on the joint signatures of the two assistant treasurers, who also are authorized to invest the surplus money of the association. The assessment of 2 per cent and one-half of 1 per cent made against the electric railway and lighting and gas properties, respectively, are remitted to the trustees in cash and are held in a separate bank account. It is intended to build this fund up to a total of $150,000, if these percentages will allow it. Should it be found by experience that the stated percentages are not sufficient they will be increased, and when the fund reaches $150,000 the percentages will be fixed so as to maintain the fund as close to this amount as possible. With nearly a year's experience in paying claims according to this plan the results are found to be satisfactory. The credit of arranging for this method of paying accident claims is due to H. E. Chubbuck, general manager.

The next convention of the Vereins Deutscher Strassenbahn und Kleinbahn-Verwaltungen (German Street & Interurban Railway Association) will be in Berlin, September, 1911.

IMPROVEMENTS IN PAY-WITHIN CARS IN PHILADELPHIA

The Philadelphia Rapid Transit Company is rebuilding 10 18-ft. single-truck, closed car bodies for pay-within operation, and will embody in them several novel features. The old bodies are being cut in two and a section 8 ft. 6 in. long spliced in, making the new bodies 26 ft. 6 in. long as against 28-ft. body length of the company's standard double-truck semi-convertible cars. The 4-ft. 6-in. platforms of the old bodies are to be retained without changing their dimensions.

The principal feature of interest in the rebuilt cars is the use of twin folding doors opening outward instead of sliding doors to close in the platforms. In the cars in which sliding doors are used the old tapered platforms are built out flush with the inside of the sliding door pocket, and the step folds up to close the opening between the bottom of the sliding door and the platform floor. With the folding doors no change whatever is necessary in the platform floor, and the step folds up against the riser flush with the edge of the floor. The folding doors swing on vertical hinge rods turning at the bottom in trunnions bolted to the outside platform sill and at the top in bearings attached to a shelf over the doors. The pneumatic operating device is mounted on this shelf above the doors, and consists of two opposed cylinders of unequal diameter whose pistons move a common crosshead. To this crosshead are attached two racks



Folding Doors for Pay-Within Cars

engaging with sector gears fastening to the upper ends of the door hinge rods. The folding step is operated simultaneously with the doors by a system of links and bell cranks back of the riser, which connect the door hinge rods with the step hinges. The conductor's and motorman's operating handles are located in the same positions as on the sliding door cars, but the movement of the handles is transmitted through mechanical connections under the floor and inside of the body corner posts to the operating valve on the air engine above the doors. The valve is turned by a cross-rod, which also raises the spring latches holding the doors open and closed, so that the movement of the operating handle first releases the latches and then admits compressed air from the brake reservoir to the operating cylinders.

In opening the doors the large cylinder is open to the atmosphere and the pressure in the small cylinder moves the crosshead to the left. To close the doors pressure is admitted to both cylinders, but the excess pressure on the piston of the large cylinder overcomes the opposing pressure on the small piston and moves the cross-head to the right. A check valve on the exhaust of the large cylinder prevents the doors from slamming when opened outward, and an adjustable detent on the

cross-head reduces the pressure in the large cylinder near the end of the stroke so as to prevent the doors from pinching anyone caught between them as they close. The power required to close the doors and raise the step is adjusted so that a pressure of less than 5 lb. on the step or against the edge of the doors will arrest their movement. There are no grab handles on the outside of the car, but long, slanting grab handles are fastened to the inside of the doors as shown in the accompanying illustration from a photograph.

These 10 cars are to be fitted inside with vertical hand rods rising from the edge of the seats and curved at the top to fasten to the deck rail. A longitudinal rod will be run the entire length of the car on each side within easy reach of those standing in the aisle. There will be five vertical posts on each side and staggered. This arrangement is similar to that employed in the new cars of the Hudson & Manhattan Railroad, which were illustrated and described in the ELECTRIC RAILWAY JOURNAL of Oct. 2, 1909, page 604, with the exception that no division plates are to be used to divide the seats at the posts.

A new method of ventilation is also to be tried in these cars. In the end deck sash at each end of the car will be mounted two revolving fan ventilators or spinners 8 in. in diameter. These will be protected on the outside from the entrance of rain or snow by a flat shield hinged at the top, which may be raised or lowered as required by means of a notched sector and latch inside of the car. The shields will also control the amount of air entering at the front end and leaving at the rear.

All of the sliding door pay-within cars in service in Philadelphia are to be equipped immediately with emergency valves for opening the platform doors. An exhaust valve is to be connected to the cylinder of each pneumatic operating device which is under pressure when the door is closed. A cord attached to the handle of this valve will be carried up inside of the body corner post and over a pulley terminating in a red knob on the outside of the post near the top. By pulling on this cord the pressure in the cylinder is quickly released and the door can then be opened by hand. In order to restore the pneumatic operating mechanism it will be necessary to lift the end seat cushion and close the emergency valve by hand.

THE OCCLUDED GASES IN COAL

Bulletin 32 of the Engineering Experiment Station, University of Illinois, contains the results of researches by S. W. Parr and Perry Barker to determine the behavior of coal upon exposure to the atmosphere with reference to the gases normally contained by it in the mine. The investigation is a part of a study which is being made by the Engineering Experiment Station relating to the deterioration and weathering of coal, as well as its spontaneous combustion. As a result of these experiments, it appears (1) that freshly mined coal when subjected to a vacuum yields an appreciable percentage of combustible hydrocarbons; (2) that the escape of these combustible hydrocarbons takes place slowly in coal exposed to ordinary atmospheric conditions, and is almost entirely suppressed when submerged in water; (3) that the avidity of coal for oxygen is so marked that a sample in an airtight jar with a large volume of air quickly exhausts the air completely of its oxygen, and this experiment may be repeated a number of times without appreciably lessening the avidity of the coal for oxygen; (4) a comparatively small amount of this oxygen shows itself as carbon dioxide of water, but is seemingly more largely involved in the formation of organic acids, such as humic acid, etc.; (5) the finely divided coal is more active in these processes than the coarse coal. On the whole, these experiments afford positive indications as to some of the underlying causes of the heating and spontaneous combustion of coal in storage piles.

The Twenty-third Chapter of Tau Beta Pi, the honorary engineering fraternity, was installed in Cornell University on Jan. 17 by Prof. L. E. Moore, Massachusetts Institute of Technology, president of the fraternity.

GOVERNMENT REPORT ON TRANSPORTATION OF UNITED STATES MAIL

The report of Joseph Stewart, Second Assistant Postmaster-General, relating to the fiscal year ended June 30, 1909, has been made public. The bureau of which he has charge comprises six divisions, including those of railway mail service and railway adjustments. Of electric and cable car routes 525 were in operation at the conclusion of the fiscal year, with an aggregate length of 6,969.34 miles, involving an annual expenditure of $643,977.78. The summary of all classes of mail service in operation during the year shows an average rate of cost per mile of length of $180.01, or an average rate of cost per mile traveled of 14.89 cents. A comparison between the service and expenditure for railroad transportation and electric and cable car service shows the following:

SERVICE AND EXPENDITURE.

	Electric and Cable Car Service.	Railroad Transportation.
Number of routes	525	3,316
Length of routes.....miles	6,969.34	217,115.907
Annual travel.....miles	11,939,373.11	413,546,194.73
Annual rate of expenditure	$643,977.78	$44,885,395.29
Average rate of cost per mile of length..	$92.40	$206.73
Average rate of cost per mile traveled .....cents	5.39	10.85
Average number of trips per week.....	16.47	18.31

Comparison with the previous year shows—

	Per cent.	Per cent.
Increase in number of routes.	17 or 3.346	23 or 0.698
Increase in length of routes .....miles	204.57 or 3.024	3,895.43 or 1.826
Increase in annual travel .....miles	222,956.85 or 1.902	5,747,155.29 or 1.409
Increase in annual rate of expenditure	$2,241.46 or 0.349	$162,409.82 or 0.363
Decrease in average rate of cost per mile of length..	$2.46 or 2.593	$3.02 or 1.439
Decrease in average rate of cost per mile traveled ..... cent	0.08 or 1.462	0.11 or 1.003
Decrease in average number of trips per week.....	0.18 or 1.081	0.08 or 0.435

The appropriation for electric and cable car service for the fiscal year was $725,000; the amount expended was $645,554.05, leaving a balance of $79,445.95, out of which unsettled accounts must be paid. For the fiscal year 1910 the appropriation is $730,000. The annual rate of expenditure was $647,643.42 on July 1, 1909, and $650,746.25 on Sept. 30, 1909. In the fiscal year ending June 30, 1911, the sum estimated as necessary is $740,000, being $10,000, or 1.37 per cent, more than the appropriation for the fiscal year 1910. The report then continues:

ELECTRIC CAR RATES

"In accordance with the provisions of law authorizing maximum rates of compensation to be paid for electric and cable car service readjustments have been made, where the facts and circumstances would justify them, which have resulted in a net increase of $1,562.63 for the fiscal year.

"The act making appropriations for this service for the fiscal year of 1909 includes a provision that not exceeding $30,000 of the sum appropriated may be expended in the discretion of the Postmaster-General where unusual conditions exist or where such service will be more expeditious and efficient, and at no greater cost than otherwise. Under this provision an annual rate of $2,348.48 for such service has been authorized."

AUTHORITY DESIRED TO PAY FROM THIS APPROPRIATION FOR SUBSTITUTED MOTOR-WAGON SERVICE

"In view of the demands made by electric car companies for higher rates for service in the large cities it is found desirable in some cases to substitute motor-wagon service for the electric car service. Under existing law, service of this character must be paid for out of the appropriation for regulation, screen or other wagon service, although it may replace electric car service. The appropriation for regulation, screen or other wagon service is never adequate for this purpose, as the estimate for it is made with a view of caring for only such wagon service as is in existence at the time and for small increases. Such substituted wagon service would in all cases replace electric car service, and thereby relieve the appropriation for that class. If a certain amount of the appropriation for electric car service were made available for substituted motor-wagon service it

would enable the department to care for these cases. It is therefore recommended that Congress be asked to add the following to the last proviso of the paragraph appropriating for electric and cable car service, viz.: 'and that not to exceed $100,000 of this appropriation may be expended for regulation, screen or motor screen wagon service, which may be authorized in lieu of electric or cable car service.'"

The work of the division of railway mail service relates largely to steam lines, but there were 21 electric car lines, with 19 crews of 21 clerks. Railway post office service on electric car lines covered a length of 600.25 miles, an increase of 12.26 per cent over the previous year, and involved an annual service of 615,259 miles, an increase of 3.11 per cent. The corresponding statistics for closed pouch service on electric lines are as follows: Length of lines, 6,037.27; increase, 1.60 per cent.

ELECTRIC AND CABLE CAR SERVICE.

State or Territory.	Number of routes.	Length of routes.	Distance traveled per annum.	Annual rate of expenditure.
		Miles.	*Miles.*	*Dollars.*
Maine	12	143.10	197,675.94	7,128.54
New Hampshire	9	78.46	130,557.95	9,217.61
Vermont	7	40.86	85,780.61	2,865.52
Massachusetts	65	661.73	1,193,669.93	73,173.06
Rhode Island	11	130.92	312,0 3.28	10,721.61
Connecticut	25	199.20	326,772.69	10,523.60
New York	44	601.00	1,195,336.67	65,553.07
New Jersey	15	140.12	250,892.05	8,7.5.01
Pennsylvania	71	898.88	1,631,617.85	83,338.08
Delaware				
Maryland	14	220.53	515,696.14	47,950.63
Virginia	9	78.31	100,740.98	3,397.30
West Virginia	6	66.19	87,531.21	2,795.73
Total first section	288	3,259.30	6,028,285.30	325,359.76
North Carolina	1	3.44	6,051.64	250.00
South Carolina	4	23.63	36,079.88	1,129.16
Georgia	3	25.88	54,726.78	1,794.33
Florida	3	17.53	26,076.47	897.85
Porto Rico	1	7.37	17,304.65	519.13
Alabama	5	46.51	119,560.49	3,586.80
Mississippi	1	1.34	1,817.04	54.51
Tennessee	6	83.95	157,311.10	5,986.55
Kentucky	2	29.74	80,879.58	2,426.34
Total second section	26	239.39	499,807.63	16,644.67
Ohio	68	1,075.39	1,567,672.43	68,079.49
Indiana	14	280.50	2'2,727.04	6,411.87
Illinois	24	317.35	634,811.72	66,369.87
Michigan	20	419.03	556,546.87	23,141.58
Wisconsin	6	33.04	59,510.77	1,976.75
Minnesota	8	120.07	154,220.11	4,796.23
Iowa	9	221.48	242,053.34	9,094.12
Missouri	4	123.90	417,337.15	60,916.49
Total third section	153	2,590.76	3,844,879.43	240,726.40
Arkansas				
Louisiana	1	15.06	58,803.36	1,764.09
Texas	3	51.59	72,413.13	2,219.80
Oklahoma	2	12.66	22,786.52	695.27
Kansas	3	27.95	48,729.12	1,476.62
Nebraska	2	26.25	117,521.24	4,577.74
South Dakota				
North Dakota	1	2.51	2,473.15	175.00
Montana				
Wyoming				
Colorado	3	48.91	74,362.04	2,243.31
New Mexico				
Arizona				
Utah	2	24.79	37,330.06	1,214.82
Idaho	2	61.62	75,083.82	3,378.84
Washington	8	129.42	170,994.44	8,610.70
Oregon	6	87.06	130,427.10	5,218.05
Nevada				
California	25	392.07	756,076.77	29,672.71
Alaska				
Hawaii				
Total fourth section	58	879.89	1,566,400.75	61,246.95
Grand total	525	6,969.34	11,939,373.11	643,977.78

Postal Service on Electric and Cable Cars, Year Ended June 30, 1909

Annual miles of service, 8,768,376; increase, 0.95 per cent. On electric and cable lines 24 cars were in use in the service. Electric and cable car lines were subject to deductions and fines amounting to $3,586.58, but remissions on account of service during the previous year aggregated $12,752.49. During the year arrangements were made for payments monthly instead of quarterly for the transportation of mails by railroad and electric companies.

COST OF THERMIT-WELDING MOTOR CASES

A company which repairs its motor cases by the thermit process, using wax matrices, finds that the average cost of a weld, including labor, is $13, whereas it would have to pay $90 for a new top half. Before applying the thermit, the motor cases are heated to a cherry red in from 1 to 1½ hours with a blow torch, using a mixture of city gas and compressed air. A broken journal box has been welded with thermit for $7.20. Thermit is also successfully used by this company for the repair of cast-steel machine parts.

ANNUAL MEETING OF NORTHWESTERN CEDARMEN'S ASSOCIATION

The fourteenth annual meeting of the Northwestern Cedarmen's Association was held in Chicago on Jan. 11 and 12. E. L. Clark, of the Valentine-Clark Company, Chicago, presided. In his presidential address Mr. Clark reviewed business conditions for 1909, calling attention to the renewal of activity at the close of the year. He said, in part:

"Our stock report of Jan. 1, 1910, shows considerable encouragement in the fact that while we have not had a normal year for sales by any means, yet we were able to reduce our pole stocks fully 20 per cent from what they were a year ago and the output this present winter will not be one-half of what it was last winter. One fact which I think assists matters more than any other point is that the little miscellaneous stocks in the hands of 'scalpers' and companies that are not members of our association have all been cleaned up; these stocks were partially the cause of the low range of prices which we have been compelled to meet.

"In my opinion the demand for the season of 1910 will be better than normal and, as one of our members has put it, we will all see the bottom of our piles before snow flies next winter. If this member is correct, and I am inclined to believe that he is, it behooves us not to let the material go at less than inventory figures; we are warranted in holding on to it for a fair living margin of profit, as the output this winter will not warrant anyone figuring that he is going to be able to produce material the balance of this winter at prices sufficiently low to warrant his sacrificing his seasoned stock. The company that disposes of its material early this year will be the one that makes the least money."

The annual report of the secretary was read by H. H. McKinney, who had assumed the duties of that office late in the association year. The Northwestern Cedarmen's Association has a membership of 32 companies. About 60 representatives attended the meetings. The secretary told of the stock reports collected and furnished the members of the association, of the changes in tariffs governing freight rates and the issuance of the association's freight-rate book. The report of the treasurer, W. B. Thomas, showed the finances of the association to be in a healthy condition. The legislative committee announced that it had been unsuccessful in its attempts to have the duty on cedar poles made specific instead of ad valorem.

The railroad committee called attention to the matter of minimum loading weights and said the railroad companies in Michigan had raised the minimum weight to a figure higher than the cars could be loaded. The State commission had asked the association to have its members make tests, and these had substantiated the statement just made. H. P. Grover, of the Dregge-Grover Lumber Company, Grand Rapids, Mich., attended a conference with the Michigan State Railroad Commission when a minimum for poles of 36,000 lb. on cars 36 ft. to 40 ft. long was requested. Mr. Grover felt this minimum could be had if the questions of loading poles and posts were kept separate. A. T. Naugle, of the Naugle Pole & Tie Company, Chicago, reported for the pole committee that there was a reduction of fully 20 per cent in the stocks of poles on hand now and a year ago. The secretary was instructed to furnish the members with a comparative statement of the estimates of production last year and this, together with the names of those furnishing the estimates, the statement to be tabulated by districts. It was decided that in the future reports of stocks of the various sizes of poles 20 ft. and 25 ft. long and longer be kept separate.

At the close of the session a vote of thanks was tendered E. L. Clark, Chicago, the retiring president, in appreciation of the zeal manifested during his term of office. The following officers were elected: T. M. Partridge, T. M. Partridge Lumber Company, Minneapolis, president; J. E. Gerlich, MacGillis & Gibbs Company, Milwaukee, vice-president; W. B. Thomas, White Marble Lime Company, Manistique, Mich., treasurer; H. H. McKinney, Valentine-Clark Company, Chicago, secretary.

CHICAGO TRACTION DISCUSSED BY WESTERN SOCIETY OF ENGINEERS

The annual meeting and dinner of the Western Society of Engineers was held at the University Club of Chicago, Jan. 12. At this meeting the following officers were installed: J. W. Alvord, president; O. P. Chamberlain, first vice-president; A. Bement, second vice-president; W. K. Hatt, third vice-president; A. Reichmann, treasurer.

Andrews Allen, the retiring president, spoke of the advancements made by the Western Society during 1909. The present membership is 1085, and there has been a net increase of 92 members during the year, with 40 applications for names yet to be acted upon. The net gain in finances of the society for the year was $1,128.

The average attendance at the 35 meetings held was 112. A bridge and structural section had been organized with a membership of 190. This section promised to offer meetings of considerable interest in its particular phase of the field. The society had arranged for a mural standard of length to be donated to the city of Chicago and installed in the city hall, witnessed by a suitable bronze tablet. Mr. Allen suggested that the next administration revise the membership requirements so that each grade of membership would have a definite meaning and that the highest grade would be the equal of the highest grade of any of the national societies. At the close of his remarks Mr. Allen introduced the president elect, J. W. Alvord, who spoke on the history and future of the Western Society of Engineers.

The speaker of the evening was B. E. Sunny, president of the Chicago Telephone Company and a director of the General Electric Company. Mr. Sunny spoke on "The Engineering of Chicago," and his remarks included considerable about the local transportation systems. On the subject of subways Mr. Sunny first referred to the 1902 report of Bion J. Arnold, recommending a system of high-level subways to connect the north and south side lines through the business district and low-level subways for the west side lines. Attention also was called to the recommendations made in 1906 by Mr. Arnold for subways to carry the cars of the surface roads only. Initial subway routes proposed by the committee on local transportation were to serve the business district and handle the cars of both surface and elevated roads.

Mr. Sunny strongly urged that the city be supplied with a board of high-class engineers to which should be referred all data on the property now owned by the city and all of the suggestions that had been made with respect to improvements. An engineering board made up of specialists in several fields, such as subways, water, sewerage, railways, harbors, etc., could, in a brief time, make a definite and no doubt satisfactory recommendation with reference to all important matters of subways, and could also, in a year or 18 months, submit a complete report for a greater Chicago which would be a standard to work to for many years to come.

Chicago spreads out for miles north, south and west, and to arrange for the conduct of its passenger traffic is a more difficult problem than that of New York, where the travel is mostly in a north and south line. In New York one four-track subway through the middle of the narrow island can carry approximately 860,000 passengers in one day and the elevated roads an equal number—a total of 1,720,000 passengers—while all of the Chicago elevated roads carry but 450,000. Similar figures for the surface road would probably show a proportionate comparison. The Chicago transportation facilities are greater than in New York with respect to miles of track and the number of cars available. This means that as a unit the Chicago local transportation system is less efficient. Mr. Sunny asked whether with a properly constructed subway it would not be possible to rearrange the transportation lines in Chicago so that they would operate chiefly between the north and south sides. He suggested two four-track subways and one three-track subway on the north and south streets through the business district. This plan would permit the removal of all surface cars from the north and south streets in the "loop" district except on Wabash Avenue, and on all the east and west streets except Randolph, Madison, Adams and Van Buren streets. It would dispose of seven-tenths of the surface lines in the loop district, do away with all surface crossings, reduce traffic on the Union Elevated Loop by more than one-half and would involve the building of only about 3.5 miles of high-level subway, practically without curves and with no crossings. Attention was called by the speaker to the excellence of the street car subway built under Park Avenue, New York, between Thirty-third Street and Forty-second Street, more than 30 years ago.

Bernard Snow, chairman of the finance committee of the city of Chicago, stated that the problem of providing local transportation in any large city was the most important question to be dealt with. Without proper transportation facilities the radius of action would be so limited that the community would become a group of detached business centers. The Chicago transportation problem for the entire city should be considered as a unit. Surface, elevated and subway lines should be combined in order that through routing and proper service might be given. This combination would require co-operation by all interests, but would be of the greatest value. Mr. Snow favored a centralized engineering board to lay out a plan for all engineering work to be done in the next two or three decades.

L. C. Fritch, chief engineer, Chicago Great Western Railway, and formerly consulting engineer in charge of the study of electrification for the Illinois Central Railroad system, spoke of the steam railroad transportation problem. There are 2200 miles of steam railroad track in the city of Chicago, a large proportion of which is required for handling through freight which passes close to the business center of the city and thus congests traffic. If the railroads would adopt the plan of grouping their union passenger stations and would provide for passing the through freight around the congested portion of the city, electrification would become a far more simple problem.

Mr. Fritch said that the sooner the steam railroads faced the problem of equipping for electrical operation and worked out rational plans the better it would be for them, because otherwise the community might force electrification and this would not permit sufficient time for thorough development of plans. At the present time he objected to electrification on account of cost, but he had faith that the electrical engineers would soon be able to offer a system of electrification which would be more economical to operate than the present steam locomotives.

Milton J. Forman, chairman local transportation committee Chicago City Council, spoke of the financial aspect of the engineering work of Chicago.

Bion J. Arnold, chief engineer, Board of Supervising Engineers, Chicago Traction, told of the city's transportation needs. Chicago must have surface, elevated and subway lines to handle its traffic. It would be an ideal condition if the surface of the streets could be kept clear of railway lines, but this would hardly ever be possible on account of congested traffic in the business district. Referring to his subway recommendations made in 1902, Mr. Arnold said that these were the result of but four months' work, and while the scheme as originally laid down was still suited to the needs, the amount of initial work proposed would now necessarily have to be increased because of the growth of the city since the presentation of the report. The consolidation of the local transportation lines in Chicago would be an excellent thing if financial arrangements would permit it. If the consolidation took place one result would be that the long-haul passengers would be carried by the elevated roads and the short haul passengers by the surface lines. Thus the two kinds of transportation facilities would need to be owned jointly so that the losses of one might be recouped with the profits of the other. Mr. Arnold firmly believed that great benefits would be had from consolidation.

ANNUAL REPORT OF SECOND DISTRICT PUBLIC SERVICE COMMISSION, NEW YORK

The New York Public Service Commission, Second District, has submitted its annual report for 1909 to the Legislature. Of the 811 corporations, municipalities and individuals over which the commission has jurisdiction, 139 are street railroad corporations. The electric railroad mileage is 2,744.54 miles. Following are the results of operation of electric roads during three years:

	Year ended June 30,		
	1907.	1908.	1909.
Gross earnings from operation.....	$19,293,052	$21,194,486	$21,919,652
P. C. of increase over preceding year.	15.9	9.85	3.4
Expenses of operation.....	$12,471,755	$14,129,150	$14,647,399
P. C. of increase over preceding year.	17.7	13.3	3.7
Net earnings from operation.....	$6,821,197	$7,065,336	$7,272,253
P. C. of increase over preceding year.	12.8	3.6	2.9
Passengers carried.....	A427,520,000	451,388,415	462,455,932
P. C. of increase over preceding year.	11.4	7.2	B3
Total dividends paid during the year.	$1,659,157	$2,065,242	$2,965,206

A.—Includes 6,356,000 other than passengers paying single fare and continuing travel on transfers, which is the basis for 1908 and 1909 figures; and this number is deducted before calculating percentage of increase in 1908.

B.—The total for 1908 is decreased by 2,542,000 before deriving this percentage in order to compare like returns in both years.

IRREGULAR DIVIDEND RETURNS

Interesting statements of the dividend abilities of electric railroad corporations, electrical corporations and gas corporations are submitted by the commission, as follows:

Total number of corporations, all classes.....	310
Total number paying no dividends.....	237
Total number paying dividends.....	73
Total number paying no dividends on common stock.....	243
Total number paying no dividends on preferred stock.....	16
Total number paying dividends on common stock.....	67
Total number paying dividends on preferred stock.....	15
Amount of common stock paying no dividend.....	$126,956,530
Amount of common stock paying dividend.....	53,859,074
Amount of preferred stock paying no dividend.....	15,317,400
Amount of preferred stock paying dividend.....	18,461,072

The commission adds that "the very remarkable showing made by these tables and summaries demands but little comment from the commission at this time. Attention should, however, be directed to the fact that they have no wide range of use except by way of suggestion for investigation. The significance of the facts which they disclose depends wholly upon the further fact not disclosed whether these stocks represent actual cash investment in the properties of the several corporations or whether they are lacking in that particular characteristic.

"It is common belief that the plants of the public service corporations included in these tables have been constructed, as a rule, upon the bond issues, and that the common stock, at least, is representative only of hopes entertained. The precise truth with regard to so many corporations, many of which are the product of reorganization, it is difficult, if not impossible, to ascertain. The intervention of construction companies to which a lump amount of stock and bonds has been issued for construction, makes a clear showing of what has been paid for with stock and what with bonds, or how much has been realized for the stock, impossible.

"The general fact is believed to be beyond dispute, although it may not be susceptible of legal proof in many cases, that in launching public service corporations prior to the regulation of capitalization by the State, it has been thought that capital could not be enlisted without the aid of large bonuses in the form of stock upon which returns could be had either by way of dividends or by sale to those seeking an investment. It has been feared, unquestionably, that the regulation of capitalization by the State and insistence by the commission upon the law, that capital stock should be issued only for full par value in money, property, or services, would hinder, if not prevent, the further growth of such corporations by making them unattractive as business enterprises. Upon this point certain observations seem pertinent.

"If the stock of non-dividend-paying corporations represents no actual investment of money, and was in its inception issued merely as a bonus or gratuity in connection with the promotion of the enterprises upon the expectation that it would yield profits, and thus become of substantial value, the table demonstrates the fatuity of any such expectation.

"If the stock was a bonus or gratuity to those to whom it was issued, but has been transferred to holders, for a valuable consideration, who made the purchase as an investment, the table is a warning against dealings in stocks issued for no value, representing no property, and having no prospect of a return except from unreasonable charges.

"If the stock represents actual investment, then there is grave reason to consider what is wrong in the condition of public service corporations in this State that they cannot earn returns upon such enormous sums of money invested in them.

"Any system of law which permits uninstructed investors to place their money in stocks of public service corporations which either ought not to or cannot yield any return, and which, in fact, are non-productive, is distinctly injurious to the non-investing as well as the investing public. Eventually capital will learn by experience the actual results of such financing and will carefully avoid enterprises thus handled.

"The value of the tables presented lies in their conclusive demonstration that, broadly speaking and taking the corporations included as a class, such corporations have either been financed by methods which the event has shown to be disastrous or they are now operating under conditions which need careful investigation."

ISSUES OF SECURITIES AUTHORIZED

During the year the commission granted authority for the issue of $142,855,035 of stocks, bonds and other evidences of indebtedness, making a total of $252,839,681.34 authorized during the 30 months since the commission was established. The increase in the amount of capitalization authorized in 1909 over 1908 was 56.6 per cent and the increase in the number of cases during that time was 33.8 per cent. Of the securities authorized last year, the following related to electric railroads: Stocks, $4,154,000; bonds, etc., $4,950,360.

COMPLAINTS AND HEARINGS

The commission devoted 202 days to public hearings and heard 415 matters during the year. Five hundred and thirty-two formal complaints and others which were treated informally numbering 1088 were received, a total of 1620 as against 1399 during 1908, an increase of 30 per cent. The number of applications from corporations for various authorizations was 225, as against 207 in 1908. The commission disposed of 1515 of these matters. Discussing its practice in taking up complaints for informal investigation and disposition whenever practicable the commission says: "Such practice serves: One, to cause prompt settlement of cases by concession of relief to the complainants; second, to promptly advise many complainants that the law does not apply to the matters they present, either from lack of jurisdiction or because no violation of the statute is shown; third, to keep the number of cases requiring formal investigation and action down to a minimum.

"So far as rates and rate regulations are concerned, and in many cases as to service, the public is best served by this method of informal investigation. Where authority to effectively correct abuses is fully conferred by the statute, the changes of rates and provision of better service called for by well-founded complaints can generally be secured by the commission without trial and issuance of orders.

"The commission has had called to its attention from time to time some tendency on the part of shippers to refrain from complaining to the commission because of the fear that such action may prejudice them in the minds of the railway managers and in some indefinite way result injuriously to their shipping business. Of course, such fear is entirely unfounded and not likely to exist to any extent after shippers have come thoroughly to realize that common carriers in this State are required by the law to act and conduct their business in conformity with accepted standards of reason and justice.

"Some of this tendency on the part of shippers to withhold rate and service complaints is undoubtedly due to the fact that a few subordinate railroad officials have misrepresented the requirements and prohibitions of the law and have based refusal to accord relief to shippers upon a claim that the con-

cession was forbidden by the regulating statute. Several instances of this kind have been brought to the attention of the commission. In every such case the shipper has been notified that the claim so asserted was wholly without foundation, and the subject has been taken up vigorously with executive officers of the railroad company. Their replies have invariably disclaimed responsibility for such action on the part of their subordinates."

DOWNWARD TENDENCY OF RAILROAD RATES

The commission finds, from actual investigation of freight and passenger tariffs, that the trend of rates and fares in the State has been downward.

Freight and passenger tariffs of electric and interurban railroad companies have undergone some revision to the extent of making various rate changes in 32 passenger schedules, seven class-rate freight tariffs and 45 commodity freight tariffs, of which 59 per cent of the passenger fare schedules and 83 per cent of the commodity freight tariffs contained reductions, and 43 per cent of the class-rate freight tariffs contained advances.

ELIMINATION OF GRADE CROSSINGS

Because of the failure of the Legislature to make any appropriation for steam railroad grade elimination last year the commission has been unable to proceed in the 65 applications for grade crossing now pending. The commission says the lack of appropriation to carry on this work has not only seriously interfered with the State's policy to insure public safety at crossings, but also has undoubtedly acted to prevent both railroads and municipalities from presenting further petitions for grade crossing elimination. It is on account of this lack of funds that the commission has been unable to make orders for grade separations at Bronxville, Scarsdale, Irvington, Tarrytown and Hartsdale, within the electric zone of the New York Central & Hudson River Railroad.

INSPECTION OF RAILROADS

During the year, with the exception of the Delaware & Hudson, all steam railroads and 1898 miles of street railroads have been inspected as to physical condition and operation. Recommendations made by the commission as a result of these inspections have resulted in repairs to roadbed, track and bridges, improvement in equipment, additions and needed repairs to terminals and stations, and the correction of faulty operation.

In 1908 the Delaware & Hudson company presented a bill to the commission amounting to $2.450 for the use of an observation engine employed in transporting an inspector of the commission over the road of the company while engaged in inspecting such road. The commission has not paid this bill and last year the company refused to provide facilities for inspection without the payment of special train rates. It was impossible for the commission under these circumstances to have an inspection of the road made. Among the recommendations is the following:

"Additional employees are asked for so that traveling auditors may be sent about through the State to assist the smaller corporations and municipalities operating public utilities that are required by law to report to the commission. The corporations, while rendering an important and usually highly appreciated service in their respective communities, are, because of the smallness of these communities, limited to extremely slender revenues, such that the cost of the services of skilled accountants seems one of the expenses most easily avoided and therefore least necessary to incur. Most of the municipal plants are particularly in need of such aid, and many of them have made requests for it."

TIE AND POLE CONSUMPTION IN 1908

The Census Bureau of the United States Department of Commerce and Labor, in co-operation with the Forest Service, Department of Agriculture, has issued a forest products report for 1908, which contains some very interesting figures on tie and pole consumption, particularly regarding preservatives.

DATA ON CROSS-TIES PURCHASED

The steam and electric railways purchased 112,463,449 cross-ties in 1908, this number being a decrease of 41,236,171 ties, or 26.8 per cent, from the number purchased in 1907. The chief cause of this decrease was the widespread business depression during the year. In 1908 only 7,431,170 ties, or 6.6 per cent of the total, were reported as purchased for new track, while in 1907, 23,557,000 ties, or 15.3 per cent of the total, were purchased for the same purpose. Two-thirds of the ties purchased for new track in 1908 were reported by the steam roads, and one-third by the electric railways. Since the total mileage of the steam roads was several times that of the electric lines, these figures indicate that the building activity on the part of the electric railways was relatively much greater than that of the steam roads in 1908.

The bulk of the ties was composed of comparatively few kinds of timber, although at least 40 different species were used to some extent. The oaks were credited in 1908 with 48,110,853 ties, or 42.8 per cent of the total number of ties purchased. In the production of ties white oak is more largely used than any other species. Three or four Southern yellow pines, taken together, furnished 21,528,874 ties, or about one-fifth of the total number. Combined, the oaks and pines supplied about five-eighths of all the ties purchased. Cedar, chestnut and Douglas fir were used for about 8,000,000 ties each, the three varieties combined forming over one-fifth of the total number purchased. The principal species of wood included under "all other" are in order of their importance: Maple, spruce, birch, elm, sycamore, mesquite, locust, hickory, cherry, walnut and mulberry. There was an increase in the proportion of oaks, chestnut and cedar used in 1908 as compared with 1907, while decreases are shown for Southern pines, Douglas fir and cypress.

The steam railroads purchased 106,038,081 cross-ties, or 94.3 per cent of all the ties purchased. Of this number 82.4 per cent were hewed and 17.6 per cent were sawed. Steam railroads used 95 per cent of all the hewed ties and 91.1 per cent of all the sawed ties purchased during the year. The electric railroads purchased 6,425,368 ties, or 5.7 per cent of the total number of ties purchased. Of these 71.5 per cent were hewed and 28.5 per cent were sawed. While the quantity of ties purchased in 1908 was much less than in 1907, the average prices in the two years were remarkably close together, being 50 cents in 1908 and 51 cents in 1907. The lowest priced ties in

TIES BOUGHT BY ELECTRIC RAILWAYS IN 1908.

	Total			Hewed			Sawed		
Kind of wood.	Number.	Cost.	Average cost per tie.	Number.	Cost.	Average cost per tie.	Number.	Cost.	Average cost per tie.
Oaks	2,414,403	$1,285,968	$0.53	1,812,916	$951,403	$0.52	601,487	$334,565	$0.56
Southern pines	944,690	592,046	0.63	513,759	275,596	0.54	430,931	316,450	0.73
Cedar	850,687	377,868	0.44	777,875	347,498	0.45	72,812	30,370	0.42
Chestnut	1,282,128	605,077	0.47	923,984	434,563	0.47	358,144	170,514	0.48
Douglas fir	357,460	133,148	0.37	37,785	12,785	0.34	319,675	120,363	0.38
Tamarack	28,249	10,327	0.37	28,249	10,327	0.37	.....	.....	..
Cypress	107,676	44,727	0.42	100,879	41,075	0.41	6,797	3,652	0.54
Hemlock	25,063	9,501	0.38	25,063	9,501	0.38	.....	.....	..
Western pine	23,024	9,305	0.40	8,063	3,799	0.47	14,961	5,506	0.37
Redwood	330,762	170,473	0.52	310,412	158,607	0.51	20,350	11,866	0.58
White pine	18,427	11,044	0.60	15,934	9,972	0.63	2,493	1,072	0.43
All other	42,799	23,225	0.54	37,276	20,749	0.56	5,523	2,476	0.45
Total	6,425,368	$3,272,709	$0.51	4,592,195	$2,275,875	$0.50	1,833,173	$996,834	$0.54

1908 were hemlock, the average cost of ties of that wood being 38 cents. The highest priced ties were the Southern ties, the average cost per tie being 54 cents. The average cost of the hewed ties purchased by both the steam and the electric roads was 50 cents, while the average cost of the sawed ties was 52 cents for those purchased by the steam roads and 54 cents for those purchased by the electric roads. An accompanying table shows the number and average cost of each kind of tie bought by electric railway companies in 1908.

The rapid progress of wood preservation during recent years is disclosed in the rapidly increasing percentages of treated ties in the total annual purchases. In 1908, 23,776,060 ties were reported by the steam and electric roads as having been treated by them or purchased already treated, which was 21.1 per cent of all of the ties purchased in that year. The corresponding percentages in 1907 and in 1906 were 12.9 and 11.5, respectively. In 1908 the steam roads treated 12,590,643 ties and purchased 10.565,925 treated ties, the total for these roads being 23,156,568 treated ties, or 21.8 per cent of the total number of ties purchased by them, and 97.4 per cent of the treated ties reported for that year. The use of treated ties is less general among the electric than among the steam roads. The electric railways treated after purchase 212,356 ties, and purchased in treated form 407,136 ties, making a total of 619,492 treated ties, or 9.6 per cent of the total number purchased by them. Among the woods which are most generally treated when used for ties are loblolly and shortleaf pines, lodgepole pine, Douglas fir, Western pine and the red and black oaks.

DATA ON POLES

The number of poles purchased in 1908 showed a slight falling off as compared with the number purchased in 1907. The decrease in the cost of the poles purchased was much larger, however, amounting to 26.6 per cent. The decrease in number is not remarkable, since there have been even more marked decreases in many other lines of forest products during the general business depression. During 1908 the telephone and telegraph companies bought 2,562,239 for $3,425,621; the steam railroads bought 155,418 poles for $501,704, and the electric railway, light and power companies bought 531,497 poles for $2,001,449. Details of the electrical installations are presented in the table below:

POLES BOUGHT BY ELECTRIC RAILWAY AND ELECTRIC LIGHT AND POWER COMPANIES.

	1908			1907		
	Number.	Cost at point of purchase.	Aver. cost per pole.	Number.	Cost at point of purchase.	Aver. cost per pole.
Cedar	285,689	$1,108,976	$3.88	346,813	$1,920,428	$5.54
Chestnut	166,050	625,624	3.77	187,077	762,626	4.08
Oak	2,523	3,638	1.44	2,347	4,715	2.01
Pine	19,919	94,687	4.75	26,969	134,748	5.00
Cypress	30,619	84,663	2.77	71,136	275,594	3.87
Juniper	14,087	45,136	3.20	19,098	77,493	4.06
Tamarack	1,847	5,208	2.82	1,057	3,632	3.44
Douglas fir	3,766	8,366	2.22	3,408	9,284	2.72
Redwood	2,918	15,061	5.16	6,586	37,852	5.75
Locust	37	60	1.62	74	142	1.92
Spruce	1,821	5,018	2.76	4,981	17,539	3.52
All other	2,221	5,062	2.28	7,283	31,920	4.38
Total	531,497	$2,001,499	$3.77	676,829	$3,275,973	$4.84

Increases in the number of poles purchased by all companies are shown in the case of several kinds of wood used for poles, the largest relative gains being 203.7 per cent for bois d'arc, 118.8 per cent for locust and 110.2 per cent for oak. The largest percentage of decrease for the kinds of wood shown was 58.5 for redwood. One of the most interesting changes was the decrease in the purchases of chestnut poles. This decrease was probably due in part to the ravages of the chestnut worm, which have resulted in the killing of a large amount of the pole timber in the northeastern part of the United States. Although the purchases of pine poles show a considerable falling off in number in 1908 as compared with 1907, the average cost per pole was greater in the later year by 33 cents. The wood which showed the greatest increase in average cost per pole was Douglas fir, the change amounting to $1.53; on the other hand, there was a decrease of $1.44 in the average cost per pole for cypress.

The electric railways and the electric light and power companies purchased 16.4 per cent of the total number bought in 1908 by all companies. It was this latter class of consumers whose purchases of poles in 1908 showed the greater actual decrease, although the percentage of decrease in the case of the steam railroad companies was 47.3, and for these companies it was only 21.5. The average cost per pole of different woods varied more widely in 1908 than in 1907, the range in the later year being from 59 cents for oak to $4.09 for Douglas fir. The average cost of the Douglas fir poles was high because a large percentage of them were treated. The highest average cost per pole for any class and species, $18.93, was reported for oak poles 60 ft. or more in length, while the next highest, $18.12, was reported for redwood poles 40 ft. or more in length. Less than 62,000 of the poles of all kinds purchased in 1908 had a length of 45 ft. or over, while nearly 2,860,000 poles, or 88 per cent of the total number, were under 35 ft. in length. Over nine-tenths of the oak poles purchased were less than 25 ft. long, but not quite one-fifth of the total number of chestnut poles were less than that length.

Each year substantial progress is disclosed in the practice and methods of treating poles with chemicals to preserve them from decay, and the benefits derived from such treatment are being demonstrated under practical conditions. A recent inspection of some poles on a Georgia line showed that at the end of four years 67 per cent of the poles that had been treated with certain derivatives of wood and oil compounds were still sound, while the untreated poles were more or less decayed, in some cases to such an extent that their renewal was necessary. The returns for 1908 showed that 344,388 poles purchased during the year received some preservative treatment before being set in position. Of these poles, 101,998, or 29.6 per cent, were bought already treated, while 242,390, or 70.4 per cent, were treated after purchase. The number of poles reported as having been given some preservative treatment in 1908 showed a slight falling off as compared with the corresponding number for the preceding year, because the abnormal business conditions obtaining during the later year caused the purchasers of poles to practice every possible economy in expenditure. The number of treated poles reported formed 10.6 per cent of the total number bought in 1908 as against 12.1 per cent of the total in 1907. Telephone and telegraph companies reported 218,317 treated poles, or 63.4 per cent of the total of all treated poles, for 1908. Electric railway, light and power companies reported 78,083 treated poles, or 22.7 per cent of the total in 1908. Steam railroad companies reported 47,988 treated poles in 1908, or 30.9 per cent of their total purchases. While about seven-tenths of the treated poles were treated after purchase, the proportion was slightly less in 1908 than in 1907, for all companies, and for each class of companies, except in the case of steam railroads, where the percentage increased from 53.4 per cent in 1907 to 77.9 per cent in 1908.

COST OF MAINTAINING A STORAGE AIR-BRAKE SYSTEM

An electric railway which is using the Magann storage air-brake system reports that the total maintenance, power and operating cost based on the use of about 250 equipments does not exceed $1 per month per car. The longest route operated is a 7-mile belt line over which eight trips are made without recharging. The initial charge is taken at 300 lb. and reduced to 40 lb. for train-line use. In the morning the cars are charged in groups at the depots and usually only one additional charge is necessary during the same day. The storage apparatus on the car is easily maintained. The reducing valve is placed under a seat near the stove, where it is always in a warm and accessible position. Since the original trial of the pressure tanks at 500 lb. before installation there has been no need of making any hydraulic tests.

Despite the little extra expense that would be occasioned, no air-brakes are used on the single-truck cars, as it is the company's experience that light city cars are more safely operated with a well-maintained hand brake.

AN ENGLISH CAR HOUSE USED FOR A POLITICAL MEETING

A novel use of an electric railway building was made on last New Year's Day when a mass meeting was held in the car house of the Reading (England) Corporation Tramways, where Mr. Lloyd-George, Chancellor of the British Exchequer, addressed some 10,000 persons who had assembled to hear him defend the proposed budget. The platform, accommodating some 300 persons, was constructed along one side of the car house, and a temporary floor was laid over the car pits. Barriers were erected to divide the audience and all the doors forming the south side of the building were thrown open. The quadrangle formed by the store block of buildings and the boiler house of the power station, between the car house proper and the entrance, was filled with people. The car house was brilliantly illuminated with arc lights, and the network of electric

Mr. Lloyd-George Speaking in British Car House

wires along the roof materially assisted the acoustic properties of the building, a large sounding board being erected just over the speaker's head. Photographs were taken during the meeting by means of a number of flashlights arranged along the walls, which were fired by electricity, under the control of the photographer in one part of the building.

Walter Binns, the general manager and engineer of the tramways, was responsible for the whole of the arrangements and the preparations made for adapting the building for the purposes of this huge meeting, and both Mr. Lloyd-George and Rufus Isaacs, K.C., M.P., the borough member, personally congratulated him upon the excellent arrangements made for the meeting. A substantial sum was paid for the use of the car house and a number of cars conveyed the audience from the car house to all parts of the town immediately after the meeting. The temporary flooring was removed a few minutes after the meeting closed, and the cars ran into the sheds as usual the same evening.

PRODUCER-GAS POWER PLANTS IN THE UNITED STATES

The United States Geological Survey, in Bulletin 416, publishes some statistics of producer gas power plants in the United States compiled by R. H. Fernald. The first producer-gas plants were installed about 10 years ago. At the present time there are over 500 such plants in operation, with an aggregate horse-power of about 115,000. Tests made with the Government plants at St. Louis, Mo., and Norfolk, Va., have shown a fuel consumption under the most favorable conditions as low as 0.95 lb. per electrical horse-power at the switchboard. Tests with 75 grades of bituminous coal show a ratio of coal per brake horse-power fired under a boiler to coal per brake horse-power burned in a producer of 2.7. Many low-grade coals and lignites which cannot be burned successfully under a boiler give excellent results in a gas producer.

MASSACHUSETTS COMMISSIONS REPORT ON ELECTRIC TRANSPORTATION MATTERS AT BOSTON

The Massachusetts Railroad Commission and the Boston Transit Commission, sitting as a joint board by order of the Legislature of 1909, has submitted to the Legislature of 1910 three reports embodying the most important discussion of electric transportation matters at Boston that has been presented to the General Court for many years.

The joint board recommends the passage of a law which will permit the Boston Elevated Railway to acquire control of the system of the Boston & Northern Street Railway, the Old Colony Street Railway, the Middlesex & Boston Street Railway, the Lexington & Boston Street Railway, the Boston & Worcester Street Railway, and the Blue Hill Street Railway, such control to be exercised under the well-established principles of public utility supervision by commission which have characterized the history of Massachusetts transportation for nearly four decades. Under the proposed acquisition of these companies the management of the Boston Elevated Railway would administer the affairs of a system at present comprising about 1700 miles of track, with annual gross earnings of $23,000,000, a yearly traffic of about 460,000,000 revenue passengers, a rolling stock movement of 83,000,000 car-miles per annum, and a payroll of over 13,000 employees, with total operating expenses exceeding $15,000,000.

The lines operated by the Boston Elevated Railway Company would extend in such event from Newport, R. I., on the south to Nashua, N. H., on the north, connecting with the Worcester Consolidated Street Railway system on the west. Large economies in operation and administration are anticipated, and the joint board points out in its report, that the public will, with proper safeguards, gain through a unified system of transportation centering in Boston, enjoying increased accommodations and decreased rates. Through fares, more speedy transit and a common management will induce travel and result in benefits to both the public and the companies.

Other matters considered in the reports are the terms of the consolidation of the West End Street Railway and the Boston Elevated Railway; the proposed tunnel and subway of the Boston & Eastern Electric Railroad under Boston Harbor, and a large number of subway and tunnel questions referred to the joint board by the last Legislature. The board reviews thoroughly the relations of the Boston Elevated and West End companies and concludes that a 7 per cent dividend is an ample and liberal return upon the second preferred stock of the Boston Elevated Railway, to be issued upon consolidation in exchange for the common stock of the West End Street Railway. The latter organization has contended vigorously for an 8 per cent dividend, since the passage of the act of 1908 setting the rate at 7 per cent. The joint board also finds that it is inexpedient, inadvisable and not in the public interest to provide for any distribution of assets among the stockholders of the West End company. The anticipated benefits of the consolidation are emphasized.

Regarding the Boston & Eastern tunnel and subway the joint board considers it necessary to suspend judgment until the quadruple joint commission upon metropolitan improvements shall have made its investigation and final report to the Legislature of 1911. Without in any way withdrawing from the position which the Railroad Commission assumed in its finding that public convenience and necessity call for enterprise in the field undertaken by the Boston & Eastern road, the joint board, as a member of the above quadruple board, considers that the matter should be studied in relation to the broader plans of transportation improvement in the metropolitan district, which are intimately related to the construction of a possible new tunnel between the North and the South Stations and the electrification of the steam railroads in the metropolitan area.

An exhaustive discussion is given in favor of constructing a subway or cross-town tunnel from Park Street to the South Station, with the conclusion that such an underground route

should be built as the natural extension of the Cambridge subway, now under construction. The total cost of this tunnel would be about $3,000,000, and its length 3000 ft.

The joint board recommends no legislation to establish a station at Castle Street, on the Washington Street tunnel line of the Boston Elevated Railway.

Relative to the restoration of elevated train service in the Tremont Street subway the board states that such a course would greatly obstruct traffic, lead to great inconvenience and invite danger of accident, as well as congesting existing tracks, reducing the capacity of the Washington Street tunnel one-half. The crossings which would be necessitated at grade would "form an intolerable nuisance."

An extended study is made of the traffic conditions in South Boston, in connection with the construction of a proposed subway or tunnel line from the city proper to the vicinity of Marine Park. The board finds that the cost of such an undertaking would be all out of proportion to the traffic, being from $6,000,000 to $8,000,000 to handle a maximum of about 28,000 passengers per day. No legislation is, therefore, recommended.

Like action is taken in regard to a proposed subway from Sullivan Square to the North Station, the board finding no evidence that the present combined surface and elevated facilities are inadequate to handle the traffic. Such a line is declared objectionable on account of the impossibility of fitting it into the present system of tunnel lines.

The board finds that the cost of a subway from Tremont and Park streets to Milton Lower Mills would be prohibitive, requiring between $13,000,000 and $14,000,000, exclusive of land damages, and being 6⅛ miles in length. The district is unfavorable for such a project.

No legislation is recommended in case of the proposed union of terminals and stations of the steam and elevated lines of Boston.

The board finds that a tunnel between Boston and Chelsea would be unduly costly, but recommends that a loop be constructed at Scollay Square, in the East Boston tunnel, and that arrangements be made by the Boston Elevated Railway and the Boston & Northern Street Railway for joint use of the tunnel, with transfers given at the Boston Elevated stations.

Bills providing for the discontinuance of the elevated structure on Washington Street, Boston, and the extension of the Washington Street tunnel to Dudley Street were declared unconstitutional by Attorney-General Dana Malone, of Massachusetts.

P. A. Y. E. RESULTS ON THE CHICAGO CITY RAILWAY

This paper presented in its issue of Jan. 15 a statement regarding the 31.9 per cent reduction in accidents on the Chicago City Railway since the use of pay-as-you-enter cars. A more complete analysis of results which this road has obtained with pay-as-you-enter cars is now available. The following statement compares the receipts, car-hours and accidents on the Cottage Grove Avenue division of the Chicago City Railway, from the commencement of the pay-as-you-enter car service on Nov. 24, 1907, to the close of the fiscal year ending Jan. 31, 1909, with the same period for the previous year, when pay-as-you-enter cars were only operated for two months on one line of that division:

	Receipts.	Car hours.	Receipts per C. H.
Nov. 24, 1907, to Jan. 31, 1909	$1,808,321.52	702,395	$2.57
Nov. 24, 1906, to Jan. 31, 1908	1,686,712.17	796,843	2.12
Increase	$121,609.35	*94,448	$0.45
Per cent	7.2	*11.9	21.2
Per cent increase or decrease on all lines	2.8	*3.0	6.0
Per cent of increase or decrease due to "P. A. Y. E." cars	4.4	*8.9	15.2

* Decrease.

ACCIDENTS

FALLING AT CURVES OR WHILE BOARDING OR LEAVING CARS OR STEALING RIDES.

Nov. 24, 1907, to Jan. 31, 1909	1,280
Nov. 24, 1906, to Jan. 31, 1908	1,821
Decrease	541, or 31.9 per cent.

NEW SINGLE PHASE MOTOR DESIGN DISCUSSED AT INSTITUTE OF ELECTRICAL ENGINEERS

A paper entitled "The Space Economy of the Single Phase Series Motor" was presented at a meeting of the American Institute of Electrical Engineers on Jan. 14 by Prof. W. S. Franklin and S. S. Seyfert. The authors stated that the object of their paper was not to discuss the relative merits of single phase and direct current electrification, or to consider the question of the locomotive versus the multiple unit system of electric propulsion, or to argue in favor of the axle motor as against the detached motor with side-bar or gear connection. Its sole purpose was to discuss the question of the maximum single phase series motor rating which can be placed within a given space. They complimented the designers of the motors of the present New Haven locomotives, but believed that improvements were possible in the way of increasing the motor rating for a given weight of locomotive, especially in increasing the tractive effort at starting.

The principal novel feature in the design proposed by the authors consisted in removing the commutator from its usual position, making the armature stationary, arranging the field structure to revolve and placing the stationary commutator at some convenient point where the revolving brushes may be positively driven by the revolving field structure.

For this arrangement it was claimed that all of the available space between the wheels would be occupied by active material, which would be utilized to the best possible advantage. The resistance leads, balanced choke-coils and similar apparatus could then be designed practically regardless of the amount of space they should occupy, and the designer could produce a machine which would commutate satisfactorily with a higher short voltage circuit than would otherwise be possible. Again, the power losses of the non-sparking device would take place outside of the motor region proper, and hence would not have to be taken care of by ventilation. Repairs to resistance leads, or other devices for preventing sparking, could be made with great ease and without opening up the motor in any way, and arrangements could be provided for the short-circuiting of any portion of the resistance leads of the disconnecting or the choke-coils at any prescribed motor speed, thus enabling the designer to treat the problem of starting and the problem of steady running independently of each other.

The authors then presented diagrams of a 500-hp motor of this general construction, and described the type of revolving brush holder which they proposed and of a non-sparking device based on the use of leads, providing great impedance for any short-circuit current and almost non-inductive for the main-line current.

The paper was discussed by several of those present. S. M. Kintner thought that there would be many difficulties in constructing and operating the machine, especially so far as the commutator and revolving brushes were concerned. He also doubted whether there would be any gain in output per unit weight of active material. E. H. Anderson criticized the complication of the proposed motor.

E. F. W. Alexanderson also thought that there was no evidence in the paper that the space occupied by the motor would not be quite as large as that of the motor designed along familiar lines. He commented on the close agreement as regarding weight and space per horse-power of the single-phase railway motors of standard type, as manufactured by different makers in America and Europe. S. S. Seyfert defended the design of the motor.

The report of the Public Service Commission of New York, Second District, on passenger train delays for the month of November shows that 54,891 trains were run, of which 84 per cent were on time at division terminals. The average delay for each late train was 25.3 minutes and the average delay for each train run was 4.1 minutes. The causes of delay were waiting for trains on other divisions, train work at stations, trains ahead, meeting and passing trains, wrecks and engine failures.

HEARING ON FORM OF HEATING ORDER

The rehearing before the Public Service Commission of the First District of New York regarding the form of notice to be posted in the cars of street railways within the jurisdiction of the commission to show the amount of heat required in cars as fixed by the commission, was held before John E. Eustis of the commission on Jan. 10, 1910. Frederick W. Whitridge, receiver of the Third Avenue Railroad, and Henry A. Robinson, counsel, represented that company, and J. L. Waugh represented the Interborough Rapid Transit Company, New York & Queens County Railway and the New York & Long Island Traction Company. H. H. Whitman represented the commission as counsel. Mr. Eustis said that it had been decided to supply the companies with a form of notice drawn by the commission which could be followed without the necessity of the companies submitting notices for approval, but that any material change from the form as proposed by the commission would have to be approved by the commission. All forms of notices approved by the commission previous to the drawing of the conditional notice by the commission would stand. Mr. Eustis thought that two weeks would be sufficient time for the companies to prepare and post the notices, but said that further time would be given if required. The Brooklyn Rapid Transit Company, Metropolitan Street Railway, Interborough Rapid Transit Company and several others have submitted forms of notices which have been approved by the commission.

THE CHEMIST AND THE POWER PLANT

The function of the industrial chemist in improving power plant efficiency was discussed at the recent meeting of the American Association for the Advancement of Science at Boston by Arthur D. Little, before the division of which he is chairman, of the American Chemical Society. Speaking to industrial chemists and engineers, Mr. Little pointed out that in the selection of raw materials the chemist has the power to institute savings amounting to many thousands of dollars yearly, to open up new sources of supply and to improve specifications, analyses and physical tests. In the field of power supply the natural outcome of this line of attack is the improvement of combustion processes, analysis of boiler compounds, study of lubricants, determination of fuel qualities and mixtures, control of the operations of the fire room, and, in general, skilled supervision of plant management.

Within the last few years the chemist has come to see that his work along certain lines in connection with public utility improvement deals with energy no less than with matter, and the excellent results that have in many cases followed the study of power house conditions by the industrial chemist have been in part due to the narrowing of the gap that formerly existed between chemistry and physics. The laboratory has thus been brought close to the field of commercial service, and among public utility enterprises few have benefited more than electric railways from the work of the industrial chemist.

The selection of the most efficient type of coal and its proper use in the boiler room under all conditions of load are essentially chemical questions, and in the gas engine and producer fields the securing of high efficiency is far more than a physical problem. Similarly, the development of power from waste gases of blast furnaces, the storage of coal, prevention of spontaneous combustion by thermometric exploration of fuel piles, abatement of smoke, improvement of draft conditions, analysis of fuel for calorific power, moisture, sulphur, etc., and the purification of boiler feed water are matters in which the chemical engineer has often saved money for operating companies. In stating that the analysis of boiler compounds as an end in itself presents little to excite enthusiasm, but when such analyses are made the means of saving $3,600 a year in the plants of a single company they take on a new and larger aspect. Analytical work is by no means the sole sphere of the power plant chemist. Boiler and engine tests, studies of the efficiency of grates and stokers, applicability of new equipment, such as the low-pressure turbine, behavior of engine and cylinder oils in service, costs of waste, relative efficiency of different lubricating equipment, selection and maintenance of bearing metals, are some of the wider interests of the chemist in connection with the power plant, in each case with the object of reducing the unit costs of service.

HEARING BY MASSACHUSETTS COMMISSION ON HAMILTON FARES

The Massachusetts Railroad Commission gave a hearing on Jan. 10 upon the petition of citizens of the town of Hamilton for a fare readjustment on the Beverly-Gloucester line of the Boston & Northern Street Railway. Selectman Norwood represented the town, and the company was represented by Bentley W. Warren. The petitioners desired a 5-cent fare within the limits of the town of Hamilton, and also a 5-cent fare between Hamilton, Beverly, Ipswich and Essex.

Under cross-examination, the witnesses for the petitioner admitted that the line passes through a comparatively deserted part of the town of Hamilton, being merely a part of a through route between Beverly and Gloucester. There are practically no public buildings of any kind in this part of the town. Mr. Warren stated that the fare in vogue between Essex and Beverly had little to do with what was equitable between Hamilton and Beverly. A charge of 10 cents was made between Essex and Beverly, and also between Hamilton and Beverly, although Essex is slightly beyond Hamilton. The directors of the company still felt that when the board reduced the fare between Essex and Beverly several years ago the traffic conditions of the line did not warrant such action, and that this fare should in no case be regarded as a criterion as to what was proper elsewhere on the system. So far as traffic originating on this line was concerned it would be a benefit to the company and its patrons elsewhere if the line could be taken up, for the business was unremunerative, and the line was of use only as a short section of a through route.

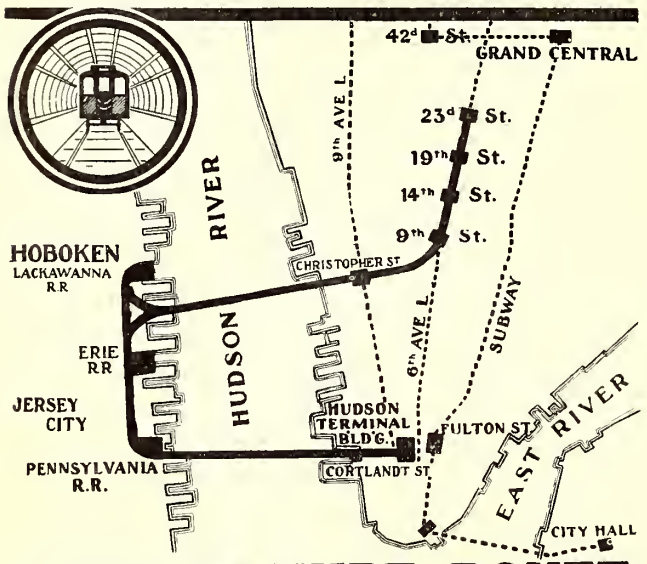
In itself the franchise given to the old Gloucester, Essex & Beverly Street Railway was of practically no value. It covered 3 miles of track that were an absolute burden to the company so far as local business was concerned. It was not what was so often called a "valuable franchise given the company for nothing." The line passed through the back part of the town, and no sane man would ever think of building it except as a part of a through route. In the 12 years that the line had been built probably not over a dozen new houses had been erected along the tracks. The center of Hamilton was adequately served by a different line of the company.

Mr. Warren stated that the difficulty in the case was largely one of fare division points unless the board took the position that the company ought to carry its patrons at a rate per mile that was simply prohibitive of profitable business. When the petitioners asked for a 5-cent fare from all parts of Hamilton to Beverly they wanted the company to carry them a possible 7.9 miles through a country district for 5 cents. The maximum ride which passengers might take from points in Hamilton to Ipswich and Beverly was in several cases in excess of 5 miles. Mr. Warren urged the board to ride over the line or send an inspector over the route to see how little there was in the way of traffic possibilities. He submitted a number of recent photographs taken along the route.

In conclusion, Mr. Warren said that in establishing the fare division point in Hamilton at the junction of the Essex-Gloucester line with the Hamilton-Wenham line, the company had proceeded on the theory that such few patrons as the line had would prefer to be carried for a single fare from the junction into the center of Ipswich to having the limit at the town line. This gave a ride of over 5 miles for 5 cents. The company was ready to go back to a 5-cent fare within the town limits if it could have a 10-cent fare from town to town. It did not think that such a plan would serve, although probably it would be more profitable than the present arrangement. The board took the case under advisement.

"PUBLIC BE PLEASED" ADVERTISEMENT OF HUDSON RIVER TUNNELS

The Hudson & Manhattan Railroad has commenced the publication of large advertisements in the daily newspapers of New York, calling attention to its service through the Hudson River tunnels between New York City and New Jersey. The



HUDSON TUBE ROUTE

"The Public be Pleased"

Quickest—surest—safest—route between New York and New Jersey.

A time, trouble and money saver. The map above shows it at a glance.

Study it! Remember the stations!

The next time, every time, you cross the Hudson **go under it** via the Hudson River Tubes.

QUICKEST because you start from the heart of the city. No trip to the water front. Trains run every few minutes day and night. Make all connections at Pennsylvania, Erie and Lackawanna Stations.
SUREST because you can't be stopped by storm, fog, or ice. If one train is missed another follows shortly. No ten minute wait and a connection lost.
SAFEST because the tubes and trains are equipped with the most perfect safety devices known—steel cars, automatic signals, automatic switches, automatic stops, electric operation.

Hudson & Manhattan Railroad Co

Newspaper Advertisement of Hudson & Manhattan Railroad

first advertisement is shown above, and includes a reference to the policy of pleasing the public which has been expressed so frequently by William G. McAdoo, president of the Hudson & Manhattan Railroad.

SPLICING WITH SILVER SOLDER

A good electrical shop kink is the butt-end soldering of broken or burned-out wires without removing them from the armature or field coil. If the splice is to be made on an armature coil the damaged wire is raised a little way out of the slot. The insulation is then scraped off for a few inches and the ends of the broken wire are filed off smoothly, after which a piece of wire is cut to fill the gap. One end of the inserted wire is then butt-ended with the armature wire and the ends heated by a gas torch until they are red hot. Upon this a little borax is applied as the flux, and then some silver solder is inserted between the ends. When both splices are completed in this fashion the bare wire is wound with silk, as the latter takes up less space than tape. After the silk has been covered with insulation the coil is ready to be returned to the slot. During the operation of heating with the torch the adjacent wires are protected by fiber barriers. Field coils also can be spliced in this way, and the same method used to solder the ends of successive reels of wire.

CHICAGO ELECTRICAL SHOW

The fifth annual Chicago Electrical Show in the Coliseum was opened to the public at 1 p. m. on Jan. 15 and will continue until Jan. 29. It is open daily from 10 a. m. to 10:30 p. m. except on Sundays. The building has been beautifully decorated and the attendance promises to be larger than in any previous year. The illumination scheme is novel and spectacular. The exhibits are illuminated by tungsten lamps mounted on the corner posts and in domes suspended over the center of each space, while the spectacular illumination which is independent of the useful illumination is accomplished by throwing beams of light from projector lanterns among streamers of ribbon and tinsel suspended from the ceiling of the building. These streamers, about 3500 in number, hang straight down at intervals of 2 ft. to 4 ft. with their lower ends free. Of the tinsel streamers about one-half are gold and one-half silver. The ribbon streamers are one-half yellow and one-half gray. There are three 90-amp 30-in. General Electric projector lamps at each end of the building, making six in all. The purpose of these is simply to illuminate the moving streamers, which are of different lengths. The projectors have colored glass slides for varying the effect. The floor area of the building which is occupied by the exhibits aggregates 51,000 ft. The general decorative and illuminating designs were made by D. H. Burnham & Company, architects, of Chicago.

One striking feature of the show is the Wright aeroplane which is exhibited by the United States Government. This machine is suspended from the ceiling in the center of the hall and has been fitted for demonstrating wireless telegraphy. While most of the exhibits are of electrical devices intended for household and commercial use, several manufacturers of electric railway apparatus show samples of their products. Brief descriptions of the exhibits of a number of these manufacturers are given in the following paragraphs:

Allis-Chalmers Company, Milwaukee, Wis., has a machinery exhibit which includes a 30-hp polyphase induction motor and a portable air compressor of 11 cu. ft. capacity driven by a 115-volt, 60-cycle, three-phase, alternating current motor. A model of the Allis-Chalmers horizontal steam turbine is also shown.

American School of Correspondence, Chicago, Ill., exhibits its line of text-books used in school work and its encyclopedias, of which some 13 are published.

American Steel & Wire Company, Chicago, Ill., has an exhibit of its "Crown" and "United States" rail bonds and machines for applying these bonds. Rubber-covered wires and cables, weatherproof wire, lead-encased cables, trolley wire, lamp cord, telephone and telegraph wires and miscellaneous wires of varied description are shown. The exhibit also includes wire railroad fencing.

Chicago Fuse Wire & Manufacturing Company, Chicago, Ill., shows some fine display boards, on which are exhibited a representative line of the company's conduit outlet boxes, covers and switch boxes, also enclosed fuses and blocks, fuse wire and fuse links, all sold under the trade name "Union."

Chicago Pneumatic Tool Company, Chicago, Ill., displays a complete line of portable electric drills, grinders and hoists, as well as portable pneumatic tools, consisting of hammers, drills, etc.

Crane Company, Chicago, Ill., has an exhibit of motor-operated cast-steel gate valves, as well as high-pressure gate valves of ferro steel, and a working exhibit of "Cranetilt" steam traps. There is also a cast-steel header 7 ft. 6 in. long with two outlets, samples of flanging, miscellaneous brass valves, packing, etc.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has furnished its large booth as a reception room. Here a model of the new C-H porcelain switch and a typical sample of steel mill contactors are displayed.

Driver-Harris Wire Company, Harrison, N. J., exhibits its line of resistance alloys in the form of round and flat wire. It also displays Nichrome wire glowing at working temperature in the open air to demonstrate the non-oxidizable properties and efficiency of this wire for all types of resistance. Nichrome

wire has a resistance 60 times that of copper. It is non-corrosive, ductile and can be worked unprotected at temperatures up to 1800 deg. Fahr. Climax (a nickel-steel alloy), Advance (a copper nickel alloy) and Monel metal are among the other alloys shown.

Duntley Manufacturing Company, Chicago, Ill., exhibits Duntley pneumatic cleaners in all sizes for operation, both by electricity and by hand power, together with a portable electric generator to operate the electric cleaners.

Electrical Testing Laboratories, New York, N. Y., have an instructive exhibit designed to show the color values of modern electric illuminants and the great progress that has been made recently in their efficiency.

Electromagnetic Tool Company, Chicago, Ill., shows its new electric hammer in operation. This tool is particularly designed for the drilling of concrete, brick and stone. The amount of electric energy required is 3.5 amp at 110 volts. This device differs from previous electric percussion tools in that the blow is produced, not by direct action of an electromagnet on the plunger or by the centrifugal force of a flywheel arrangement on the motor shaft, but by means of a magnetic clutch so arranged as to provide adequate cushioning of the blow and prevent sudden strain on the motor.

Fairbanks, Morse & Company, Chicago, Ill., exhibit a large collection of electrical machinery, including 14 alternating-current polyphase motors, ranging in size from 1 to 30 hp, and nine direct-current motors ranging in size from 1 to 15 hp. Monarch lamps are also shown in various sizes.

General Electric Company, Schenectady, N. Y., pays particular attention to lighting and heating appliances in its large, centrally located exhibit near the main entrance.

General Vehicle Company, Long Island City, N. Y., has an exhibit of two electric commercial vehicles, a 1000-hp delivery wagon and a 4000-lb. truck.

G. M. Gest, New York, N. Y., displays a full-size brick manhole with fiber conduits leading out on one side and clay conduits on another side. This manhole is equipped with the Gest patented bracket frame and hangers and contains several sections of spliced cable.

Hamler-Eddy Smoke Recorder Company, Chicago, Ill., exhibits the Eddy automatic smoke recorder. This is an instrument carrying a card calibrated for time on which is blown and affixed a continuous ribbon of smoke of the precise shade and density appearing at the top of the power plant stack. The instrument on exhibition is connected with the Coliseum chimney and is shown in operation.

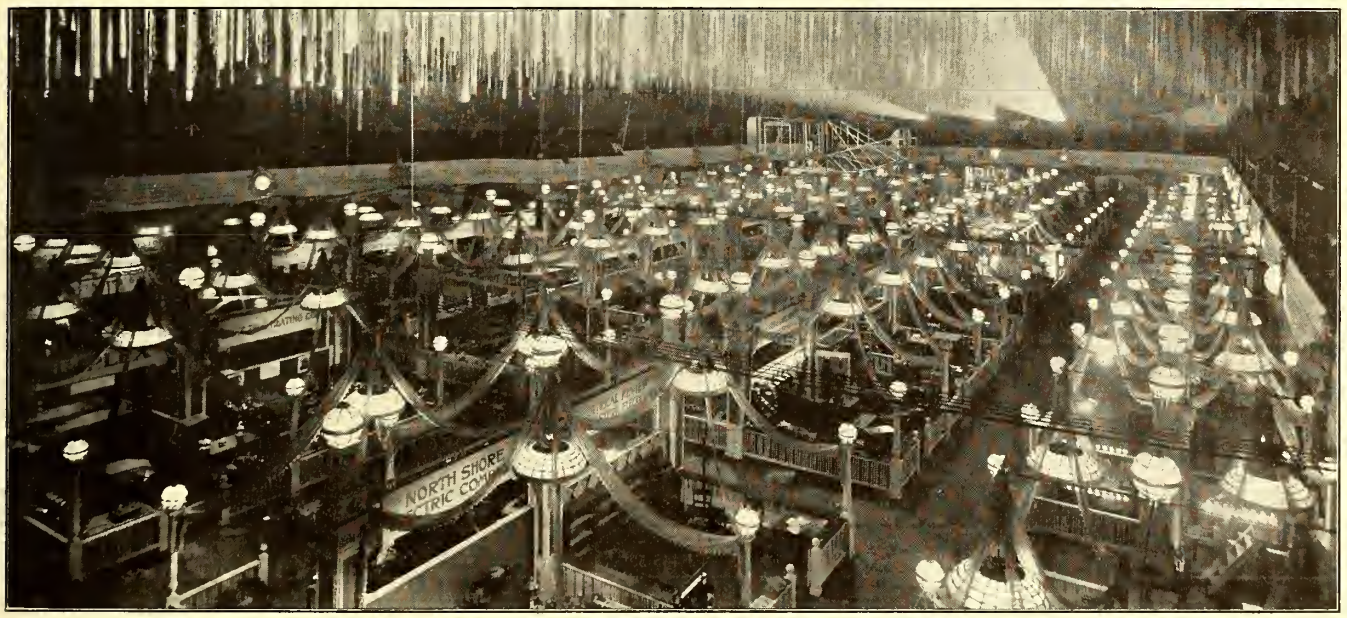
Mathias Klein & Sons, Chicago, Ill., display linemen's and electrical construction tools adapted for pole line work as well as for underground construction and interior wiring. The new Goehst insulation stripper is shown, as well as grips for small wires and cables, gasoline torches, wire reels, pliers, wrenches and a large assortment of other tools.

National Carbon Company, Cleveland, Ohio, displays a complete line of carbon products, primary batteries, motor brushes, arc lamps and electrodes, as well as carbon packing rings for turbines and many other carbon specialties.

National Electric Lamp Association (Engineering Department), Cleveland, Ohio, has a large exhibit of a complete line of 110 and 220-volt Mazda tungsten lamps. Tantalum lamps for the same voltages are also shown. Ten 16-cp carbon lamps and 10 16-cp tantalum street railway lamps are burned continuously during the show.

New York Pole Company, New York, N. Y., shows a number of sections of reinforced electric railway poles.

Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., shows a complete line of telephone apparatus for use on railroads, as well as the company's selective dispatcher signal for use on interurban roads. Several different types of switchboards are also displayed, including both magneto and central energy systems with standard equipment.



General View of Chicago Electrical Show in Coliseum Building

United States Light & Heating Company, New York, N. Y., displays all types of storage battery plates for light and power, propulsion, ignition and automobile lighting, in addition to a plate recently developed for car lighting purposes, which is made by the National swedging process. The Bliss and Moskowitz car lighting system owned by the company is shown in detail.

Western Electric Company, New York, N. Y., devotes much of its space to telephones, but also shows Hawthorn motors and miscellaneous electrical goods.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., displays a very complete line of its smaller apparatus particularly intended for domestic service.

Theodore P. Shonts, president of the Interborough-Metropolitan Company, announced at the annual meeting of the stockholders of the company on Jan. 18, 1910, that J. P. Morgan & Company were ready to furnish $100,000,000, or more, to finance new lines that may be constructed by the company, but said that he did not care to name the conditions which Morgan & Company had made.

VALUATION OF BROOKLYN RAPID TRANSIT SYSTEM

Bion J. Arnold was recalled on Dec. 23, 1909, as a witness in the case before the New York Public Service Commission, First District, involving valuation of the Brooklyn Rapid Transit system in connection with the petition for a 5-cent fare to Coney Island. Mr. Arnold's testimony supplemented his testimony at the hearing on Dec. 15, when, as stated in the Electric Railway Journal of Dec. 25, 1909, page 1261, he estimated the total cost to reproduce the properties at approximately $100,000,000. He presented the accompanying statement, dividing the reproduction value by companies. The total value determined is $103,216,789.30, which includes $2,511,099.31 for non-operative property. The statement represented an attempt to segregate the total value by companies. There should be added whatever is finally agreed to be the value of the real estate over and above the assessed value, since only the assessed value of this class of property was allowed in the valuation. No percentages were added for anything outside of construction expenses. Mr. Arnold was not aware of any properties belonging to the companies which had not been included in his compilation unless it might be rights-of-way that were not assessed.

The allowance for depreciation below cost of reproduction new in properties of this character, Mr. Arnold testified, would depend upon the actual physical condition, which would have to be ascertained after a careful examination, but it would usually extend from 15 to 25 per cent of the value of the physical property. Sometimes a property was found to be worth 85 per cent, sometimes as low as 75 per cent, and there might be cases where the value would be much lower. Mr. Arnold would not attempt to state the percentage for the properties of the Brooklyn Union Elevated Railroad without an exhaustive examination and a carefully prepared estimate. He would say, however, that the property was in very good condition and well kept up, much better than other properties which he had examined. A good deal of the property had been reconstructed. Mr. Arnold spoke more particularly of the Brooklyn Union Elevated road because of his examination of that part of the property, but his remark applied generally to the entire system of the Brooklyn Rapid Transit Company.

George D. Yeomans, general counsel for the company, asked whether Mr. Arnold, in computing the reproduction value, considered the fact that the company had acquired practically all of its 300 lineal ft. of easements. This was not considered, as the property was not assessed. No values were included for intangible elements or franchises.

In answer to a question by Commissioner McCarroll as to the percentage value of a road in good operating and efficient condition, Mr. Arnold stated that in Chicago it was thought that the property, after proper reconstruction, could be maintained at 85 per cent of the cost to reproduce new. Some authorities thought a road could not be maintained at better than 80 per cent, so that probably 80 to 85 per cent of the cost to reproduce new would be first-class condition.

BROOKLYN RAPID TRANSIT SYSTEM—REPRODUCTION VALUE OF PHYSICAL PROPERTY AS ESTIMATED BY BION J. ARNOLD.

PRELIMINARY TOTALS BY OWNERSHIP.

	Ownership.	Operative property. Percentages for contractor's profit, incidentals, engineering and administration. Without.	With.	Total non-operative property.	Grand total operative and non-operative property with percentages.
1.	American Ry. Traffic Co.	.....	.....	$1,000,000.00	$1,000,000.00
2.	Bridge Operating Co.	$72,632.83	$83,527.75	.....	83,527.75
3.	Brooklyn City R. R. Co.	20,470,051.16	25,066,297.00	438,483.00	25,504,708.00
4.	Brooklyn Hts. R. R. Co.	443,180.83	510,726.65	1,000.00	511,726.65
5.	Brooklyn, Queens Co. & Suburban R. R. Co.	4,148,237.47	4,962,498.70	32,483.00	4,994,981.70
6.	Brooklyn Un. Elev. R. R.	20,768,694.51	25,262,154.18	597,282.31	25,859,436.49
7.	Canarsie R. R. Co.	2,853,250.33	3,283,672.57	420.00	3,284,092.57
8.	Coney Island & Gravesend Ry. Co.	379,628.55	463,511.95	.....	463,511.95
9.	Nassau Elec. R. R. Co.	9,800,200.14	11,924,049.18	112,967.00	12,037,016.18
10.	Prospect Park & Coney Island R. R. Co.	1,824,949.06	2,148,614.54	11,440.00	2,160,054.54
11.	New York & Coney Island R. R. Co.	.....	.....	.....	.....
12.	Prospect Park & South Brooklyn R. R. Co.	12,325.00	15,591.13	.....	15,591.13
13.	Sea Beach Ry. Co.	1,297,242.36	1,489,519.32	35,515.00	1,525,034.32
14.	So. Brooklyn Ry. Co.	2,346,875.86	2,799,279.24	52,756.00	2,852,035.24
15.	Transit Development Co.	19,028,308.78	22,696,247.66	228,753.00	22,925,000.66
	Grand total.	$83,445,576.88	$100,705,689.99	$2,511,099.31	$103,216,789.30

INDIANA INTERURBAN RULES AMENDED

At a conference of a committee of Indiana interurban railway managers and the Railroad Commission of Indiana, held at Indianapolis on Jan. 18, the Indiana code of interurban rules was amended to make it conform more closely with the standard code of rules of the American Street & Interurban Railway Association. The committee, composed of H. A. Nicholl, Indiana Union Traction Company; C. D. Emmons, Fort Wayne & Wabash Valley Traction Company; F. M. Durbin, Evansville & Southern Indiana Traction Company, and Guy K. Jeffrus, Terre Haute, Indianapolis & Eastern Traction Company, presented a report recommending the following changes in the Indiana code, all of which were adopted:

Rule 82 (c) to be changed to read "four bells" instead of "three bells," and the positions of Rules 82 (c) and 82 (d) reversed, conforming with American Street & Interurban Railway Association Rule 103.

Rule 134 to have the following paragraph added:

"Conductor must leave the car from the rear platform, and before doing so securely fasten the rear vestibule door opposite the side from which he leaves to flag the crossing, and not give a signal to the motorman to proceed until after he is positive that no one is attempting to board or leave his car. Before starting, the motorman will look back, when conditions will permit, to see that no passengers are getting on or off."

Rule 107, signals at switches, to read as follows:

"After a regular scheduled train or an extra train holding meeting or time orders against an opposing train clears the main track, and switches are properly set for the main track, the conductor must step to the side of the track opposite the switch stand until after the opposing train has passed, keeping his hand lantern at night in full view of the approaching train, but giving no proceed signal. Under like conditions, conductors of extra trains not holding meeting or time orders will remain with their train or out of view of the motorman of opposing train."

Rule 113 to be amended to conform to American Street & Interurban Railway Association Rule 203, and Rule 113-A added, conforming to American Street & Interurban Railway Association Rule 203-A.

Rule 138 to be amended to conform to American Street & Interurban Railway Association Rule 230.

Rule 155 to be amended to conform to American Street & Interurban Railway Association Rule 261.

Rule 162 to be amended to read as follows:

"When a train order is to be given affecting the movements of more than one train, the train or trains whose rights are to be restricted must first receive the order and be given the complete before the order is given to the train or trains whose rights are to be increased; except when the train or trains whose rights are to be restricted are flagged by authorized agents or operators, as per Rule 152."

Rule 239 to be amended to conform to American Street & Interurban Railway Association Rule 398.

MESSAGES OF THE GOVERNORS

The Legislatures of New York, Ohio, Massachusetts, Rhode Island, New Jersey and Maryland have organized for the session of 1910. Sessions of the Legislatures of Kentucky, Mississippi, South Carolina and Virginia are also to be held this year. The Legislature of Illinois convened in special session in December, 1909. Most of the messages of the Governors contained recommendations for legislation affecting railroad interests, several such recommendations being embodied in reference to the necessity for creating public utility commissions. Abstracts of the messages of the Governors of a number of States, so far as they relate to public utility enterprises, follow:

GOVERNOR HUGHES, OF NEW YORK

I again recommend that the Public Service Commission law should be extended to telegraph and telephone companies, and that these companies should be brought under appropriate regulation as to rates, service and other matters similar to that which has been provided for corporations at present subject to the law. The events of the past year have served to emphasize the importance of adequate supervision and regulation, and I know of no sound reason for excluding these activities from the established policy of the State.

Such amendments of the Public Service Commission law as experience has shown to be advisable, to improve its provisions, to aid administration or to carry out the intent of the statute, should be supplied.

I disapproved the consolidated railroad law passed at the last session because the inclusion in the consolidated statute (if enacted as worded), of the provisions of sections 37 and 38 of the railroad law, with regard to rates and charges, might form the basis for a claim that it was the intention of the Legislature to continue these provisions, notwithstanding the subsequent enactment of the public service commissions law. I advise the formal repeal of these provisions of the railroad law. And if a consolidated statute, without a general revision, is enacted—the wisdom of which is open to serious question—they should be omitted.

GOVERNOR FORT, OF NEW JERSEY

In my inaugural address and first annual message, the creation of a public utilities commission, with ample powers to regulate public-utility corporations, was recommended. This recommendation was in line with the pledges made to the people of the State by both political parties in their respective conventions in 1907.

The opposition to such legislation emanates solely from interested sources and corporations which control the franchises for public utility purposes. If the people of the State could fully realize the character of the influence exerted to defeat this beneficent legislation, or could be brought to appreciate fully the advantages which would accrue to them under it, the result would not be doubtful.

There is a statute which prevents the sale of bonds at a less price than 80 per cent of their par; but it in no way prevents the capitalization of futures or of combinations in the same line of business. The law should be clear and stringent against any attempt at the merger of public-utility companies, or the issuance of bonds or stocks by such companies, except upon the approval of some State board.

Every dollar of exploitation, in the way of excessive bond or stock issues, is simply adding to the burden of the people who use the street cars, the electric light and the gas. The same thing is equally true of the telephone service and the charges for express matter. Each of these public-serving companies now conducts these public matters in its own way and in its own time and under any rate it chooses; and the people are helpless. The consumer has no place to go for relief against any exactions, inequalities or neglect, and a long-suffering public must submit and allow all this to continue unless a commission, with ample power to protect and relieve the people, is created.

This question touches every householder and tenant in the State. It affects every home. It is a vital issue and will not down. The failure to enact this legislation during the past two years has been a flagrant violation of a most honorable and specific political pledge.

Whatever bill is enacted should provide for the consolidation of the present Railroad Commission with the new commission created by it, and thus the question of expense which has been raised (not by the people, but by the interested ones) would not avail as an objection. The present Railroad Commission was opposed when created. No one would now abolish it. It has done, and is doing, splendid work. The commissioners now in office can be continued for their unexpired terms, as the commissioners under the new bill. Practically no additional expense would be involved. Forty thousand dollars would cover the cost of this commission, and justice between the people and the public-serving corporations would be assured. This is a small cost for a consummation so greatly to be desired.

There is no subject that is to come before the present Legislature which casts so great an obligation upon us as the creation of a public utilities commission with ample powers. It is an obligation as sacred as the good faith of a political pledge can make it. It is as binding as should be the loyalty of a representative to the people who elected him.

GOVERNOR DENEEN, OF ILLINOIS

The city of Chicago has under consideration the question of the construction, maintenance and operation of subways for the use of street railroads and other public utilities belonging to the city or to public utility corporations, and for general traffic. In this connection the question has been raised as to the authority of the city to appropriate money for the securing of expert advice upon the question whether a subway system for Chicago is desirable, and if so, the precise character and location of such subways. An early decision of this question is of great importance to Chicago, and in view of the purely local character of the questions involved, I have been requested to submit to the General Assembly the question of conferring upon cities the powers mentioned by the passage of an enabling act, and I urge that such an act be passed at the present session.

MIDYEAR MEETING OF THE A. S. & I. R. A.

Since the publication of the list of committees in the issue of last week scheduled to meet at the midyear meeting of the American Street & Interurban Railway Association next week, meetings have been called of the following additional committees: Classification committee of the Accountants' Association, to meet on Jan. 26-27; city rules committee of the Transportation & Traffic Association, to meet on Jan. 27; subjects committee of the Claim Agents' Association, to meet on Jan. 26, and the executive committee of the Manufacturers' Association, on Jan. 27.

Advices have been received from a large number of railway companies that they will be represented at the midyear meeting of the American Street & Interurban Railway Association on Jan. 28, and it is expected that from 150 to 200 persons will be present at the banquet on the evening of Jan. 28 at the Knickerbocker Hotel. Among those who will speak on that occasion are George A. Post, of New York, and Charles W. Colby, professor of history at McGill University, Montreal.

COMMITTEE ON SUBJECTS OF THE TRANSPORTATION ASSOCIATION

R. I. Todd, president of the American Street & Interurban Railway Transportation & Traffic Association, announces the appointment of the following committee on subjects of that association:

J. H. Pardee, chairman, J. G. White & Company, New York.

G. W. Parker, general express and freight agent, Detroit United Railway Company, Detroit, Mich.

H. W. Fuller, general manager, Washington Railway & Electric Company, Washington, D. C.

MEETING OF THE WOOD PRESERVERS' ASSOCIATION

The fifth annual meeting of the Wood Preservers' Association was held at the Auditorium Hotel, Chicago, Jan. 18, 19 and 20. About 75 members and guests were present. The association now has a membership of 60, and is growing rapidly. C. W. Berry, Laramie, Wyo., superintendent, Union Pacific & Western Pacific Preserving Works, was secretary during 1909. The program included discussions of the following papers:

"Precautions to Be Observed to Prevent Fires at Plants," by H. J. Whitmore, superintendent, Missouri, Kansas Wood Preserving Works.

"Results Obtained by Treating with Crude Petroleum," by C. Marshall Taylor, in charge department chemistry and tests, International Creosoting & Construction Company.

"Proper Grouping of Timbers for Treating," by F. J. Angier, superintendent timber preservation, Chicago, Burlington & Quincy Railroad.

"Advantages and Economy of Various Retort Doors," by David Allerton, superintendent, Kettle River Quarries Company.

"Amounts of Various Antiseptics Required per Cubic Foot to Obtain Good Results for Various Purposes," by R. L. Allardyce, general superintendent, International Creosoting & Construction Company.

"What Per Cent of Creosote Oil Can Be Withdrawn from Wood by Subsequent Vacuum?" by J. B. Card, superintendent, Chicago Tie & Timber Preserving Company.

"What Effect Does the Time of Cutting Timber Have on the Rate of Seasoning and Treatment of Same?" by J. G. Williams, superintendent wood preserving department, The Barber Asphalt Paving Company.

"Inflammability of Treated Timber," by H. M. Rollins, superintendent, Texas & New Orleans Wood Preserving Works.

"Economics of Cables, Electricity or Locomotives in Moving Materials at Plant," by Andrew Gibson, superintendent timber preservation, Northern Pacific Railway Company, Brainerd, Minn.

"Precautions to Be Observed for Prevention of Fire in Creosoting Plants," by Lowry Smith, assistant superintendent, Northern Pacific Railway tie-treating plants.

"Advantages and Economy of Various Retort Doors," by Samuel M. Rowe.

During the discussion which took place in earlier sessions of the meeting the following statement of the material treated during 1908 by all processes was presented (this statement is said to be not complete because reports were lacking from some treating plants):

STATEMENT OF MATERIAL TREATED DURING 1908—ALL PROCESSES.

Piling and Poles.

Treatment—	Lineal feet.
Creosote	8,960,400
Zinc Oil	630,800
Total	9,591,200

Lumber.

	Board feet.
Creosote	72,800,600
Zinc Oil	430,300
Zinc Chloride	1,150,800
Total	74,381,700

Building Timber.

	Board feet.
Creosote	16,230,700
Zinc Chloride	840,070
Total	17,070,770

Cross Ties.

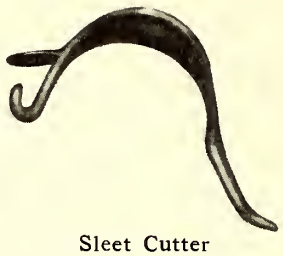
	Number of Ties.
Creosote	9,620,420
Zinc Chloride	8,640,230
Zinc Oil	3,260,530
Total	21,521,180

Miscellaneous (Cu. Ft.).

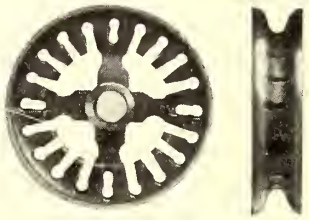
	Switch Ties.	Paving Blocks.	Cross Arms.
Creosote	1,304,840	1,260,020	480,640
Zinc Chloride	570,600	.....	.....
Zinc Oil	95,700	.....	.....
Total	1,971,140	1,260,020	480,640

SLEET WHEELS, SLEET CUTTERS AND HARPS

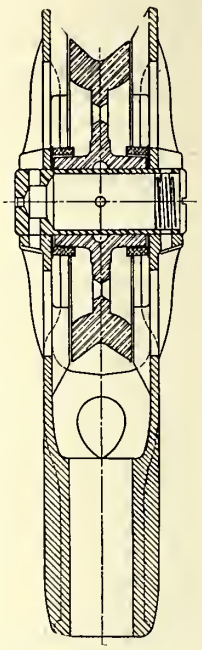
The accompanying illustrations show three interesting overhead current collection specialties of the Holland Trolley Supply Company, Cleveland, Ohio. The sleet wheel and sleet cutter should be of particular interest in view of the operating difficulties brought about by the present severe winter. This company also manufactures several types of harps, of which the type "B" illustrated is perhaps the most interesting. The peculiarity of this harp is that its top flanges project beyond the wheel so that the side wear is taken by the harp flanges,



Sleet Cutter



Sleet Wheel



Projecting Flange Harp

and not by the wheel. Although many assert that rigid iron flanges of this kind wear out the overhead line very rapidly, the manufacturer of this harp states that these opinions have not been borne out in practice. For instance, this harp is reported as having been used with a 6-in. wheel on a line about 13 miles long for over nine months, yet during that period the wear on the harp flanges has been only ¼ in. During the same time even the overhead special work has shown no appreciable wear. The protection afforded by this harp has made it possible to secure a wheel life of 12,000 miles in nine months' service near Cleveland. This company also makes ball-bearing trolley bases and other fittings for overhead current-collecting devices.

CAB SIGNAL SYSTEM FORMALLY ACCEPTED BY THE TORONTO & YORK RADIAL RAILWAY

The Simmen Automatic Railway Signal Company, Toronto, Can., announces that the Toronto & York Radial Railway has formally decided to take over the Simmen cab signal and despatching system, being fully satisfied through eight months' operation that this method has fulfilled all its claims. In the operation on the Toronto & York Radial Railway during the months of November and December, a total of 129,314 signal indications were had, showing an efficiency of 99.995 per cent. The past two months offered a number of opportunities successfully to operate the system under frost, sleet, ice and snow conditions. The company is prepared to say that with its present type of third-rail contact, satisfactory results can be obtained under all climatic conditions.

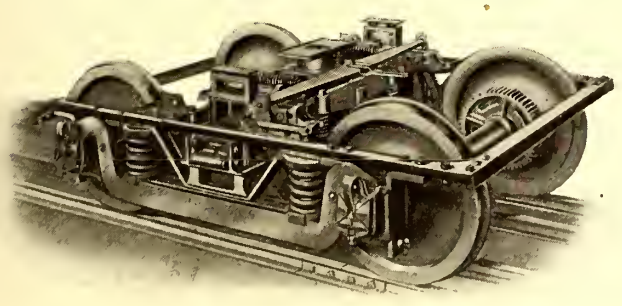
As to the maintenance cost of this method, the routine established on the Toronto installation is as follows: Each day a newly charged storage battery is placed on the cars. The despatchers attend to the charging of the batteries and the

motormen are required to get their batteries from the despatcher's office and place and connect them on the car. The batteries in the despatcher's office are looked after by the despatcher. About half a day each week is devoted by a competent man to the inspection of the signal and telephone apparatus on the cars, besides which the car house men examine the wearing plates on the shoes and the electrical connections to the same. During the nine months of operation there were seven cases of broken wires along the line, which required the attention of a lineman; five cases of broken wires on the car equipment, which were quickly repaired by car house men. The system is so arranged that a broken wire results in a danger signal. As a rule, such a broken wire only incapacitates the signal end of the system and leaves the telephone end intact, thus still permitting the safe and quick despatching of cars until the trouble is repaired. Another strong feature regarding these failures is the fact that when they occur the despatcher instantly has notice of it, thus enabling him to direct repairs as quickly as possible. In its letter of acceptance, the Toronto & York Railway says that even the trackmen can handle the apparatus successfully. The motormen also have more confidence and consequently it is now possible to operate on a closer headway and with more regularity.

ELECTRIC MOTOR TRUCK FOR THE DETROIT UNITED RAILWAY

The accompanying engraving illustrates one of 10 motor trucks recently built by the Baldwin Locomotive Works for the Detroit United Railway Company. These trucks are designated by the builders as class 78-25-A, which signifies a truck of the equalized pedestal type with angle iron end frames, having a wheel-base of 78 in. and designed for a center-pin load of 25,000 lb. The track gage is 4 ft. 8½ in. and the trucks are to be used in interurban passenger service, with maximum running speed of 60 m.p.h. They are arranged for inside hung Westinghouse motors. The axles are finished in accordance with A. S. & I. R. A. standards, and have 4¼ in. x 8 in. journals. The wheels were manufactured by the Standard Steel Works Company; they are of solid forged and rolled steel, 36 in. in diameter, with rims 2½ in. thick.

The truck side frames are of wrought iron, 1¾ in, x 3 in. in section, while the end frames consist of 3 in. x 3 in. angles. The side frames are bent downward at the outer ends in order to clear the car body. Plate gussets brace the frame at the corners, while the side frames are secured to the transoms by



M.C.B. Type Truck for Detroit United Railway

cast-steel gussets of most substantial construction. The transoms consist of 9-in. channels. The bolster and center-pin are of cast steel, and the pedestals are forged iron. In accordance with the practice of the builders, the equalizing beams are punched from steel boiler plate.

The equalizing beam springs are double coil, while the bolster springs are double elliptic. The lower spring plank is composed of a pair of 2½-in. x 2½ in. angles, suspended on swing links. The top swing link bearings consist of steel castings, which span the channel transoms, and constitute a substantial brace at a point where stiffness is essential.

The brakes are inside hung, and the transverse brake beam is pinned directly to the live levers. The brake levers and brake shoe hangers are carried by the transom gussets. The hangers are arranged with a fine adjustment in order that the points of suspension can be located to avoid chattering. The brake shoe, furthermore, is partially cut away in such a manner that the shoe wear will be equalized over the entire bearing surface. It has been found in practice that the form of the brake shoe and the method of suspending the shoes are largely responsible for the amount of chatter. The design of brake applied to these trucks has been patented. The trucks described above embody all the latest improvements adopted by the builders.

THE EDISON NICKEL-IRON STORAGE BATTERY

The Edison Storage Battery Company, of Orange, N. J., announces the completion of the new Edison cell, which is now being placed on the market for traction service. In outward appearance it does not differ except in minor details from the original cell brought out in 1901, but the structure of the positive plate has been radically modified and other improvements embodied to increase the capacity and durability. At present the battery is made in two sizes; one size having four positive and five negative plates, and the other possessing six positive and seven negative plates. The active material in the positive plate consists of nickel oxide and iron oxide is used in the negative electrode. The electrolyte consists of potassium hydrate (21 per cent solution) to which has been added a small amount of lithium hydrate. The function of the lithium hydrate is not clearly defined, but it has been found to improve the working of the positive electrode. The normal specific gravity of the solution is 1.210, which does not change during charge or discharge. The efficiency and capacity of the cell, however, are not affected to any extent if the specific gravity of the solution is as low as 1.160. Below this a temporary effect is noticeable in the output of the cell.

The retaining cans are made of electroplated steel welded at the seams by the autogenous method—that is, by the application of the oxyacetylenic blow-pipe. The walls of the can are corrugated so as to obtain the greatest amount of strength with minimum weight. The iron element has an excess capacity over the nickel element. Much time has been spent in perfecting the latter. The original positive plate was made up of flat rectangular pockets containing nickel oxide and graphite. It was found that the graphite oxidized and that mechanically the structure could not resist the swelling action of the nickel oxide. In the new plate round tubes 4 in. long and about the diameter of an ordinary pencil are used to retain the nickel oxide. The tube is made of thin perforated steel, which when filled with the active material and properly bound by eight steel rings, makes expansion of the active material impossible and insures perfect internal contact. Instead of the graphite formerly employed, electrochemically prepared flakes of pure nickel are interspersed in the oxide to increase the conductivity of the active mass, because nickel oxide of itself is a poor conductor. Each positive plate consists of a grid of nickel-plated steel holding 30 of these tubes. The negative plate comprises 24 flat rectangular pockets supported in three horizontal rows in a nickel-plated grid. The pockets are made of thin nickel-plated steel perforated with fine holes, each pocket being filled with an oxide of iron and afterward subjected to very heavy pressure.

The plates of each group are hung on a connecting rod perpendicular to, but integral, with the pole. They are held apart by nickel-plated steel washers and held in contact by nuts screwed on both ends. The two outside plates are negative and are insulated from the retaining can by sheets of hard rubber. Hard-rubber pieces are also fixed between the can and the side and bottom edges of the plates, and these, together with the hard-rubber rods inserted between the plates, maintain correct spacing and insure permanent insulation.

The cover of the cell, which is also welded in place, has four mountings. Two of these are for stuffing boxes through which the positive and negative poles extend; one is a separator which

prevents the loss of electrolyte while allowing the gases to escape and the other is an opening for water and electrolyte.

This opening is fitted with a water-tight cap held in place by a catch. Fastened to the cap is a spring so arranged that the cap will fly open unless properly fastened. In an assembled battery each individual cell is held securely in place and from contact with adjacent cells by a small hard-rubber button which extends through the slat on each side of the tray and fits over an emboss pressed out on the side of the can. The bottoms of the cells are held in position by small buttons protruding from a conveniently arranged wooden block fastened to the bottom slats of the tray. The indentations in the bottom of the cell fit over these buttons. A rubber apron insulates the cell from the block.

The separator through which the gases escape while the battery is charging is designed in such a way that these escape in a substantially dry condition, the globules of liquid coalescing with a liquid film which forms at the base of the casing and the seat of the ball valve with which the battery is fitted, and in this way falling back into the cell. The electrolyte, therefore, need only be replenished with distilled water until completely changed every eight or 10 months.

Electrical connections between the cells are made by heavy copper connectors, well plated with nickel. The lugs at the end fit over taper-joint binding posts and are held in place with a nut. A socket wrench for removing the nuts which hold down the connectors and a specially designed jack for lifting the lugs from the binding posts when disconnecting the cells are sent with each battery. The trays in which the cells are assembled are very light, and where formerly the ends and the bottom were dovetailed together, the trays are now made of continuous strips, the corners being bent. The data of the cells are given herewith:

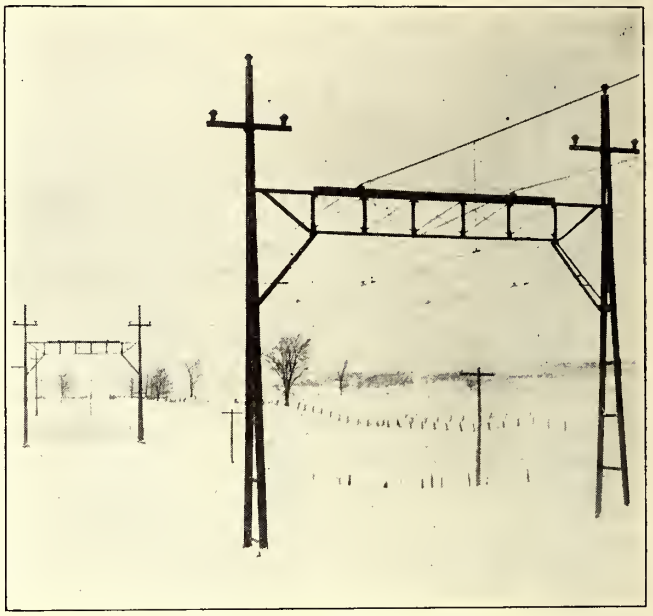
	Type A-4.	Type A-6.
Normal ampere-hour output	150	225
Average discharge voltage per cell	1.2	1.2
Normal rates of charge and discharge in amperes	30	45
Weights (in pounds) of cell complete	13.5	19.2
Width of can	2 9/16	3 3/4
Breadth of can	5	5
Height of can	13 3/8	12 3/8
Height of cell to top of pole (not assembled)	13 3/8	13 3/8
Required height of battery compartment	15	15

While the normal rate of charge of the smaller cell, for instance, is 30 amp, charging may be done at double this rate for a one-hour boost if the temperature is kept from rising much above 100 deg. Fahr. It is also permissible, though not recommended, to discharge a battery continuously at rates up to 25 per cent above normal, and for occasional short intervals of time, as in hill climbing or starting on heavy roads, no harm is said to result if the rate be increased to three or four times normal. The capacity of the Edison battery increases after being in service so that when working some time the efficiency is increased and greater output obtains also. This process of self-forming continues over a period of from one to three months of regular service and it is partly to assist in this forming up that the overcharges are recommended at intervals.

The battery possesses reserve capacity. The highest practical limit of output is reached when a battery is charged 10 hours at the normal rate, and its value will be, for a fully formed battery, perhaps 30 per cent more than the rated output. A seven-hour charge at normal rate is considered a normal charge. With a rated discharge three times normal the voltage drops 0.03 volt for every 10-amp increase. On returning to normal discharge the voltage comes up to a value a trifle higher than normal owing to the heat generated at the heavy discharge rate. Heat on discharge increases the output, while heat on charge diminishes it; but excessive heating at all times impairs the life of the battery. The watt-hour efficiency ranges from 60 per cent to 65 per cent. The smaller battery gives about 14 watt-hours per pound of cell, and the larger cell 16 watt-hours. The manufacturer lays stress on the claims that the battery cannot be injured by overcharging; it does not deteriorate when left discharged; any cell can be removed simply by detaching the connections from the poles, and the battery has nearly twice the output or mileage of other batteries weight for weight.

CATENARY WITH FEEDERS FOR MESSENGERS

An account was published in the Electric Railway Journal, for May 22, 1909, of a proposed method of catenary construction to be employed on the Rochester, Syracuse & Eastern Railroad. The chief feature of novelty in this construction was the use of the regular copper feeder cables for messenger wires, thus dispensing with the usual steel messenger cables. Since the publication of that article a section of this line has



Catenary with Feeders for Messengers

been built by the Rochester, Syracuse & Eastern Railroad, and is illustrated in the accompanying engraving.

The feeders are of 500,000 cir. mil section and are carried on the cross girders of the bridges in porcelain saddle insulators, which are lagged to a kyanized spruce timber 4 in. x 6 in. x 18 in. mounted on the top member of the girder. The bridges are spaced every 300 ft. on straight track, the same distance as when steel messengers were used, and the hangers are 30 ft. apart, or 10 to each messenger span. It is estimated the cost is reduced about $400 per mile over that with steel messengers. As yet no objectionable features have developed.

The Rochester, Syracuse & Eastern Railroad Company built the foundations and installed the bridges, which were designed and furnished by the Archbold-Brady Company, of Syracuse. The Ohio Brass Company supplied the saddle insulators.

TOOTH FOR ICE PLOWS

At this season of the year considerable trouble is caused in Northern latitudes by the accumulation of ice and snow packed between the rails. This cannot be removed by the snow plow, and frequently builds up until it wears against the gear-cases under the cars. To overcome this difficulty the Gifford-Wood Company, Arlington, Mass., has invented an adjustable point or knife, made of tool steel, which can be easily attached to a heavy straight bar, say, 4 in. x 5/8in. This heavy bar can

Ice Plow Tooth

then be bolted to the under side of the scraper beam. An important feature of these knives is that they are easily adjusted and readily replaced without disturbing the rest of the set. These teeth have been in use for some years by the Boston Elevated Railway, Old Colony Street Railway and others.

News of Electric Railways

Franchise Conference in Detroit

A closed conference was held on Jan. 5, 1910, between J. C. Hutchins, president of the Detroit (Mich.) United Railway, F. W. Brooks, general manager of the company, and the committee of the City Council of Detroit on ways and means and ordinances to consider the question of the extension of the franchises of the company. It is understood that what is known as the Carstens plan of extensions, which was presented to the Committee of Fifty, was considered, and that the company will report to the Council as soon as possible which of the extensions proposed in the Carstens plan it thinks should be built at once. The terms of the Codd-Hutchins franchise, which was drawn in 1905 and which the directors of the company approved in 1906, were suggested, but Mr. Hutchins is reported to have said that the company could not meet the terms of the grant now. Detroit has increased greatly as a manufacturing center since then, and suburban districts have been incorporated with the city which would impose too great a burden on the company under the terms of fare proposed in the Codd-Hutchins grant.

The representatives of the city are said to have again asked Mr. Hutchins what concession the company would be willing to make pending the settlement of the franchise, although Mr. Hutchins wrote Mayor Breitmeyer recently that pending the results of the investigation of street railway affairs in Detroit it would not be wise to jeopardize either the revenue or the credit of the company, as noted in the ELECTRIC RAILWAY JOURNAL of Jan. 15, 1910, page 122. The company is said to favor a uniform fare good on all lines day and night. Mr. Hutchins is reported to have said:

"Betterments can be provided in only two ways, out of the profits or by the issue of bonds. We cannot sell bonds for improving lines for which we have no franchise, and we cannot make improvements out of profits unless we earn the profits. If we are forced to reduce our rate of fare or to pay a heavy occupation tax our profits will be reduced just that much and we will be able to do that much less work on betterments. It seems to me that pending a final adjustment under which we can go ahead and bond for all the extensions that are necessary, it is much more important that we should be allowed to continue making profits and putting them into betterments, than to make a reduction in the rate of fare that would benefit only a comparatively small portion of the population."

Decision Affecting Construction of Chicago Subways

Judge George A. Carpenter, in the Circuit Court of Cook County, handed down a decision on Jan. 15, 1910, which is said to remove the only barrier to the construction of the subways in Chicago. The case before Judge Carpenter grew out of an appropriation amounting to $48,429, which it was desired to make from the subway fund to defray expenses incurred in preparing a preliminary subway report under the direction of the local transportation committee of the Chicago City Council. A suit to enjoin the payment of this amount was brought, the right of the city to construct or authorize the construction of transportation subways and to expend any of the money realized under the traction settlement ordinances being raised. A lower court had found that the city could not pay any portion of the so-called "subway fund," as appropriation for payment had been made irregularly. In the present suit it was contended by those seeking the injunction that the State had not conferred upon the city the right to build subways. Judge Carpenter in his decision said:

"The clear inference of the act is that the city is limited in its control and regulation of its streets only by the demand of the public. Whether or not the building of a subway may be regarded as a necessary improvement of the street is a matter which lies wholly within the discretion of the governing body, and in the absence of an abuse of power that discretion will not be interfered with by the court.

"The only test by which the city is governed in determining what use shall be made of the streets is whether or not it is for the benefit of the public, and to that end a legitimate use of the streets."

As a result of the decision it is held that Chicago is empowered to proceed immediately under the traction settlement ordinances to construct a down-town system of subways, the street railways paying for that portion of the underground facilities which shall be used for transportation purposes, and the city defraying the cost of the portion which its individual requirements demand.

Cleveland Traction Situation

Burr Gongwer, secretary to ex-Mayor Johnson of Cleveland, states that Mr. Johnson does not intend to take part in the referendum campaign and that he will not oppose the Tayler ordinance. According to Mr. Gongwer, Mr. Johnson is visiting his daughter in New York and does not propose to return to Cleveland until thoroughly rested.

The selection of Feb. 17, 1910, as the date for the referendum vote pleases Judge Tayler as he wishes to be relieved of the responsibility that rests upon him in arbitrating the differences between the company and the city and desires particularly that the property of the Cleveland Railway be turned over to it as soon as possible by the receivers of the Municipal Traction Company. All the old cars that could be used have been pressed into service, but the rolling stock facilities of the company are not adequate to the demands of service during the rush hours.

Members of the committee of the City Council on judiciary and ordinances agreed on Jan. 14 to recommend the passage of the Horner ordinance repealing the grants made to the Cleveland Underground Rapid Transit Company under the former administration. W. R. Hopkins, who appeared before the committee, said that the company had accepted the ordinances and that they could not be legally repealed now, citing several cases before the Supreme Court. The grants should be presented to the people for approval. The latest ordinance has not been made legal as its publication has been prevented by injunction. An injunction was also secured to prevent the counting of blank ballots in the referendum vote on the first ordinance. Neither case has been decided.

Tentative Ordinance Drawn in Des Moines

The City Council of Des Moines, Ia., passed on Jan. 10, 1910, and A. J. Mathis, Mayor of Des Moines, approved on the same day a proposed ordinance drawn under the direction of R. O. Brennan, city solicitor of Des Moines, in accordance with a resolution of the City Council on Jan. 3, 1910, as a basis for negotiations for an extension of the franchise of the Des Moines City Railway for 25 years. The ordinance imposed in general the following principal provision:

The company shall use electricity as motive power, but shall have the right to use any other power except steam which the city shall approve. Within two years after the passage of the grant the company shall construct or reconstruct 10 miles of line, increase its power capacity 50 per cent and place in service at least 25 new cars to be equipped with power and hand brakes. All work in the streets shall be done under the supervision of the city engineer and be approved by him. The width of the devil strip shall not be lessened and, wherever practicable, the tracks at curves shall be laid so as to enable cars to pass with safe clearance. The rail of single track and the inside rails of double track shall be cross-bonded not less than every 1000 ft. Poles shall be set in concrete and be spaced on an average from 100 ft. to 115 ft. apart, the location of poles to be subject to the approval of the superintendent of the department of streets and public improvements.

The company shall grade, pave and keep in repair 7 ft. of all streets occupied by single track and 14 ft. of all streets occupied by double tracks, and shall sprinkle such tracks

for a similar distance and remove the snow from streets occupied by its tracks. It shall also keep the pavement between its tracks in repair and pave and keep in repair 1 ft. of the street outside of its tracks. Similar provisions regarding paving, repairs, etc., apply to bridges over which the company operates. The city is to have the use, without compensation, of the poles of the company for stringing signal, telephone and telegraph wires. Unused tracks shall be removed at the request of the city. The city shall have the right to regulate the service of the company, but such instructions regarding service issued by the city as are considered burdensome by the company or unjust shall be submitted to arbitration as provided in the ordinance.

The cash fare for each passenger more than 7 years of age shall be 5 cents for a continuous trip in one general direction. Children under 7 years of age, accompanied by a person paying fare, shall be permitted to ride free. These provisions apply to the present and future limits of the city. At 25 convenient places in the city the company shall sell six tickets for 25 cents. Transfers shall be issued from one line to another, but shall not be issued where passengers can return to the point of starting for a single fare. All disagreements between the company and the city regarding transfers shall be submitted to arbitration. Policemen and firemen on duty shall be transported free.

Interurban railways shall have the right to operate into Des Moines over the lines of the Des Moines City Railway, as provided in the statutes of Iowa, and be given the right to haul freight upon the same terms as are granted to other interurban railways as near as practicable. Contracts for the entrance of interurban cars shall, however, be subject to the approval of the city. Freight trains shall consist of not more than two cars and freight shall be hauled only between the hours of 6 p. m. and 6 a. m. Places for the delivery of mail, express and freight shall be so located as not to interfere with regular traffic.

Open cars shall be operated only from April 15 to Oct. 15. All cars shall be equipped with hand and power brakes. Passenger cars shall be provided with push buttons for the convenience of passengers in signaling the conductor where to stop. All cars shall be equipped with fenders, and the heating and illumination of cars shall be subject to the approval of the City Council. Destination signs shall be illuminated at night. There shall be a motorman and a conductor to each car, and trail cars shall be operated only during rush hours. The headway of cars shall not be greater than that now maintained. Night cars shall be operated over lines fixed by the City Council, and between 12 o'clock midnight and 5 a. m. the company may double the ordinary maximum single fare on such cars. Differences between the company and its employees shall be arbitrated. Within five days of the receipt of a communication from a majority of its employees for arbitration of any question the company shall name an arbitrator and the men an arbitrator. If these two arbitrators do not agree within five days, they shall appoint a third arbitrator, and if they cannot agree upon the third member of the board, either side may apply to the Chief Justice of the Supreme Court of Iowa to appoint the third arbitrator. The finding of this board shall be binding, and the expense of the third arbitrator shall be divided equally between the company and the men.

The net receipts of the company, after paying all charges and setting aside not less than 1 per cent of the capital liabilities of the company for depreciation, shall be divided in the proportion of 55 per cent to the city and 45 per cent to the company. If the 45 per cent fund of the company is not sufficient to pay dividends on the stock of the company at the rate of 6 per cent a year, such portion of the 55 per cent fund of the city shall be used as may be necessary to insure the 6 per cent return on the capital of the company. The company is to certify that its stock outstanding does not exceed $1,305,000, its bonded indebtedness $2,907,000 and its floating debt $300,000.

As soon as legislation is enacted to permit the city to purchase the property of the company, and periodically thereafter every two years, the city, upon six months' written notice, shall have the right to purchase the property of the company at the value represented by the total capital liabilities of the company, less the sums carried to the sinking fund. The city shall be represented on the board of directors of the company by a man whom the Council shall name. The city shall have access to the books of the company, and an operating report shall be made to the City Council not later than the 15th of each month which shall cover the business of the company for the calendar month preceding. A complete inventory of the property of the company, made within 20 days after the passage of the ordinance, shall be filed with the superintendent of the department of accounts and finance of the city. Disputes between the company and the city shall be arbitrated by a board of three members, one of whom shall be chosen by the company, another by the city and the third by the other two.

As before stated, the ordinance is for 25 years, and if approved by the company is to be submitted to the voters of the city at the election in March, 1910, or at a special election for approval.

Transit Affairs in New York

To ascertain the growth in population along various rapid transit lines contiguous to rapid transit routes planned for early construction in New York, the Public Service Commission has completed a census showing the increase in the number of inhabitants along each route in the Bronx and Brooklyn for approximately half a mile on either side of the route which shows the population in 1909 as compared with the population in 1905. The routes covered are the branches of the Broadway-Lexington Avenue system in the Bronx; the White Plains Road Extension, also in the Bronx; the Fort Hamilton and Coney Island branches of the Fourth Avenue subway in Brooklyn, and the Eastern Parkway, Livonia Avenue and Nostrand Avenue routes in Brooklyn. The summary showing the population along the different routes for 1905 and 1909 follows:

	1905.	1909.
Broadway-Lexington Avenue subway, The Bronx, eastern branch from the Harlem River north to Pelham Bay Park	90,097	142,487
Broadway-Lexington Avenue line, The Bronx, western branch from 149th Street north to Woodlawn Road....	53,577	64,695
White Plains Road extension of eastern branch Broadway-Lexington Avenue subway, The Bronx.....	20,839	29,175
Fourth Avenue subway, Brooklyn, Fort Hamilton route..	48,171	63,446
Fourth Avenue subway, Brooklyn-Bensonhurst, Bath Beach and Coney Island route.....	30,653	49,593
Eastern Parkway and Livonia Avenue route, Brooklyn...	143,760	193,263
Nostrand Avenue route, Brooklyn, from Eastern Parkway south to Sheepshead Bay.....	27,122	40,383

The special committee, consisting of the Mayor, the Controller and the President of the Board of Aldermen, appointed by the Board of Estimate to confer with the Public Service Commission with a view to determining a definite transit policy, is to meet the commission very soon to consider transit facilities for the new Manhattan Bridge.

Annual Dinner of the A. I. E. E.—The annual dinner of the American Institute of Electrical Engineers will be held at the Hotel Astor, New York, N. Y., on Thursday evening, Feb. 24, 1910. Prof. Elihu Thomson, who is to receive the first award of the Edison medal, will be the guest of honor. The details of the dinner will be announced later.

Order for Filing Records in New York.—The Public Service Commission of the First District of New York has issued an order calling upon the railroads and street railways operating in the territory under its jurisdiction to file with the commission by Jan. 24, 1910, sworn copies of specified books, contracts, documents and papers of companies owned, leased, operated or controlled not heretofore filed with the commission.

Chicago & Oak Park Elevated Railroad Franchise.—The subcommittee of the local transportation committee of the City Council of Chicago, which is considering the franchise sought by the Chicago & Oak Park Elevated Railroad, has reported in favor of the grant. When this franchise is passed by the City Council the controversy over the elevation of the tracks in Austin will be ended as the company agreed to elevate the tracks as soon as the city would permit it to make the extension.

Statement by Richmond Company Regarding Franchise Application.—In connection with the petition which it submitted to the Council of Richmond, Va., on Dec. 6, 1909, for a new franchise, the Virginia Railway & Power Company has recently prepared for the benefit of the public a very full statement of the reasons for the application, in which the attitude of the company is expressed on such

subjects as changes in trackage and routes, new track, schedules, taxation, rates of fare, etc. Maps are presented of the present trackage and the proposed trackage.

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, Mass., on the evening of Jan. 25, 1910. Dinner will be served at 6:45 p. m. The business session will be held at 8 p. m. Following the regular business meeting, C. A. Sylvester, general manager of the Boston & Suburban Electric Companies, and H. A. Faulkner, passenger agent of the Boston & Northern Street Railway and the Old Colony Street Railway, will address the club on the subject, "Street Railway Advertising Methods," which will be followed by a general discussion. Members of the club who propose to attend the dinner are requested to notify John J. Lane, secretary of the club, 12 Pearl Street, Boston, Mass., as soon as possible.

Utilities Commission Recommended for Providence.—Henry Fletcher, Mayor of Providence, R. I., in his second inaugural address, delivered on Jan. 3, 1910, recommended the creation of a commission with jurisdiction over railroad matters in that city. The Mayor referred to the work of the public utility commissions in several States, and concluded: "If Rhode Island had such a commission, the subject of franchise privileges in Providence, the need of proper transportation facilities for the East Side, and all defects of car service in general would properly be considered by it. In the absence of such a body in this State, however, questions of this nature as they arise in our city must be settled by other agencies. To the end that there may be an equitable adjustment of conditions governing the character of the service furnished by the street railway operating in the city's highways, I urgently recommend the creation of a special commission, with power to secure the services of suitable experts, to consider and report to the City Council upon a method of solving the East Side approach problem, and also to concern itself similarly with the general question of street car service throughout the city in its broadest application to the comfort, convenience and accommodation of the people of Providence."

LEGISLATION AFFECTING ELECTRIC RAILWAYS

Illinois.—Proposed forms of subway measures for Chicago and other cities of Illinois to be introduced into the Legislature and other matters relating to the street railway situation in Chicago were considered at recent meetings of the committees on local transportation and State legislation of the City Council of Chicago. On the matter of subway and harbor and terminal legislation, the committee on State legislation met jointly with the committee on local transportation, and the committee on harbors. The subway measure, drawn by Walter L. Fisher, special traction counsel, if enacted by the Assembly, will authorize any city in Illinois to construct, acquire or operate a subway, to be used for street railways, sewers, water, light and power, wire and gas main conduits, or any other purposes and to grant franchises to private companies or persons leasing the use of the subway when constructed. The bill requires a referendum vote on any franchise grant under the powers of the act, and limits franchises to 20 years, but does not require that frontage consents be secured.

Kansas.—As the result of a conference called by the Governor on Jan. 7, 1910, it is said that a special session of the Legislature will be called to enact a new law on bank guaranty, a public utilities law and a recall law. Governor Stubbs, Bank Commissioner Dolley, Speaker Pro Tem Hopkins of the House and Attorney-General Jackson and John Marshall, his assistant, attended the conference.

Massachusetts.—The report of the Railroad Commission and the Boston Transit Commission relative to postponing action to authorize the Boston & Eastern Electric Railroad to construct a tunnel and subways in Boston has been referred to the committee on metropolitan affairs. The special report of the Railroad Commission and the Boston Transit Commission relative to the consolidation of the Boston Elevated Railway and the West End Street Railway has been referred to the committee on street railways. The report of the Railroad Commission dealing with street railway questions has been referred to the committee on that subject. A bill has been introduced into the House for legislation to authorize the construction of additional subways in the West End of Boston. The object is to provide what is substantially a double terminal for the Cambridge subway at its Boston end, including both the Park Street and Scollay Square districts as outlets for Cambridge traffic. The bill has been referred to the committee on metropolitan affairs. The Senate has received the joint report of the Massachusetts Railroad Commission and the Boston Transit Commission relative to the construction of additional subways and tunnels in Boston. The principal recommendation is that the Transit Commission study a tunnel between Park Street and the South Station. A bill which has been introduced into the House to reduce the hours of street railway employees one hour per day has been referred to the committee on street railways. A bill has also been introduced into the House for the establishment of a Metropolitan Board of Commerce and Industry at Boston, with authority to construct elevated, surface or subsurface railways in any of the municipalities under its jurisdiction. A bill has been introduced authorizing the Boston Transit Commission to construct a combined railway and railroad station for steam and electric passenger interchange at Castle Street on the Washington Street tunnel route in the South End with a tunnel under Winter and Summer Streets and loop service from Castle Street to Park Street. A bill has been introduced into the House for legislation to provide a tunnel between the North and South Stations in Boston, for heavy railroad service between the Boston & Maine Railroad and the New York, New Haven & Hartford Railroad, trains in the tunnel to be operated by electricity.

Maryland.—The Legislature of Maryland convened on Jan. 5, 1910. In his message to the Legislature, Governor Crothers referred to the necessity for creating a public service commission, and it is said that the bill providing for such a commission which was prepared by the Attorney-General at the request of the Governor will take precedence over all others. This measure has been approved by the Governor's cabinet. Mr. Gorman was elected president of the Senate and Mr. Peeples speaker of the House. After the preliminaries had all been arranged, adjournment was taken until Jan. 10.

New Jersey.—The New Jersey Legislature convened on Jan. 11, 1910. The proceedings in the Senate were uninterrupted by the minority and that body finished its work in about an hour. In the House, however, the proceedings were long drawn out and that body adjourned at 4 p. m. until Jan. 17. In his message, Governor Fort referred to the failure to enact a public utilities bill at the last session, and urged again the extension of the powers of the railroad commission, saying that both parties pledged themselves to extend the powers of the railroad commission and that no excuse could possibly be advanced this time by members for avoiding the subject.

New York.—James S. Parker, chairman of the Assembly committee on railroads, has introduced the bills dealing with the Public Service Commission's control of railroads and transit lines which failed to pass the Senate last year. Of the many matters with which they deal the transfer problem is perhaps the most important. The bills do not, of course, include any new recommendations that have or may be made by the commissioners this year. The provisions dealing with the placing of telegraph and telephone companies under the control of the commissioners do not constitute a part of the railway committee's bills. Senator Wagner of New York has again introduced a bill providing for a 5-cent fare between the City Hall, Manhattan, and Coney Island, over the lines of the Brooklyn Rapid Transit Company and the Coney Island & Brooklyn Railroad. He has urged the passage of a similar measure at the last three sessions of the Legislature.

Ohio.—Representative Frank Woods, who is preparing a public utilities bill for introduction in the Assembly, has stated that the measure will not contain any provision that will curtail the rights of city councils to grant franchises. The bill will require a uniform system of accounting by public service corporations and will make it obligatory for companies which desire to issue stock or bonds to have the issues authorized by the commission.

Financial and Corporate

New York Stock and Money Market

January 18, 1910.

The stock market during the last week has been active but very weak in tone, despite the fact that the money market is comparatively easy and the banks are liberal in their accommodations. The tractions have suffered less than other more active issues. Interborough-Metropolitan continues to be very active. Third Avenue has lost a few points on moderate activity.

The financial condition appears to be good, both in this country and Europe. Quotations for money to-day were: Call, 3¼ to 4 per cent; 90 days, 4 to 4½ per cent.

Other Markets

There has been considerable pressure to sell Rapid Transit in the Philadelphia market and the trading has been of considerable volume. The price for the week has declined about 2½ points. Other tractions have been only moderately active at former prices.

In Chicago, the issues of the Chicago Railways have been less active and prices have receded fractionally. Metropolitan Elevated preferred is also slightly lower.

Massachusetts Electric shares continue to be fairly active in the Boston market. Prices, however, are practically unchanged, the fluctuations being within a single point. There have been a few sales of Boston Elevated at old prices.

There has been no interest in traction securities in Baltimore during the past week. Even the bonds of the United Railways Company, generally active, have been very quiet.

At the auction of securities in New York last week, 325 shares of Brooklyn City Railroad stock were sold at 198⅛.

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

	Jan. 11.	Jan. 18.
American Railways Company	a49	a49
Aurora, Elgin & Chicago Railroad (common)	a62⅜	a62
Aurora, Elgin & Chicago Railroad (preferred)	a95	a93
Boston Elevated Railway	134	133½
Boston & Suburban Electric Companies	a16	a16
Boston & Suburban Electric Companies (preferred)	74	a76
Boston & Worcester Electric Companies (common)	a11½	a11½
Boston & Worcester Electric Companies (preferred)	a47	46
Brooklyn Rapid Transit Company	79	75¾
Brooklyn Rapid Transit Company, 1st pref., conv. 4s	86	84⅞
Capital Traction Company, Washington	a136½	134
Chicago City Railway	185	185
Chicago & Oak Park Elevated Railroad (common)	*2	*2
Chicago & Oak Park Elevated Railroad (preferred)	*10	*10
Chicago Railways, ptcptg., ctf. 1	a108	*108
Chicago Railways, ptcptg., ctf. 2	a33	31
Chicago Railways, ptcptg., ctf. 3	a17	*17
Chicago Railways, ptcptg., ctf. 4s	a9½	*9½
Cleveland Railways	a91½	*91½
Consolidated Traction of New Jersey	a77	*77
Consolidated Traction of New Jersey, 5 per cent bonds	a106	*106
Detroit United Railway	*63	*63
General Electric Company	159⅛	154¼
Georgia Railway & Electric Company (common)	a105½	a105½
Georgia Railway & Electric Company (preferred)	87½	a88
Interborough-Metropolitan Company (common)	25¼	23½
Interborough-Metropolitan Company (preferred)	62¼	60⅝
Interborough-Metropolitan Company (4½s)	82⅞	82⅜
Kansas City Railway & Light Company (common)	a36	*36
Kansas City Railway & Light Company (preferred)	a70½	*70½
Manhattan Railway	*138	137¾
Massachusetts Electric Companies (common)	a18½	a18½
Massachusetts Electric Companies (preferred)	80	80
Metropolitan West Side, Chicago (common)	a17½	*17½
Metropolitan West Side, Chicago (preferred)	a54¼	53
Metropolitan Street Railway	*20	21
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	81½	79½
Northwestern Elevated Railroad (common)	a17½	*17½
Northwestern Elevated Railroad (preferred)	a70	*70
Philadelphia Company, Pittsburg (common)	a52¼	a51
Philadelphia Company, Pittsburg (preferred)	a46	a45½
Philadelphia Rapid Transit Company	a27½	a25½
Philadelphia Traction Company	a89	a88½
Public Service Corporation, 5 per cent col. notes	*100⅛	*100⅛
Public Service Corporation, ctfs	a106	a106½
Seattle Electric Company (common)	a115½	a115
Seattle Electric Company (preferred)	a104½	a104½
South Side Elevated Railroad (Chicago)	a55	*55
Third Avenue Railroad, New York	18	16¼
Toledo Railways & Light Company	15½	13½
Twin City Rapid Transit, Minneapolis (common)	115	113¼
Union Traction Company, Philadelphia	a52½	a51
United Rys. & Electric Company, Baltimore	a14⅞	a14
United Rys. Inv. Co. (common)	42	39⅞
United Rys. Inv. Co. (preferred)	*71⅞	*71⅞
Washington Ry. & Electric Company (common)	a42¾	a42¼
Washington Ry. & Electric Company (preferred)	a90½	a90¼
West End Street Railway, Boston (common)	a94¾	a94½
West End Street Railway, Boston (preferred)	*106	*106
Westinghouse Elec. & Mfg. Company	79⅞	73¾
Westinghouse Elec. & Mfg. Company (1st pref.)	*130	*130

a Asked. * Last Sale.

Reorganization of Chicago Consolidated Traction Company Approved

The plan for the reorganization of the Chicago (Ill.) Consolidated Traction Company as the United Railways Company in accordance with terms proposed by Charles G. Dawes of the Central Trust Company, Chicago, Ill., was approved at a meeting of the representatives of the bondholders and the stockholders of the company held in Chicago on Jan. 7, 1910. As made public on Jan. 10, 1910, the reorganization plan provides for a first rehabilitation mortgage which may reach $6,000,000 to finance the reconstruction of the lines; a second mortgage of $3,123,000, to be issued in exchange for the underlying securities of the company par for par; a general mortgage of $717,500 to retire 10 per cent of the bonds and 100 per cent of the stock of the North Shore Street Railway, and participation certificates to be issued for the present consolidated bonds. More in detail the plan of distribution of the new securities follows:

To receive sinking fund mortgage bonds:

Chicago Electric Transit bonds	$1,097,000
North Chicago Electric bonds	868,000
North Side Electric bonds	155,000
North Shore Street Railway bonds	675,000
Chicago and Jefferson bonds	208,000
Evanston Electric bonds	130,000

To receive general mortgage bonds:

Ten per cent of North Shore bonds	67,500
North Shore Street Railway stock	650,000

To receive participation certificates:

All of the Consolidated bonds represented by certificates of deposit.

The extent of the bonds to be issued under the first mortgage is to be limited only by the amount needed for rehabilitating the physical property, and it is provided that no dividends shall be paid on the stock while the sinking fund mortgage bonds or the general mortgage bonds remain unpaid or shall be unprovided for by cash deposited with the trustee under the mortgage. All of the bonds of the United Railways are to bear interest at 5 per cent. Details as to the issue of stock are left to the reorganization committee. It is specified, however, that such stock shall be placed in the hands of trustees under a trust instrument.

The United Railways will ask for a franchise to run concurrently with the franchise of the Chicago Railways, which means a grant of 17 years. In order that the rights of the city may be protected and good service guaranteed, an operating agreement with the Chicago Railways will be presented to the Council at the time formal application is made to the Council for the new franchise.

The subcommittee of the local transportation committee of the Chicago City Council was appointed on Jan. 13, 1910, to draw up a tentative franchise for the Chicago Consolidated Traction Company. This franchise is to include features similar to those contained in the 20-year grant with provision for municipal purchase and a division of net receipts with the city, made to the Chicago Railways and the Chicago City Railway. It is understood that the majority of the local transportation committee is opposed to granting any street railway franchise that does not include an operating agreement between the United Railways and the Chicago Railways and Chicago City Railway.

Metropolitan Street Railway Sale Order Argued

Final argument was heard by Judges Ward, Holt and Hough of the United States Circuit Court of Appeals on Jan. 12 on the appeal of the Guaranty Trust Company, New York, N. Y., from the order of Judge Lacombe of the United States Circuit Court directing the sale under foreclosure of the property of the Metropolitan Street Railway, New York, N. Y. The Guaranty Trust Company, holder of a mortgage of $12,500,000, claims that its rights are not properly protected under the terms of the sale set forth in Judge Lacombe's order. Mr. Colles, of Davies, Stone & Auerbach, representing the Guaranty Trust Company, said that the mortgage should be recognized as a first claim upon the proceeds of the sale. He also objected to the plan to make the claims of the receivers of the Metropolitan Street

Railway and the New York City Railway a first lien upon the proceeds. In addition to the counsel for the Guaranty Trust Company, Bronson Winthrop appeared for the Morton Trust Company, J. Parker Kirlin for the Metropolitan Street Railway, both of whom are appellants, together with the Guaranty Trust Company, for the appellees. Mr. Masten, of Masten & Nichols, appeared for the receivers of the Metropolitan Street Railway; Mr. Byrne, of Byrne & Cutcheon, for the Pennsylvania Steel Company; Mr. Fleming, of Dexter, Osborn & Fleming, for the receivers of the New York City Railway; Morgan J. O'Brien, for the Contract Creditors' Committee, and Benjamin S. Catchings, for the Tort Creditors' Committee. At the close of the argument counsel submitted briefs and the court reserved decision.

American Light & Traction Company, New York, N. Y.—The directors of the American Light & Traction Company have declared dividends of the same amount as in October, 1909, namely, a 2½ per cent stock dividend, payable on the common shares on or before Feb. 15, 1910, to holders of record on Jan. 19, 1910, who will thus receive 2½ shares of new common stock on every 100 shares of common held by them, respectively, and the usual quarterly dividend of 2 per cent, payable on Feb. 1, 1910, to holders of record on Jan. 19, 1910.

Aroostook Valley Railroad, Presque Isle, Maine.—J. M. Robinson & Son, St. John, N. B., offer for sale $300,000 of first mortgage 4½ per cent gold bonds of the Aroostook Valley Railroad dated Aug. 1, 1909, and due Aug. 1, 1929, but subject to redemption on any interest day at the option of the company at 105 and interest. Coupons are payable February and August at the office of the Augusta (Maine) Transit Company, the trustee of the mortgage, or at the office of the Liberty National Bank, New York, N. Y.

Boston (Mass.) Elevated Railway.—Nehemiah W. Rice has resigned as a director of the Boston Elevated Railway.

Catskill (N. Y.) Electric Railway.—The property of the Catskill Electric Railway was purchased under foreclosure of a mortgage for which the Hamilton Trust Company, Brooklyn, N. Y., was trustee, on Jan. 12, 1910, for $33,000 by W. C. Wood, formerly president of the company, who is understood to represent local interests in Catskill. The road is 5.5 miles long and has 13 cars.

Chicago (Ill.) City Railway.—Ira M. Cobe, president of the Assets Realization Company, Chicago, Ill., says that papers are being drawn in accordance with the published plan of the merger of the Chicago City Railway, Southern Street Railway, Calumet & South Chicago Railway and the Hammond, Whiting & East Chicago Electric Railway as the Chicago City & Connecting Railway.

Clarksville Railway & Light Company, Clarksville, Tenn.—The personnel of the Clarksville Railway & Light Company has been changed by the election of the following officers: N. L. Carney, president; L. E. Fischer, Danville, Ill., vice-president and treasurer; George Burton, Peoria, Ill., secretary; A. C. Murray, assistant secretary and general manager. The directors of the company are: N. L. Carney, L. E. Fischer, George Burton, A. C. Murray and J. F. Gracey, who was formerly secretary and treasurer of the company.

Columbus, Delaware & Marion Railway, Columbus, Ohio.—In the case of Newton J. Catrow against the Columbus, Delaware & Marion Railway, now in the hands of a receiver, Judge E. B. Kinkead has ordered that a suit be filed against John G. Webb, Springfield, Ohio, formerly president of the company, for an accounting regarding the construction of the road. The court has also ordered that suit be brought against the Prospect Electric Light & Power Company for the collection of money due for current furnished by the railway from April, 1907, to August, 1909.

Holmesburg, Tacony & Frankford Electric Railway, Tacony, Pa.—The time for the deposit with the Fidelity Trust Company, Philadelphia, Pa., of the first mortgage bonds of the Holmesburg, Tacony & Frankford Electric Railway expired on Jan. 10, 1910, and it was announced that more than a majority of the bonds had been deposited.

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—The report of Charles L. Henry, receiver of the Indianapolis & Cincinnati Traction Company, for December, 1909, as filed in the Superior Court, shows that the gross receipts were $39,710; operating expenses, $28,930; net earnings, $10,780.

Los Angeles-Pacific Company, Los Angeles, Cal.—At a meeting of the stockholders of the Los Angeles-Pacific Company on Jan. 6, 1910, it was voted to issue $20,000,000 of bonds, $10,000,000 of which approximately will be used to defray the expense of building a 4-mile subway from Fourth and Hill Streets to Western Avenue, Los Angeles, and the remainder to be reserved to retire outstanding bonds of the company.

Louisville (Ky.) Railway.—It was proposed to submit a plan to authorize a blanket mortgage for $20,000,000 to the stockholders of the Louisville Railway at the annual meeting of the company on Jan. 19, 1910.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—E. A. Cudahy has been elected a director of the Omaha & Council Bluffs Street Railway to succeed Albert Strauss, New York, N. Y.

Pittsburgh & Westmoreland Railway, Pittsburgh, Pa.—W. M. Lindsay, Warren, Pa., acting for the Pittsburgh, McKeesport & Westmoreland Railway, purchased the Pittsburgh & Westmoreland Railway recently at receiver's sale for $2,000, assuming a mortgage of $335,000 to cover a bond issued. There is a floating debt of about $10,000. The line runs from McKeesport to Irwin, 6 miles. T. M. Evans and Manning Stires, the receivers, showed in their report that the gross earnings of the Pittsburgh & Westmoreland Railway for 1909 were $23,211. Following the purchase the Pittsburgh, McKeesport & Westmoreland Railway elected the following officers: Manning Stires, McKeesport, president; I. I. Robertson, West Newton, vice-president; George D. Cook, Philadelphia, treasurer. The company contemplates building a line from West Newton to Irwin and an extension from West Newton to Monongahela City. The purpose of the Pittsburgh, McKeesport & Westmoreland Railway is to issue bonds to the extent of $1,000,000 for extensions and improvements.

Railway & Light Securities Company, Boston, Mass.—The Railway & Light Securities Company has declared an initial dividend of 2 per cent on the $1,000,000 of common stock of the company, payable on Feb. 1, 1910, to stock of record on Jan. 15, 1910.

Third Avenue Railroad, New York, N. Y.—The committee of holders of the 4 per cent consolidated bonds of the Third Avenue Railroad consisting of James N. Wallace, Adrian Iselin, Edmund D. Randolph, Mortimer L. Schiff, James Timpson and Harry Bonner, has adopted the plan of reorganization dated Dec. 2, 1909. The plan will become binding upon all the depositing bondholders unless within 30 days after Jan. 29, 1910, one-third of the certificate holders shall file with the depositary written notice of their dissent. Further deposits of the bonds will be received without penalty at the office of the Central Trust Company, New York, on or before Feb. 18. Judge Lacombe, in the United States Circuit Court, has granted an order authorizing F. W. Whitridge, receiver of the Third Avenue Railroad, to pay $62,134, due to New York City for taxes and real estate owned by the Third Avenue Railroad.

Wilkes-Barre (Pa.) Railway.—Mention was made in the ELECTRIC RAILWAY JOURNAL of Dec. 18, 1909, page 1247, of the incorporation of the Wilkes-Barre Railway to lease the property of the Wilkes-Barre & Wyoming Valley Traction Company. In answer to an inquiry about the purpose of the company, T. A. Wright, vice-president and general manager of the Wilkes-Barre Railway, replied under date of Jan. 14, 1910, as follows: "Briefly, the Wilkes-Barre Railway Company, of which Abram Nesbitt is president; T. A. Wright, vice-president and general manager, and C. W. Laycock, secretary and treasurer, is composed of people residing in Wilkes-Barre, and leased the property of the Wilkes-Barre & Wyoming Valley Traction Company and the Wilkes-Barre, Dallas & Harvey's Lake Railway for a long term of years, and began operating the property on Jan. 1, 1910. It is anticipated that some important improvements will be made during the coming year."

Traffic and Transportation

Report on Service in Springfield, Mass.

The report of the committee of 12 citizens appointed by Mayor Sanderson of Springfield, Mass., on Oct. 21, 1909, to study street railway conditions in Springfield and confer with the city authorities and the officers of the Springfield Street Railway has been presented to the Mayor. The committee met for the first time on Oct. 27, 1909. A communication received from L. E. Storrs, president of the company, by the committee at that time stated that he was sure that nothing but lasting good could come from the conscientious consideration of traffic conditions, and assured the commission that he would do everything in his power to improve the present congested conditions. In preparation for the next meeting the members of the committee went over the property and summarized its findings as follows:

"1. That roadbed was being put in first-class order.

"2. That 11 new, large cars, with illuminated signs, were almost ready for delivery, and 13 more to follow.

"3. That readable signs were in process of attachment to the old cars.

"4. That $70,000 worth of new powerful motors were being applied to cars.

"5. Upon a special visit to the power plant we found everything up to the latest date in dynamos and engines, so that there was ample power with a surplus of 100 per cent for power, heat and light."

The committee met again on Nov. 2, 1909, in the office of Mr. Storrs. All the members were present but one. The matter of schedules and the question of delays were considered. At this meeting it was stated that in 1900 the company had 89 cars, with carrying capacity averaging daily 2902 passengers; in 1909, 105 cars, with carrying capacity averaging daily 3602 passengers—an increase of 16 cars and of carrying capacity averaging 700, or 23 per cent. It was also reported that 11 new cars were being put in commission, adding 11 per cent additional carrying capacity, thus making an increased capacity averaging 34 per cent.

The third meeting of the committee was held on Nov. 9, 1909. All the members were present. Schedules and delays were again considered, and a report was received suggesting the installation of a telephone system at a cost of $20,000 to assist in regulating the schedules. Schedules, delays and other matters largely of local interest were also considered at meetings held on Nov. 16, Nov. 30, Dec. 6 and Dec. 14.

The sessions of the committee were concluded with the meeting on Dec. 14. At this meeting a record was presented of 7-days' observation of 16,694 cars, and it showed that from 5 a. m. to 5 p. m. less than 1 per cent of the cars was five minutes or more late; during the rush hours 2.4 per cent was late. The record for seven days shows the average for 18 hours for all cars five minutes or more late was 3 per cent; Dec. 5, 1 per cent delay; Dec. 6, 3.5 per cent delay; Dec. 7, 5 per cent delay; Dec. 8, 3.5 per cent delay; Dec. 9, 1.9 per cent delay; Dec. 10, 2.7 per cent delay; Dec. 11, 3.7 per cent delay; average all days, 3 per cent. The total number of cars, the number late and the average delay in minutes by days Dec. 5 to Dec. 11, inclusive, follows:

	Total cars.	Number late.	Average delay. Min.
Dec. 5	2123	22	9½
Dec. 6	2378	83	9¼
Dec. 7	2384	117	10¼
Dec. 8	2396	84	9¾
Dec. 9	2384	47	9
Dec. 10	2380	65	9
Dec. 11	2649	99	10

Three cars—Longest delay, 30 min. each.
Fifty-eight cars—Shortest delays, 5 min. each.
Four hundred and fifty-six cars—5 min. delay.

During the period from Dec. 5 to Dec. 11 the total of cars observed as to schedule time was 16,654, of which 517 were late. The causes of delay in order of importance follow: Heavy riding; could not make up lost time; held by other cars; held by South Main repair; took car late; miscellaneous; accident to car; held on account of extras; car slow; repairs; held at Carew Street; car off track; wire down; late starting; setbacks; steam roller; changing cars; account of new cars; accidents; poor power. The fewest number of delays was caused by crippled cars and wire trouble.

In its report to the Mayor the committee says that a long list of suggestions is before the company and will be acted upon as soon as practicable. The report is concluded as follows:

"While much is still expected of the company, there is much to be expected of the city in the way of trackage privilege, also less congestion of automobiles and vehicles at the white posts and freedom in Main Street from the arch to State Street of slow-moving vehicles; this will prevent delay to cars. Something is expected from the public—more rapid movement in the rush hours in getting on and off the car. It is the intention of the company to give publicity to the manner in which the public can assist."

Insurance Policies for Employees of West Penn Railways

The following statement by the West Penn Railways, Pittsburgh, Pa., to its employees, announcing the establishment of insurance policies for them by the company, was posted at the offices, shops and car houses of the company on Jan. 1, 1910:

"Regular employees of the West Penn Railways, Latrobe Street Railway, West Penn Electric Company and Westmoreland Electric Company who have been in the service of the company continuously for two years prior to Jan. 1, 1910, shall be eligible at the present time, and other regular employees shall be eligible from time to time as the two-year period of their continuous service is completed, to receive from the West Penn Railways the following sums: $100 in case of death during the first year from date the employee becomes eligible; $200 in case of death during the second year from date the employee becomes eligible; $300 in case of death during third year from date the employee becomes eligible; $400 in case of death during the fourth year from date the employee becomes eligible; $500 in case of death during the fifth year from date the employee becomes eligible.

"The death benefit shall be payable to the beneficiary designated by the employee, or to his heirs. Employees who have served the West Penn Railways, Pittsburgh, McKeesport & Connellsville Railway, Pittsburgh, McKeesport, Wilmerding & Duquesne Railway, West Penn Electric Company or Westmoreland Electric Company continuously 10 years, and who may be deemed to be superannuated by the officers of the company, shall be entitled to receive not less than $500, payable at the rate of $8.33 per month. In the event of the death of a superannuated employee prior to the completion of the payments at the rate of $8.33 per month, the portion which remains unpaid shall be paid to his or her beneficiary or heirs.

"The company will make the donations as set forth in the above schedule to the legal representatives or appointees of employees in the service of the company at the time of their death. In case of superannuated employees, the donations will be made as above provided. Donations in either case will only be made free from debts, contracts, and obligations of the employees.

"These voluntary benefits given by the West Penn Railways are to be forfeited by an employee in case his or her connection with the company is severed in any manner except by superannuation. This arrangement may be terminated by the directors of the West Penn Railways at any time deemed by them advisable, not, however, without incurring the liability for payment to the employees up to date of such discontinuance in the manner indicated and subject to the liability on the part of the employees to forfeiture on leaving the service of the company prior to death."

Draw Bridges and Traffic in Brooklyn

With the view of bettering the service on lines of the Brooklyn Rapid Transit Company and the Coney Island & Brooklyn Railroad, Brooklyn, N. Y., which cross drawbridges in Brooklyn, the Public Service Commission of the First District of New York, recently investigated the conditions governing the operation of the bridges to ascertain whether the present hours in which the draw bridges are closed could be increased. In the course of the investi-

gation, conferences were held by representatives of the commission with a committee representing the National Board of Steam Navigation and with the chief engineer of the New York City Department of Bridges.

It was shown that any change from present regulations would be inadvisable inasmuch as while long closed hours might benefit the street railways, they would impose greater hardship on the business interests which use the navigable streams crossed by the bridges. The representatives of the National Board of Steam Navigation suggested, however, that the streams near the bridges might be widened sufficiently to permit river traffic to accumulate and thus be in readiness to pass rapidly through as soon as the draw bridges were opened. This would involve the condemnation of considerable waterfront property and in the opinion of the representatives of the commission, the expenditure would be too large to be practicable.

Of the 10 draw bridges considered, five are closed for substantial periods during the day, and frequent car movement is maintained over them, the headway varying from one to two minutes. The Hamilton Avenue bridge is closed two hours in the morning and two hours in the evening during the time of heaviest traffic on the railways, and one hour at noon. The other four bridges are closed three hours a day; one hour each in the morning, at noon and in the evening. It was suggested that the closed hours be increased from five to seven, giving three hours in the morning, an hour at noon and three hours in the evening. It was found that the river traffic through the Flushing Avenue Bridge was very light and that the number of openings per day did not average 20 and interfered so little with car movement that the establishment of closed hours seemed unnecessary at the present time. Car movements over three of the bridges vary from four to six to 10 minutes and on account of the infrequency of the service the establishment of closed hours was held to be unnecessary at this time.

Boston Elevated Railway Increases Wages

The Boston (Mass.) Elevated Railway has announced a voluntary increase in the wages of its employees in the train and car service, about 5000 men being affected. The increase will amount to about $100,000 per year, or $20 per employee, and the new rates are to go into effect on Jan. 22, 1910. The following table shows the present and the increased wage rate for each class of employees:

	Increased wage. Cents per hour.	Present wage. Cents per hour.
Elevated motormen, highest grade	28.5	27.5
Elevated guards, highest grade	24.5	23.5
Elevated brakemen, highest grade	22	21
Surface conductors and motormen:		
Highest grade (15 years' service)	26	25
Next grade (11-15 years)	25.3	24.5
Next grade (6-10 years)	24.7	24
Next grade (3, 4 and 5 years)	24.1	23.5
Next grade (1 and 2 years)	23.5	23
Car house station masters, highest grade	30	29
Inspectors and starters, highest grade	28.5	27.5

Team Accidents

The recent heavy fall of snow in the East prompted F. W. Johnson, superintendent of the bureau for the prevention of accidents of the Philadelphia (Pa.) Rapid Transit Company, to issue the following special notice, headed "Team Accidents," to the employees of the company:

"Severe snow storms invariably are followed by conditions which rather favor the occurrence of certain types of accidents. By way of illustration, note the following:

"The going becomes heavy, as at present, we will say, and, like ducks taking to water, the drivers of teams hike for the trolley tracks. This, of course, means collisions—unless all hands exercise caution.

"Unfortunately we have never been very favorably impressed with the brand of 'caution' usually observed by the drivers of teams. They prefer to take chances, trusting to the judgment and skill of the motorman to avoid the collision. Such conduct carries with it its own condemnation.

"However, be that as it may, it is our intention to avoid mishaps whenever and wherever possible. Hence this cautioning:

"Keep a sharp lookout, particularly at night or in foggy weather, for the drowsy driver who plugs along, plumb in the middle of the track, without the faintest suspicion of a light upon his vehicle.

"He may be traveling along in the track right ahead of you, or he may be coming straight at you, sound asleep upon his seat.

"In passing teams, give the horse a chance to get clear of your track before you attempt to proceed. You may depend upon it that he will not delay you a moment longer than is absolutely necessary—provided only that his driver is equally fair-minded.

"If concerned in an accident of this sort, be sure to get the name and address of the driver, and also of any other person who may have been upon the wagon.

"Parting shot—No matter how slight an accident may seem to you at the time, secure your witnesses and make out your report. Then there can be no 'flare-back.'"

Passes for Illinois Traction System Employees.—Employees of the Illinois Traction System, Champaign, Ill., will hereafter be furnished with passes. For several years a rule has been in force which required employees when riding on cars when not on duty to show their badges.

Increase in Fares on Spokane & Inland Empire Railroad.—The Spokane & Inland Empire Railroad, Spokane, Wash., has announced that effective on Feb. 1, 1910, the round-trip fare between Spokane and Cœur d'Alene will be increased from $1 to $1.50, with corresponding increases in the rates to other cities along the route.

Stools for Motormen of Massachusetts Line.—The Western Massachusetts Street Railway, Westfield, Mass., has announced that hereafter motormen on the company's lines to Springfield and Huntington will be permitted to use stools while operating their cars. The Huntington and Springfield lines are the only lines on which cars equipped with air brakes are operated.

Increase in Traffic at Indianapolis During December.—Statements for December, 1909, made by the electric railways operating into Indianapolis show that the increase in the volume of business during the holidays averaged 15 per cent more than that of 1908. On some of the roads traffic increased as much as 22 per cent. On others the increase was not more than 8 per cent.

Car Step Heights in Chicago.—The daily newspapers of Chicago have been attempting to create a general agitation in favor of lowering the steps on the cars of the surface railways. No definite action has been taken by the railways other than that the matter is now under consideration by the Board of Supervising Engineers, Chicago Traction. The steps from the ground to the platform are now 17 in. and 14 in., with a 10-in. rise from the platform to the car floor.

Grain Elevators Along Lines of Illinois Traction System.—Edward Rising and Claude Lock, who propose to construct a number of grain elevators along the lines of the Illinois Traction System, Champaign, Ill., have obtained a site for the first elevators at Dallenbach Station, one mile west of Staley, and at Bondville, and will ship grain by way of the electric railway, the agreement of the Illinois Traction System with the Chicago & Eastern Illinois Railroad affording a ready means of transporting shipments to the seaboard. The Illinois Traction System will build several sidings and spurs in the spring to facilitate the transportation of grain and livestock.

Interurban-Steam Traffic Agreement in Indiana.—A traffic arrangement effective on Jan. 20, 1910, has been entered into by the Indianapolis, Columbus & Southern Traction Company and the Southern Indiana Railroad whereby tickets will be sold by the Indianapolis, Columbus & Southern Traction Company at its offices in Indianapolis, Greenwood, Franklin and Columbus to all points on the Southern Indiana Railroad from Seymour east to Westport and west to Terre Haute. Arrangements have also been made for the free transportation of baggage from the station of the Indianapolis, Columbus & Southern Traction Company at Seymour over the Southern Indiana Railroad.

Excess Fare Provision Not Applicable to Indiana Interurban Railways.—James Bingham, Attorney-General of Indiana, has expressed the opinion to the Railroad Commis-

sion of that State that the law passed in 1909 which enables railroads to collect an excess fare of 10 cents on all fares based on the 2-cents-a-mile rate when such fares are paid in cash on the train because the passenger has neglected to secure a ticket, does not apply to interurban railways. He says that while the act in question did not repeal the act of 1909 by specification, it repealed it by implication and is the only 2-cent fare law now in effect in the State. The question was raised by Commissioner McClure at the request of the interurban railways.

Increase in Wages in Los Angeles.—On Jan. 1, 1910, the Pacific Electric Railway, Los Angeles Railway and Los Angeles & Redondo Railway increased the wages of the motormen and conductors in their employ in accordance with the following scale: First year, 25 cents an hour; second year, 26 cents an hour; third year, 27 cents an hour; fourth year, 28 cents an hour; fifth year, 29 cents an hour; sixth year, 30 cents an hour. The scale formerly paid follows: First year, 24 cents an hour; second year, 25 cents an hour; third, fourth, fifth years, 26 cents an hour; sixth seventh, eighth years, 27 cents an hour; ninth, tenth, eleventh years, 28 cents an hour; twelfth, thirteenth, fourteenth years, 29 cents an hour; fifteenth year, 30 cents an hour.

Complaint Against Service of International Railway.—Residents of Lancaster and Depew have asked the Public Service Commission of the Second District of New York to instruct the International Railway to repair its tracks in Broadway, Buffalo, between the Lackawanna Railroad and the easterly line of Buffalo, and between Buffalo, Lancaster and Depew, and construct additional sidings or double-track the road. They have also asked that the company be instructed to establish a 15-minute service at a rate of speed that will enable cars to make the round trip in not more than 1 hr. and 30 min. and run cars between Lancaster and Depew in addition to cars between Buffalo and Lancaster to care for the local traffic between these villages. The time consumed in the round trip between the cities now is two hours. The petitioners claim that the rates of fare are out of proportion to the length of the route and should be reduced.

Rates for Milk on Buffalo Suburban Line.—Effective on Feb. 8, 1910, the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., will adopt the following rates per can for the transportation of milk in either direction between stations on the Dunkirk, Fredonia and interurban divisions: 5-gal. can, 10 cents; 6-gal. can, 12 cents; 8-gal. can, 16 cents; 10-gal. can, 20 cents; 12-gal. can, 24 cents. This is an advance of 2 cents on a 5-gal. can; 3 cents on a 6-gal. can; 4 cents on an 8-gal. can; 5 cents on a 10-gal. can; 6 cents on a 12-gal. can. On the same date the company will adopt the following rates per can for the transportation of milk in either direction between stations on the Hamburg and Dunkirk and Fredonia divisions: 5-gal. can, 10 cents; 6-gal. can, 12 cents; 8-gal. can, 16 cents; 10-gal. can, 20 cents; 12-gal. can, 24 cents. The advances to and from other stations are 2 cents on a 5-gal. can; 3 cents on a 6-gal. can; 4 cents on an 8-gal. can; 5 cents on a 10-gal. can; 6 cents on a 12-gal. can.

Service in Trenton.—Walter Madden, Mayor of Trenton, N. J., in his message to the Council of that city dated Jan. 1, 1910, said: "I would suggest that there should be a general investigation by a committee of the City Council to determine wherein our street car service is not meeting reasonable requirements, and, if necessary, an expert should be called in to determine just what is needed in the way of schedules, equipment, etc., to bring our street car service up to a proper standard of efficiency. Then ordinances should be passed and such other action should be taken as may be necessary to have this standard of efficiency established and maintained. This done it would seem to me that some department of the city should be specifically charged with seeing that all regulations with respect to street car traffic are lived up to. In this connection I would suggest that these regulations should extend to protecting our electric railway companies from unnecessary obstruction in the way of cars being blocked by wagons backed up against sidewalks, cars standing on railroad crossings, and open drawbridges, which so frequently, and not without some justification, are given as a reason for cars not being operated in accordance with their schedules."

Personal Mention

Mr. J. R. Davies has been appointed purchasing agent of the Chicago (Ill.) City Railway.

Mr. Gordon Campbell, vice-president and general manager of the York (Pa.) Railways, has been elected president of the company to succeed Mr. W. F. Bay Stewart, resigned.

Mr. A. Katterheinrich, auditor of the Ft. Wayne & Springfield Railway, Decatur, Ind., has also been appointed general freight and passenger agent of the company to succeed Mr. J. R. Fink, resigned.

Mr. E. C. Foster has resigned as second vice-president of the New Orleans Railway & Light Company, New Orleans, La., effective on Feb. 1, 1910, but will continue as a director of the company.

Mr. H. A. Pharo, chief electrician of the Pittsburgh (Pa.) Railways, has been appointed superintendent of overhead lines of the company to succeed Mr. F. J. Vinning, whose resignation is noted elsewhere in this column.

Mr. Edward Hungerford of the Brooklyn (N. Y.) Rapid Transit Company entertained representatives of the daily papers of New York and Brooklyn at a beefsteak party and vaudeville performance at Healy's, New York, on the evening of Jan. 13, 1910.

Mr. W. A. Smith, who has been treasurer and general manager of the Omaha & Council Bluffs Street Railway, Omaha. Neb., has been elected second vice-president and general manager of the company. The office of second vice-president is a new one.

Mr. J. E. Osmer has resigned as master mechanic of the Northwestern Elevated Railroad, Chicago, Ill., and has accepted the position of superintendent of the locomotive shops of the Hicks Locomotive & Car Works. Mr. Osmer is located at Chicago Heights, Ill.

Mr. J. R. Fink has resigned as general freight and passenger agent of the Ft. Wayne & Springfield Railway, Decatur, Ind., and the passenger, freight and auditing departments of the company have been consolidated under Mr. A. Katterheinrich, auditor of the company.

Mr. C. E. Lenhart, whose resignation as master mechanic of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., was noted in the Electric Railway Journal of Dec. 4, 1909, has accepted a position as representative of the Holland Trolley Supply Company, Cleveland, Ohio.

Mr. R. J. Foulkes, master painter of the Chicago (Ill.) Railways, has been appointed general foreman in charge of the shops of the company to succeed Mr. Charles Schenck, who has resigned as superintendent of shops to become superintendent of the Elevator Supply & Repair Company.

Mr. D. L. Beaulieu, whose resignation as superintendent of the Northampton Traction Company, Easton, Pa., was announced in the Electric Railway Journal of Jan. 15, 1910, has accepted the position of Eastern representative of J. Frank Lanning & Company, Pittsburgh, Pa. Mr. Beaulieu will have his headquarters in Boston.

Mr. H. L. Sanders, for some time assistant purchasing agent of the Cincinnati (Ohio) Traction Company, has been appointed treasurer of the company, to succeed Mr. W. H. MacAlister, who has held the offices of treasurer and controller. Mr. MacAlister will continue as comptroller of the company.

Mr. F. L. Dame, formerly engineer of the Electrical Securities Corporation, New York, N. Y., has been elected vice-president of the Electric Bond & Share Company, New York, N. Y. Mr. Dame has also been elected vice-president and a director of the American Power & Light Company.

Mr. Sharp G. Moore, superintendent of the Willow Grove division of the Philadelphia (Pa.) Rapid Transit Company, has been appointed assistant general superintendent of the company to succeed Mr. M. F. Ryan, whose appointment as general superintendent of the company is noted elsewhere in this column.

Mr. L. C. Nash, who has been superintendent of transportation of the Omaha & Council Bluffs Street Railway, Omaha, Neb., has been elected secretary and treasurer of

the company to succeed Mr. R. A. Leussler as secretary and Mr. W. A. Smith as treasurer. Mr. Smith and Mr. Leussler continue as general manager and assistant manager of the company, respectively.

Mr. M. F. Ryan, assistant general superintendent of the Philadelphia (Pa.) Rapid Transit Company, has been appointed general superintendent of the company, to succeed Mr. Walter Ellis. Mr. Ryan entered street railway service in Philadelphia in 1872. He has been successively a conductor, receiver and division superintendent at the Sixteenth and Jackson Streets depot. In 1908 he was appointed assistant general superintendent of the company.

Mr. F. J. Venning has resigned as superintendent of overhead lines of the Pittsburgh (Pa.) Railways to become superintendent of construction of city and interurban lines of the Cincinnati (Ohio) Traction Company. Mr. Venning began his street railway career in Pittsburgh in 1893 as chief electrician for the Citizens Traction Company. He has served that company and its successor, the Pittsburgh Railways, since then as foreman of shops, superintendent of maintenance of way and superintendent of overhead lines. About 200 employees of the Pittsburgh Railways held a smoker at the Park Way office of the company on the evening of Jan. 15, 1910, at which Mr. Venning was the guest of honor. Mr. Venning was presented during the evening with a case of silver as a token of esteem from his associates.

Mr. Charles Kirchhoff, who retired recently from the editorship of *The Iron Age*, was the guest of about 150 of his friends and associates in the iron and steel industry at a luncheon in the Engineers' Club in New York on Jan. 15, 1910. The speakers were Mr. Philip T. Dodge, president of the Engineers' Club; Mr. T. C. Martin, executive secretary of the National Electric Light Association; Dr. Rossiter W. Raymond, secretary of the American Institute of Mining Engineers; Mr. Geo. W. Cope, the new editor of *The Iron Age*; Dr. Henry S. Drinker, president of Lehigh University; Mr. John Fritz, founder of the Bethlehem Steel Company, and Mr. Kirchhoff. Mr. Cope, at the close of his address, presented Mr. Kirchhoff a bronze statute of an iron worker, by Picault. Mr. Kirchhoff expects to leave very soon for a cruise in the West Indies. Later he will visit Europe and study recent developments in the manufacture of iron and steel there.

Mr. W. F. Bay Stewart, who has been president of the York (Pa.) Railways, has resigned from the company and Mr. Gordon Campbell, who has been vice-president and general manager, has been elected to succeed him. Upon receiving the resignation the directors passed resolutions expressing regret that Mr. Stewart had resigned, and commending him for his ability while performing the duties of the office. Mr. Stewart has stated that he desired to retire from business, but it is reported that he may again be a candidate for Judge. The York Railways operates 72 miles of line and supplies electricity for lighting. Mr. Stewart has long been prominent in public affairs in York.

W. F. Bay Stewart

Mr. Charles Schenck has resigned as superintendent of shops of the Chicago (Ill.) Railways to become connected with the Elevator Supply & Repair Company, Chicago, Ill., as superintendent. Mr. Schenck was educated at the University of Illinois and from 1897 to 1900 he was in the engineering department of the Northwestern Elevated Railroad and the Chicago Union Traction Company. In 1908 he was appointed to the position from which he has just resigned. From 1900 to 1908, Mr. Schenck was connected with Lewis Institute, Chicago, as an instructor in mechanical subjects and as registrar for the night schools. While connected with Lewis Institute he worked in summer in the engineering department of the Northwestern Elevated Railroad and the Commonwealth Edison Company, Chicago. The shops of the Chicago Railways are now in charge of Mr. R. J. Foulkes, who has been advanced from the position of master painter to general foreman of the company.

Mr. Walter Ellis, general superintendent of the Philadelphia (Pa.) Rapid Transit Company, was relieved of the duties of that office on Jan. 15, 1910, at his own request on account of ill-health, but will remain in the service of the company as special attaché of the president's office. Mr. M. F. Ryan, assistant general superintendent of the company, will succeed Mr. Ellis as general superintendent and Mr. Sharp G. Moore, superintendent of the Willow Grove division, has been appointed assistant general superintendent to succeed Mr. Ryan. Mr. Ellis entered the employ of the People's Passenger Railway, Philadelphia, as a conductor in July, 1879. He was promoted successively to the positions of transfer agent, receiver, dispatcher and division superintendent at the Twenty-seventh Street and Girard Avenue depot. The Union Traction Company absorbed the People's Passenger Railway and in 1895 Mr. Ellis was appointed general superintendent of the Union Traction Company, and was continued in this office when the Union Traction Company was reorganized as the Philadelphia Rapid Transit Company.

Mr. Bernard Corrigan has resigned as president of the Kansas City Railway & Light Company, Kansas City, Mo. Mr. Corrigan was elected president of the company in 1902 following the retirement of Mr. W. H. Holmes as president of the Metropolitan Street Railway and Mr. C. F. Holmes as president of the Kansas City Electric Light Company and the organization of the Kansas City Railway & Light Company to succeed these companies. Mr. Corrigan is a civil engineer by profession and is about 50 years old. Up to about 1892 he was closely identified with street railway interests in Kansas City and was familiar with the railway and lighting properties in the city when elected president of the Kansas City Railway & Light Company. Mr. Corrigan also assisted in the construction of several steam railroads in the South and West. In announcing his retirement Mr. Corrigan issued a statement in which he said: "There is no particular reason for my resignation at this time—in fact, I cannot now name the exact day on which I will retire. I have desired for some time to relinquish my duties and tried to induce Mr. C. N. Black, now vice-president and general manager of the United Railroads of San Francisco, to remain with the company as my successor. I have no plans for the future except to take a much-needed rest. I am not going back to contracting work."

Mr. J. P. Pulliam, whose appointment as manager of the railway department of the Eastern Wisconsin Railway & Light Company, Fond du Lac, Wis., and the Wisconsin Electric Railway, Oshkosh, Wis., and assistant general manager of the companies in charge in the absence of Mr. Clement C. Smith, was noted in the ELECTRIC RAILWAY JOURNAL of Jan. 8, 1910, is 35 years old. Mr. Pulliam began his railroad career as a telegraph operator on the Louisville Southern Railroad when 14 years of age. Subsequently he served the Kentucky & Indiana Bridge Company, Louisville, Ky., in various capacities for several years. During his connection with this company, the suburban service was converted from steam to electricity. He resigned from the Kentucky & Indiana Bridge Company to become chief clerk to the superintendent of the Louisville-St. Louis line of the Southern Railway, but after a year's service entered the employ of the Choctaw-Oklahoma-Gulf Railroad at Shawnee, Okla., in the stores department. Mr. Pulliam next engaged in commercial pursuits at Denver and Seattle for a year. He re-entered railroading in 1904, with the Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., as trainmaster under Mr. W. K. Morley, president and general manager, but resigned three years later to become superintendent of the Winnebago Traction Company, Oshkosh, Wis. Since the sale of the property of the Winnebago Traction Company to the Wisconsin Electric Railway in July, 1908, Mr. Pulliam has served both the Wisconsin Electric Railway and the Eastern Wisconsin Railway & Light Company as general superintendent in charge of operation.

Construction News

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

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

RECENT INCORPORATIONS

Fort Smith, Van Buren & Interurban Light & Traction Company, Van Buren, Ark.—Chartered in Arkansas to build an interurban railway through Franklin, Johnson, Madison, Boone and Searcy Counties. Capital stock, $100,000. Officers: W. F. Keller, president; L. W. Burgett, vice-president; T. A. Bayley, secretary; S. A. Pernot, treasurer. [E. R. J., Jan. 15, '10.]

***Hammond, Chicago Heights & Southern Traction Company, Chicago, Ill.**—Incorporated in Illinois to construct an electric railway from a point on the State line contiguous to Hammond, Ind., in a southwesterly direction to Chicago Heights and thence to Stanne. Capital stock, $500,000. Incorporators: William S. Reed, Andrew Ward, Joseph Orr, and Edward R. Davis, all of Chicago, and Alfred Van Steenberg, Lansing, Mich.

***Egyptian Traction Company, Springfield, Ill.**—Incorporated in Illinois to construct a railway from Murphysboro, through the counties of Williamson, Saline, Gallatin and White to the Wabash River. Capital stock, $5,000. Incorporators: C. C. Leggett, Winchester, Ind.; John W. Murphy and S. W. Latham, Eldorado, Ill.; John D. Stayron, Texas City, Ill., and G. E. K. Hixon, Chicago.

***Piedmont Traction Company, Gastonia, N. C.**—Chartered in North Carolina to build a street railway in Gastonia. Capital stock, authorized, $100,000. Incorporators: W. S. Lee, L. C. Harrison, and F. I. Osborne, Charlotte, and C. E. Hutchinson, Mount Holly.

***Hanover & Plymouth Street Railway, Wilkes-Barre, Pa.**—Application will be made to the State Department on Jan. 31, 1910, by Lewis Edwards, Harry Chase, and Harry De Mun, for a charter for a 3-mile street railway in Luzerne County.

FRANCHISES

San Francisco, Cal.—The Board of Supervisors has granted a 25-year franchise to the United Railroads over Gough Street from McAllister Street to Market Street and Haight Street.

Atlanta, Ga.—The Atlanta, Griffin & Macon Electric Railway, which proposes to build an interurban railway between these points, has been granted an extension of 120 days to its franchise in which to begin work on its line in Atlanta. [E. R. J., Sept. 4, '09.]

Sullivan, Ill.—R. B. Starbuck, president of the Decatur, Sullivan & Mattoon Traction Company, Mattoon, has asked the City Council for a 2-year extension of its franchise in Sullivan. The company plans to build an electric railway from Decatur to Mattoon, 48 miles. [E. R. J., June 5, '09.]

Alexandria, La.—The Board of Aldermen has granted a franchise to the Alexandria Electric Railways on several streets to reach the new Union Station. The company has been allowed 30 days in which to accept one or all of the propositions.

Long Branch, N. J.—Application has again been made by the Atlantic Coast Electric Railroad, Asbury Park, to extend its street railway in Atlantic Avenue to Columbus Avenue. Hearing of the petition will be considered at a meeting of the City Council on Feb. 21.

TRACK AND ROADWAY

Edmonton (Alta.) Radial Railway.—This company expects to place contracts during the next six weeks for the construction of about 3 miles of single track and 1 mile of double track. Chas. E. Taylor, general manager.

Power, Transit & Light Company, Bakersfield, Cal.—This company will award contracts during the next two weeks for the construction of 4 miles of track. Harry A. Jastro, purchasing agent.

***Coalinga, Cal.**—S. W. Morshead is said to have interested San Francisco capitalists in a project to build an 18-mile electric railway from Coalinga to Orrs. Connections will be made with the Southern Pacific Railroad at Orrs.

Los Angeles-Pacific Company, Los Angeles, Cal.—At a meeting of the stockholders of the Los Angeles-Pacific Company on Jan. 6, 1910, it was voted to issue $20,000,000 of bonds, $10,000,000 of which approximately will be used for additions and betterments to the property of the company. Of this amount it is estimated that $2,500,000 will be required for the construction of the company's proposed 4-mile subway. The remainder of the bonds will be used to retire outstanding issues.

Oakland & Antioch Railway, Oakland, Cal.—This company has begun grading of its proposed railway from Oakland to Walnut Creek and Bay Point, with a branch to Martinez. The second section will extend to Antioch. It is the intention of the promoters to extend the railway eventually to Stockton. A. W. Malthy and S. L. Napthaly are interested. [E. R. J., Dec. 18, '09.]

Baltimore & Washington Transit Company, Washington, D. C.—Senator Raynor has introduced a bill in the Senate amending the act which authorized this company to enter the District, approved in 1896. The bill will allow the company to extend its lines from its present terminus to Thirteenth Street and Ohio Avenue northwest. The extension is to be completed in two years.

Chicago (Ill.) Railway.—This company advises that it expects to build 24 miles of new track during 1910.

Rock River Traction Company, Geneseo, Ill.—This company is reported to have awarded a contract to the Northwestern Construction Company, Milwaukee, Wis., for building its projected interurban railway from Sterling to Rock Island, Ill. The estimated cost is $1,240,000. Officers: Theo. Becker, Geneseo, president; Wm. W. Cole, Geneseo, general manager. [S. R. J., Dec. 29, '06.]

Sioux City Service Company, Sioux City, Ia.—During 1910 this company will build about 1½ miles of new track. H. B. Gregory, purchasing agent.

Brandon, Man.—E. J. Gifford, Brandon, confirms the report that he has applied for a street railway franchise in Brandon. The names of the parties backing Mr. Gifford will not be announced until the franchise is obtained. [E. R. J., Jan. 1, '10.]

Cia Electrica de Aguascalientes, Aguascalientes, Mex.—This company expects to award contracts during the next few weeks for the construction of 1.24 miles of single track. Leon Branger, general manager.

***Lansing, Mich.**—John W. Ewing, Grand Ledge, is engaged in securing right of way for a proposed electric railway which will connect Lansing and Grand Ledge.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—The board of directors of this company has voted $650,000 to provide for the construction of the first section of track from Minneapolis to Northfield, 45 miles. This sum will be used in the purchase of 4381 tons of 80-lb. steel rails, 14 steel cars, and 100,000 oak, tamarack and cedar ties. The entire line when completed from Minneapolis to Dubuque, Ia., will be 293 miles long. M. W. Savage, president, and F. G. L. Hunt, engineer in charge.

Cape Girardeau-Jackson Interurban Railway, Cape Girardeau, Mo.—This company expects to build 1½ miles of new track during 1910.

Nebraska Traction & Power Company, Omaha, Neb.—This company will construct 3 miles of new track during 1910. Wm. D. Crist, purchasing agent.

Elizabethtown (N. Y.) Terminal Railroad.—This company has applied to the Public Service Commission of the Second District for authority to issue a first mortgage for $175,000 and for permission to issue bonds to the amount of $150,000 and common capital stock to the amount of $50,000. The proceeds are to be used in the construction of its railroad from Westport to Elizabethtown, a distance of about 8 miles. [E. R. J., Nov. 6, '09.]

Third Avenue Bridge Company, New York, N. Y.—This company, which is a subsidiary company of the Third Avenue Railroad, has filed a certificate for change of route in New York and Queens Counties. A loop structure will be built in Manhattan from Second Avenue through Fifty-ninth Street and Sixtieth Street. After crossing Queens-

boro Bridge and traversing the Queens plaza the cars will swing around loop adjoining Jackson Avenue and return to Manhattan. [E. R. J., Aug. 21, '09.]

North Carolina Traction Company, Danbury, N. C.—At a meeting on Jan. 4 of the original projectors of this railway an organization was effected for the building of the proposed 80-mile line from Winston-Salem to Stuart, Va. The following officers were elected: E. Hillman, Aberdeen, president; J. W. Krafft, Indianapolis, Ind., secretary; E. L. Krafft, Indianapolis, Ind., general superintendent; Dr. H. P. MacKnight, Southern Pines, general manager; W. L. Law, president Law Engineering Company, Rock Hill, chief engineer. Work has already been begun on the line. [E. R. J., Dec. 11, '09.]

Goldsboro (N. C.) Traction Company.—This company will build at once 1¼ miles of new track. E. T. Oliver, purchasing agent. [E. R. J., Oct. 2, '09.]

Salem, Ohio.—Peter McCave, Route No. 1, Washingtonville, confirms the report that he is promoting a plan to organize a company for the construction of a 34-mile electric railway from Salem to Youngstown, via Albany, Gettysburg, Greenford, Calla and Loveland. [E. R. J., Jan. 1, '10.]

Toronto, Ont.—The ratepayers of Toronto, at the municipal elections on Jan. 1, by a vote of 19,268 as against 10,697, decided in favor of the city corporation making application to the Ontario Legislation for the necessary authority to construct and operate a system of municipal subway and surface railway lines in Toronto.

Allen Street Railway, Nazareth, Pa.—This company is completing the construction of 1200 ft. of pile trestle with a 30-ft. span Bethlehem girder bridge. The contract for this work is in the hands of M. P. McGrath, Easton.

Rochester & Mars Street Railway, Pittsburgh, Pa.—This company advises that it will begin construction within the next few weeks on its 17-mile railway which is to connect Rochester, Beaver and Butler. Capital stock authorized and issued, $100,000; bonds authorized, $500,000; issued, $250,000. Officers: J. H. Barrett, Fitzsimons Building, Pittsburgh, president; D. Hunter, Jr., vice-president; David Torrence, secretary; Wm. B. Boggs, treasurer; J. H. Barrett, chief engineer. [E. R. J., Aug. 29, '09.]

Renovo & Gleasonton Street Railway, Renovo, Pa.—This company advises that it expects to begin work April 1 on its projected 6-mile electric street railway from Renovo to Gleasonton, via Farwell and North Bend. Up to the present time franchises have been obtained from the borough and townships through which the line will pass. The location of the company's power plant and repair shops has not yet been decided upon. Two amusement parks will be reached by the line. Capital stock authorized, $30,000. Officers: E. W. Hess, Clearfield, president and chief engineer; J. H. Crissman, Dubois, secretary; W. B. Reilley, Renovo, treasurer. [E. R. J., Jan. 15, '10.]

Sioux City, Sioux Falls & Missouri River Railway, Parkston, S. D.—C. A. Magee states that preparations are being made by this company to begin work on its projected railway about March 10. The route as planned will be from Sioux City to Sioux Falls, Ia., to Yankton, 170 miles. It is expected that the company will incorporate in about 30 days. Application has already been made for a franchise in Sioux City. Capital stock, $1,500,000; bonds authorized, $975,000. Officers: C. A. Magee, Parkston, president and purchasing agent; M. J. Walker, secretary and treasurer. [E. R. J., Jan. 15, '10.]

Bryan, Tex.—The executive committee representing the citizens of Bryan, it is stated, has accepted the proposition of O. E. Gammill, Gueydan, La., to build the proposed electric railway from Bryan to College Station, a distance of 5 miles. Two routes have already been surveyed. J. T. Maloney, Mayor of Bryan, is interested. [E. R. J., Nov. 13, '09.]

Belton & Temple Traction Company, Temple, Tex.—This company will construct 2½ miles of new track during 1910.

Seattle (Wash.) Electric Company.—This company will construct 20 miles of new track in the city during 1910. E. C. Gaumnitz, purchasing agent.

Spokane, Walla Walla & Western Railway, Walla Walla, Wash.—E. M. Symonds, president, states that new surveys are being made and right-of-way secured for portions of this proposed railway which is to extend from Dayton to Wallua, 51 miles. [E. R. J., Aug. 28, '09.]

Morgantown & Dunkard Valley Railroad, Morgantown, W. Va.—This company will build during 1910 about 17 miles of new track to connect West Morgantown, Riverside and Randall. J. A. Martin, purchasing agent.

***Sheridan, Wyo.**—The Chamber of Commerce has appointed a committee to consider a proposal from E. F. Wheaton, secretary and general manager of the General Traction Development Company, Cleveland, Ohio, for the organization of a company to construct an electric railway between Sheridan and Buffalo, 40 miles south. Sheridan people are asked to subscribe for $10,000 stock.

SHOPS AND BUILDINGS

British Columbia Electric Railway, Victoria, B. C.—Announcement is made of the purchase, by this company, of a central site for suburban terminal uses.

Fort Wayne & Wabash Valley Traction Company, Fort Wayne, Ind.—This company is said to be preparing plans for the reconstruction of its former power station in Huntington into a paint shop and general repair plant; also to build an extension 50 ft. long where painting and running repairs may be handled. [E. R. J., Dec. 5, '09.]

New York State Railways, Rochester Lines, Rochester, N. Y.—This company will erect shelter stations at Rowlands and Padelford on its Rochester and Eastern division as soon as the weather will permit.

People's Railway, Dayton, Ohio.—This company has let the contract for the construction of a new car house on Polender Avenue to the Hall-Cronan Company. Work will be started as soon as the weather will permit.. [E. R. J., Aug. 7, '09.]

POWER HOUSES AND SUBSTATIONS

Power, Transit & Light Company, Bakersfield, Cal.—This company will purchase a 225-kw motor-generator set. Harry A. Jastro, purchasing agent.

British Columbia Electric Railway, Ltd., Vancouver, B. C.—This company has awarded a contract to Charles C. Moore & Company, Seattle and San Francisco, for the erection of an auxiliary steam power plant at Vancouver. This improvement, it is stated, will involve an expenditure of $250,000. The company has placed an order with Allis-Chalmers Company for two 2000-kw, 1800-r.p.m., 60-cycle, 3-phase condensing steam turbo-generator units.

Worcester (Mass.) Consolidated Street Railway.—This company has engaged J. G. White & Company, New York, to prepare plans for a new power plant to have a capacity of 40,000 hp. The location of the station has not yet been decided upon. A number of new substations will also be built.

Cia Electrica de Aguascalientes, Aguascalientes, Mex.—This company is considering the purchase of a 3000-volt, three-phase, 60-cycle generator and a 230-hp, 180 r.p.m. Koerting gas engine, with necessary switchboard apparatus. Leon Branger, general manager.

Lincoln (Neb.) Traction Company.—This company is installing a 500-kw, 3600-r.p.m., 60-cycle, 3-phase, 2300-volt Allis-Chalmers condensing steam turbo generator. F. H. Brooks, purchasing agent.

Portland Railway, Light & Power Company, Portland, Ore.—This company has awarded a contract to the Pacific Coast Engineering Company for the construction of the foundation of a power plant to be erected on the river front at the foot of East Lincoln Street, Portland. [E. R. J., Dec. 18, '09.]

West Penn Railways, Pittsburgh, Pa.—This company has purchased the municipal electric light plant in West Newton. The company will enlarge the plant and will furnish street lights and serve private consumers. Power will be furnished for the extension of the company's railway from Scott Haven, Pa., to Hunkers, where it will connect with the main line running from Greensburg to Uniontown.

Sheboygan Light, Power & Railway Company, Sheboygan, Wis.—It is stated that this company will issue $114,000 bonds for improvements to its system which will include the purchase of new additional apparatus for its power plant.

Manufactures & Supplies

ROLLING STOCK

Detroit (Mich.) United Railway, it is reported, will buy 100 more cars in the near future.

Kansas City, Ozarks & Southern Railway, Kansas City, Mo., expects to buy two semi-convertible combination passenger and baggage cars this year.

Humboldt Transit Company, Eureka, Cal., has just ordered four 33-ft. combination car bodies, two complete Westinghouse No. 92-A double motor equipments and six sets of Standard short wheel-base 0-50 trucks.

Rutland Railway, Light & Power Company, Rutland, Vt., mentioned in the Electric Railway Journal of Nov. 27, 1909, as contemplating the purchase of three open and two closed cars, will use these cars on an extension to be built by this company.

Third Avenue Railroad, New York, N. Y., mentioned in the Electric Railway Journal of Jan. 15, 1910, as having placed an order with The J. G. Brill Company for 100 pay-as-you-enter cars, has specified National Brake & Electric Company's air brakes for all of the new cars.

Lexington & Interurban Railways, Lexington, Ky., has placed an order with The J. G. Brill Company for two interurban cars. Mention that this order was contemplated was made in the Electric Railway Journal of Nov. 27, 1909. The company also contemplates buying three single-truck cars.

Union Street Railway, New Bedford, Mass., reported in the Electric Railway Journal of Dec. 25, 1909, as having ordered 12 cars from the Osgood Bradley Car Works, has only ordered 10 cars. They are to be 13-bench open cars, weighing 10 tons, and having a seating capacity of 65. Length over vestibules will be 43 ft.; length of body, 35 ft.; wheel base, 4 ft. 6 in., with wood body and underframe.

TRADE NOTES

Wonham, Magor & Sanger, New York, N. Y., received an order from the Third Avenue Railroad, New York, to equip 100 new cars to be built for that road with "H.B." life guards.

Crocker-Wheeler Company, Ampere, N. J., announces that all correspondence for the company in Ohio should be addressed to 912 New England Building, Cleveland, Ohio, the company having discontinued its Columbus office.

W. R. Kerschner, Allentown, Pa., has moved his offices to New York City, where he will occupy Suite 1882 in the Hudson Terminal Buildings, 50 Church Street. Mr. Kerschner, in addition to second-hand car equipment and electrical machinery, will continue to handle the products of the Columbia Machine Works & Malleable Iron Company, Brooklyn, N. Y.; Catskill Foundry & Machine Works, Catskill, N. Y., and the Traction Equipment Company, Brooklyn, N. Y.

Western Electric Company, Chicago, Ill., closed its fiscal year on Nov. 30, 1909, with total sales of approximately $46,000,000. Gross earnings for 1909 compare with previous years as follows: 1909, $46,000,000; 1908, $33,000,000; 1907, $53,000,000; 1906, $69,000,000; 1905, $44,000,000; 1904, $32,000,000; 1903, $30,000,000; 1902, $29,000,000; 1901, $24,000,000; 1900, $24,000,000. The total for the 10 years is $384,000,000. The year 1909 shows a recovery from 1908 of approximately 40 per cent. The company reports that its business in foreign countries is increasing from year to year.

Allis-Chalmers Company, Milwaukee, Wis., recently received from the Portland (Ore.) Railway, Light & Power Company, which is increasing the capacity of its hydro-electric plant, an order for a 3750-kw, water-wheel type, 11,000-volt, 60-cycle, three-phase, 360 r.p.m. alternator. This will be of the same general design as the two 2500-kw, 11,000-volt, 33-cycle alternators already supplied by the same company, and will be semi-enclosed. A 50-kw, 120-volt exciter will be direct-connected to an extension of the alternator shaft.

J. Frank Lanning & Company, Pittsburgh, Pa., announce that D. L. Beaulieu has been appointed to handle their Eastern sales department, with headquarters at Boston, for the sale of the "Howard" composite journal bearing brass. Mr. Beaulieu is an experienced operating man, having worked on electric railways both in Massachusetts and Pennsylvania. He has resigned as superintendent of the Northampton Traction Company after serving six years in that office in order to sell the Howard bearing after having seen its performance in every-day railway service.

Peter Smith Heater Company, Detroit, Mich., has opened an office in suite 517-519 Hudson Terminal Buildings, 30 Church Street, New York, N. Y., and has secured the services of Reginald M. Campbell, who will act as the company's Eastern sales manager, covering the States of New York, New Jersey, Pennsylvania, Maryland, Delaware and Virginia, Eastern Canada and New England. Mr. Campbell is well known throughout the railway field and has a host of friends among the railway and railway supply men of the Eastern States. For the past five years he has acted as district sales agent for the Ohio Brass Company in the New York and New England territories. For six years previous to the time he entered the service of that company he was in the employ of the Western Electric Company, latterly in charge of overhead railway material sales for the United States. Mr. Campbell is also well and favorably known because of the leading part he has taken in years past in the annual Supplymen's Vaudeville Show which is held during the convention of the American Street & Interurban Railway Association.

ADVERTISING LITERATURE

A. Gilbert & Sons Brass Foundry Company, St. Louis, Mo., is distributing a small card advertising its special bronze journal bearings for railway cars.

Hart & Hegeman Manufacturing Company, Hartford, Conn., has issued a new pamphlet and several circulars covering its latest switches and accessories.

Pettingell-Andrews Company, Boston, Mass., in the January issue of its house organ, *Juice*, describes a number of new electrical devices for which it has obtained the sales agency in New England.

Railway Equipment Company, Portland, Ore., is sending out a large wall calendar for 1910, on which is advertised the fact that the company sells all kinds of new and second-hand railway equipment and supplies.

John A. Roebling's Sons Company, Trenton, N. J., has issued a folder entitled "How About Bonds?" in which these questions are asked: Do your galvanized bonds rust? Do your copper bonds break? Are your copper bonds stolen? The application of copper-clad bonds to a joint is illustrated, and the statement is made that copper-clad bonds outlast the rails.

Graphite Lubricating Company, Bound Brook, N. J., in a circular dated Jan. 15, 1910, says in part: "We are silent on every subject except machinery bearings. Our knowledge and years of experience in making the genuine 'Bound Brook' graphite and bronze bearing to run without oil or grease prohibits us from keeping silent on that subject. We are positive that we are experts in our line. We are furnishing the genuine Bound Brook bearings to the largest manufacturers in this country, and we have a very nice little booklet descriptive of the large range of work to which they can be adapted, and we would be pleased to send it to you upon your request."

General Electric Company, Schenectady, N. Y., has issued bulletins No. 4703-A, entitled "Variable Release Air Brake Equipments;" No. 4706, entitled "Curve-Drawing Ammeters and Voltmeters—Type CR;" No. 4707, entitled "Gasoline-Electric Plants for Lighting and Power;" No. 4711, entitled "Small Plant Alternating Current Switchboards;" No. 4712, entitled "An Exhaust Steam Turbine Installation;" No. 4713, entitled "Type F, Forms K-2 and K-4 Oil Break Switches." Bulletins No. 4703-A and 4712 are of the greatest interest to street railways. In the first the company describes its variable release air-brake equipment, with which it is possible to handle a long train with nearly the same facility as single cars equipped with the straight air-brake system. The bulletin goes into considerable detail in describing this equipment, and shows cross sections of the valve in different positions. In the second bulletin the subject of a non-condensing engine plant with exhaust-steam turbines is considered in detail.