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Specifications for Car Wiring

While the biennial revision of the code of installation rules of the National Board of Fire Underwriters which was completed recently did not result in any changes in the special rules affecting the wiring of cars or carhouses, the new specifications for rubber-covered wire which were adopted have an important bearing on the safety of car wiring, inasmuch as all wire used must be of an approved brand. The new specifications are much more severe in their test requirements than those which they supersede, since they embody not only mechanical and electrical tests, but chemical tests as well. It is well known that rubber compounds containing only a small percentage of pure rubber can be made up so that they will pass either a mechanical or a chemical test, but it is far more difficult to make an inferior compound which will stand both tests. The effect of putting the new specifications in force will be to insure a much better grade of rubber-covered wire at an increase in cost of not more than 15 per cent for the smaller sizes and less for the large sizes. While the use of any grade of wire which conforms with the new specification will be permissible for car wiring, too much dependence should not be placed on the label showing that the wire is of an approved brand. It pays to use the very best insulation on car wiring, exposed as it is to moisture and the flow of heavy currents. The cost of the wire is only a small part of the total cost of wiring a car, and long life of the insulation is essential for safety, reliability and low maintenance cost.

Comparative Statistics

It is needless to say that in a comparison of the service of two or more railway properties, or indeed in the comparison, on any unit basis, of two dissimilar things, all of the circumstances affecting the service or things compared should be taken into consideration if complete knowledge is desired. The car mile in a small city with light grades is a unit of an entirely different value from that in a large city with steep grades and considerable street obstruction, and each of these car miles is apt to differ widely from the car mile on a high-speed interurban road. Similarly, comparisons of pull-ins per 1000 car miles will be but a slight measure of the operating and mechanical efficiency of a company unless many of the elements which affect the number of pull-ins form part of the comparison, such as the extent of the defect which the company regards as sufficient to warrant it in withdrawing a car from service, type of equipment used, the extent to which repairs are allowed on the road and many other attendant circumstances. These remarks are made because in some quarters there seems to be a tendency to place undue emphasis upon the comparative pull-in defect records of the electric railway companies in New

York City compiled by the Public Service Commission and reproduced in our issue of last week. The value of statistics of this kind when they relate entirely to one company is considerable because presumably they have been compiled upon the same basis. Thus they assist the management quickly to detect the parts of the equipment which are relatively weak, either mechanically or electrically. From this standpoint they are interesting and instructive. But, as with all statistics, their use should not be stretched in an attempt by anyone to draw conclusions which are not justified by the widely different bases used in their compilation.

Progress in Rule Making

The prospects that the association will reach an amicable and satisfactory agreement this year on the perplexing question of standard codes of rules for city and interurban roads are most encouraging. Last week the interurban rules committee finished its revision of the rules in a two-days meeting which was marked by a spirit of compromise and harmony. The code of interurban rules which it will present to the convention for adoption this year is essentially the Denver code, modified in some respects, but rearranged and renumbered to conform as nearly as possible with the American Railway Association code. A few steam road practices of doubtful safety when applied to interurban railway operation, such as those conferring superiority by direction and those permitting the use of time orders, have been omitted, and rightly so, because a standard code should be a safe code to use under any and all conditions. The city rules committee also held a meeting last week, and in addition to revising the standard code decided tentatively upon a set of station or carhouse rules and also upon a special code of rules for the operation of prepayment cars. The two committees have not yet been able to unite upon a code of bell signals for both city and interurban roads. Standardization in this particular is highly desirable in view of the many cases where interurban crews have to run over city tracks. Response to a bell signal on the part of trainmen comes to be instinctive rather than studied—indeed, it is well that it should be so, because action is then quicker—but a man's instinct or intuition cannot be changed several times a day at will whenever he passes the city limits. We realize that a great deal can be said in favor of each code of bell signals, but the differences on the whole are so slight that it would seem as if the two codes could be harmonized. Both committees have wisely decided to give wide publicity to their proposed revisions of the rules and to solicit early comment and criticism of them from the member companies. This request should be respected, because in no other way can real progress be secured. If the committees have made serious omissions or mistakes these errors can be rectified if called to the attention of the committees in time, or if the rules as a whole are satisfactory, expressions of approval of them on the part of member companies would be equally helpful. But if all or a greater part of the criticism of the rules is reserved for the floor of the convention it will be practically impossible to make the needed changes in time to receive the thoughtful sanction of the association. It will probably be necessary for several years, and possibly always, to make slight changes in the codes from time to time. But it would be a pity if an extended revision of either the city or the interurban code should have to go over for another year.

HANDLING MATERIALS AND SUPPLIES ECONOMICALLY

The problem of handling materials and supplies economically is one of pressing importance in electric railway service on account of the yearly tonnage and the variety of articles consigned to operating companies. On a small system the provision of adequate facilities for receiving and transferring both light and heavy supplies and equipment is a matter of no little pecuniary consequence, and on a large system, using frequently from 20,000 tons to 30,000 tons of track and rolling stock, building and machinery material per year, the arrangement of the receiving yard and its equipment with suitable tracks and tools, the design of new yard facilities and the improvement of established plant exert a powerful influence upon the cost of operation. It is difficult to overestimate the advantages of locating a receiving yard for material close to one or more main lines of track providing easy access to the entire system, with convenient steam and water connections where a property is adjacent to navigable streams or bays, and with facilities which obviate rehandling of material so far as possible before it is delivered at the point of utilization.

On large systems the tendency for the volume of freight handled to increase from year to year makes it desirable for the shifting of all cars to be under the jurisdiction of a single department, allowing all branches of the service equal facilities. The reduction of hand labor to the minimum in unloading material is of recognized importance, and while it will always be necessary to unload certain kinds of material by manual methods, the bulk of the tonnage received and shipped can be handled more economically by an electric crane. Thus, in a recent instance, it was found that the cost of unloading girder rail by the existing hand methods was about 45 cents per ton. With light derricks on tool cars, electrically operated, it was possible to unload and stack rails 33 ft. long, weighing 935 lb. each, for 12 cents to 15 cents per ton. A locomotive crane was found to be necessary to handle 60-ft. rails, weighing 2700 lb. each, and at a cost of 10 cents to 12 cents per ton. Similarly it was found possible to load scrap rail by electric hoists at 15 cents per ton when stored at a main material yard, compared with an expense of 75 cents per ton for hauling the scrap rail to a distant railroad yard and loading it on the cars. With an electric crane a shipment of structural steel can be handled at a maximum of 50 cents per ton, contrasted with at least \$2 per ton where a derrick has to be erected and an engine furnished for unloading.

In applying electric cranes to receiving yards the best results require in many instances a rearrangement of the trackage, the elimination so far as possible of sharp curves and grades, the installation of parallel tracks for transfer of freight between steam railroad and electric service cars, and the avoidance of material storage between existing tracks where the spacing is narrow. The provision of ample storage facilities for heavy steel equipment on the premises of the receiving yard is desirable in the interests of avoiding rehauling and extra handling. The installation of parallel tracks for crane service is of special importance, for the unloading of rails at the side of a train instead of at its end is preferable on the ground of lower cost. The provision of trackage which permits the company's service cars or trains to stand beside the strings of loaded cars is also worth looking into.

Coal constitutes the largest single item of supplies purchased and delivered in cars or boats, and rapid and economical coal handling apparatus is an essential part of the equipment of a modern power station. On a large system other bulk material, such as sand, broken stone and paving blocks, is handled in quantities which frequently would justify the installation of special unloading trestles, conveyors and other labor-saving machinery. In St. Louis, for example, a new sand-drying plant has been built in which the sand is not touched by hand from the time it is loaded on the railroad cars in which it is shipped until it is delivered at the carhouses. The wet sand is dumped from hopper-bottom cars into a pit between the rails of the unloading track and is lifted to the storage bin above the drier by a conveyor. Where from 3000 to 4000 tons of sand are dried each year a saving of even 10 cents a ton in the cost of handling will pay large returns on the investment in suitable conveyors. The Detroit United Railway and the Public Service Railway both have facilities for handling track material in the most economical manner in the storage yards.

The question of demurrage is an important feature of material handling. Where the company depends upon a postal-card notification from the steam railroad that a car has arrived, 12 hours may easily be lost through the rule that a demurrage charge is figured back to the time the car is set, deducting the free unloading time and including the time lost in the mails. Notification by the shipper of the details and time of the shipment may properly be required in contracts, and an arrangement between departments in the electric railway organization whereby cars may be unloaded by the most available force is desirable in forestalling demurrage. Another source of economy which may easily be utilized is the provision in receiving yards of quarters for the housing of materials not to be immediately used. Cement, for example, cannot be exposed in wet weather without serious damage, and a saving of 25 cents per ton may readily be made by proper housing, taking account of the expense of demurrage and the cost of haulage to other locations prior to retransportation for use in the field. The consignment of as much freight as possible to a central receiving yard may be a means of saving substantial sums per year, since freight may be handled in a trolley train for perhaps 20 cents per ton in comparison with a cost of 60 cents per ton by teams. The pavement of teaming ways cannot safely be overlooked, since poor thoroughfares render it impossible to handle the full capacity of vehicles utilized.

The possible saving in handling supplies in bulk, of course, is greater than in the case of miscellaneous supplies purchased in smaller quantities. Nevertheless, suitable facilities in the general storehouse where this class of material is delivered will reduce the cost of unloading and placing in the stock bins to a marked degree. The storeroom of the Indiana Union Traction Company at Anderson, Ind., is an excellent example of a building constructed not only for the safe and orderly storage of material but with a view also of reducing to a minimum the labor required to handle it on and off cars. A depressed track runs through one end of the room and the level of the car floor is the same as the floor of the storeroom. Thus the contents of a car can be trucked to any part of the room without undue exertion in ascending or descending ramps. A somewhat different but equally satisfactory arrangement of an unloading track within the storeroom is used in the Syra-

cuse shops of the Oneida Railway. Smooth floors and wide, level aisles contribute to rapid loading and unloading of material on trucks.

THE PROPORTIONATE INVESTMENT IN SUPPLIES ON HAND

A report regarding the Philadelphia Rapid Transit Company to which we referred in our issue of March 11, 1911, shows a total value of supplies and materials on Dec. 31, 1910, of \$829,417. This is not far from the values shown for the corresponding item in the balance sheets made public by the company previously. The totals at other recent dates have been as follows: June 30, 1910, \$826,901; 1909, \$973,870; 1908, \$930,712; 1907, \$1,255,248; 1906, \$746,859. The average for the six dates is \$927,168. Of course these figures do not necessarily approximate the average of the account, materials and supplies, which may have been lower or higher at the time the reports were issued than at most other periods during the year.

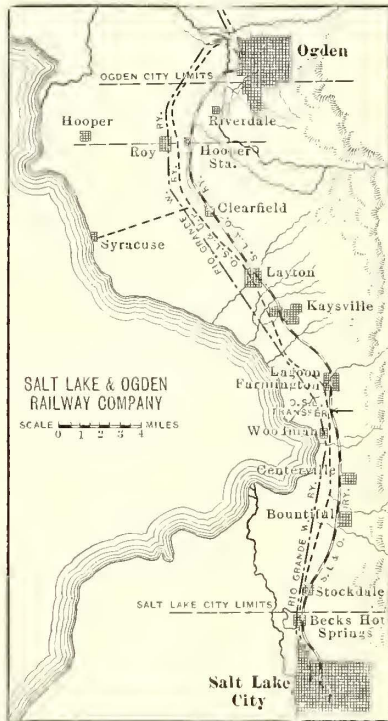
It is true that the fair investment for a year can be shown only by the average of the amount of the daily investments for the period. However, with the exception of 1907 there is no great variation in the figures given. At the close of the fiscal year 1906 the value of materials and supplies was 4.2 per cent of the total earnings and income for the year. In 1907 it rose to 6.8 per cent. For subsequent periods the percentage was as follows: 1908, 5 per cent; 1909, 5.2 per cent; year ended June 30, 1910, 4.5 per cent. The most recent published report of this company to which we directed attention in the foregoing gives the earnings for the six months ended Dec. 31, 1910, and of this total the value of supplies and materials on hand on the last day of the year was 8 per cent, which would indicate about 4 per cent on the approximate gross earnings for the full year. Analysis of the total of \$829,417 shows the following: General supplies, \$244,057, or 29.4 per cent; maintenance of way supplies, \$457,888, or 55.2 per cent; general engineering construction supplies, \$53,551, or 6.5 per cent; coal supplies, \$62,092, or 7.5 per cent; maintenance of power, \$11,829, or 1.4 per cent.

It appears from these figures of the values of supplies, provided they can be accepted as typical of the policy of the company, that a smaller proportionate amount is carried in this account by this corporation than by many other street railways. Of course, the amount of the account does not of necessity represent the gross investment in materials and supplies, which may properly be carried in part in operating expense accounts. The census record of 1907 shows that 939 operating companies carried supplies accounts on the day of reporting their balance sheets of 7.3 per cent of their gross operating earnings for the yearly period. While inspection of the accounts of several representative companies of the country shows a supplies account of 2 or 3 per cent more of gross earnings than is indicated by the Philadelphia report, other prominent electric railways appear to carry as small an investment, in proportion to their revenue, as is shown by our calculations regarding Philadelphia. If the regular investment in materials and supplies is excessive it implies a waste of interest on capital. Managers may find that it is well worth their while to study means of lessening their working capital requirements.

ELECTRIFICATION OF THE SALT LAKE & OGDEN RAILROAD

Nearly 20 years ago Simon Bamberger, of Salt Lake City, and several business associates began to construct a railway line that was to extend northward to a point near Ogden and thence in a southeasterly direction through the Weber River canyon to Coalville, there to tap the coal mines of that district. The total length of the road was to be 68 miles, with a 10-mile branch to Ogden. Some rights-of-way were obtained and a 5-mile extension was constructed as far as the Becks Hot Springs. Later the road was built 10 miles farther north to Lagoon, where Mr. Bamberger established a beautiful artificial resort that since has been successfully operated in connection with the road. An extension was next made to Layton, 22 miles from Salt Lake. This was the northern terminus of the road for several years.

A few years ago it was decided that it would not be wise to build the line through to Coalville as originally planned, inasmuch as the Union Pacific Railroad had built its main line through the Weber canyon, with a branch to Coalville. The increase in wealth of the Salt Lake valley lying west of the Wasatch Mountains and the growth in importance of the two largest cities of the State—Ogden and Salt Lake—on the other hand influenced the completion of the line to join those two cities. The cities already were connected by



Salt Lake & Ogden Railway—Map of Route

The old road, extending from Salt Lake City to Layton, was operated by steam. The changes preparatory to electrical operation have included the bonding of the rails and the stringing of feeder high tensions and trolley wires over the old track; the building of 13 miles of new roadbed and track from Layton north into Ogden; the construction of the necessary generating stations and substations and the purchase of electric motor cars.

ROUTE

The main line is 35.5 miles long. The principal towns en route are shown on the accompanying map. At St. Joseph, Bountiful and Kaysville branch lines connect with brickyards, thereby bringing the total trackage up to 40 miles.

The road has excellent terminal facilities at both Salt Lake and Ogden. The railway enters the suburbs of the former city opposite the Oregon Short Line depot. The company has franchises, however, which will permit its tracks to reach the center of the business district, and the Federal Building, over the city streets.

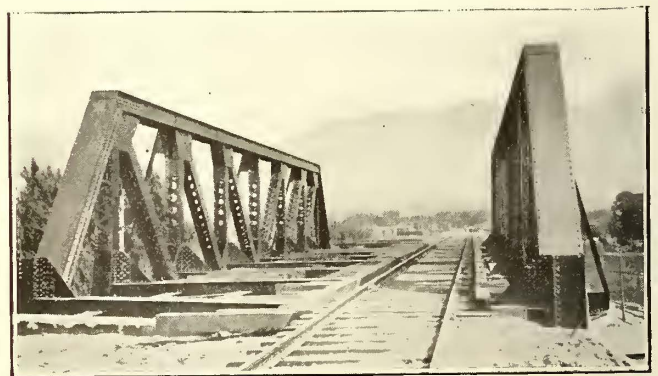
The track runs in a general northerly and southerly direction, skirting the western slope of the Wasatch range and lying between the mountains and Great Salt Lake. Midway between the terminals the line runs within a mile of the lake, of which it affords an excellent view. The route parallels the main lines of the Oregon Short Line and the Rio Grande Western railways, but its location makes it more accessible to the farmers of this valley, one of the most fertile belts in the State.

At Ogden the track leaves the private right-of-way and runs to Twenty-fifth Street, the principal cross street of the city. The Ogden depot is midway between the union station and the center of the business district on the line of the Ogden Rapid Transit Company. An extension is now being built north to reach the northern and eastern portions of the city. The company owns a right-of-way up the Ogden River canyon to "Idlewild," a mountain hotel owned by Mr. Bamberger; but it is doubtful if a railway will be built there by his company, inasmuch as the Ogden Rapid Transit Company now operates a line in the canyon as far as the Hermitage Hotel and is planning to build on to "Idlewild" and points in the valley beyond in 1911.

The Salt Lake & Ogden company owns several pieces of property fronting on the streets traversed by its tracks, which can be used as needed for storage tracks, shops and terminal stations and facilities. The main car and repair shops, however, are to be located at St. Joseph, 5.4 miles north of Salt Lake City. Here the company owns a large tract of land and



Salt Lake & Ogden Railway—Exterior of Car House at Ogden



Salt Lake & Ogden Railway—Bridge Over Union Pacific Railway

two steam railroads, but it was believed that a profitable business could be derived from an interurban railway catering by means of frequent trains to a passenger as well as an express and freight traffic. That this belief was justified has been evidenced by the success with which the Salt Lake & Ogden Railroad Company has met since it began operating electric car service between Salt Lake and Ogden in May, 1910. During this period the gross receipts have more than doubled.

at present has its main storage tracks and a small repair shop. As necessity arises modern and complete shop buildings and car houses will be erected at that point.

Track connections for the interchange of freight are maintained at Salt Lake with the Rio Grande and the Ogden Short Line railways, and at Ogden with the Union Pacific.

ROADBED

Outside of the cities the company operates on its own right-of-way, which has a standard width of 66 ft. Although only

single track with sidings is at present in use, provision is made for a double track throughout. The heaviest roadbed construction occurs at the Ogden end of the line, where bridges with the required cuts and fills are necessary for crossing the Weber River, the Union Pacific tracks and a local street railway track. At present the river crossing is made on a temporary trestle, but a concrete bridge with concrete approaches will soon be built at that point.

The Union Pacific crossing is made over two tracks and over Pacific Avenue. Above the tracks is a pony truss with 180-ft. span covering the entire right-of-way at the steam road. Over Pacific Avenue is a 9-ft. plate girder, the span being 89 ft. The bridge carries two tracks and is built on a slight skew with a grade of 1.1 per cent descending toward Ogden. A clearance of 22 ft. is provided over the Union Pacific tracks. At Wall Avenue the 80-ft. street is crossed with an 83-ft. bridge, made up of a 48-ft. central plate-girder span and two approaches, all resting on concrete abutments.

TRACK

The maximum grade is 1.1 per cent and the maximum curvature outside of the cities is 6 deg. The track is laid with 85-lb. T-rail, A. S. C. E. section, on a gravel-ballasted roadbed with standard size Oregon pine ties. All rail joints are bonded with No. 0000 "twin-terminal" copper bonds and the rails are cross-bonded every 600 ft. with cross bonds of like section. Long sidings are used to avoid delays at meeting points.

POWER AND SUPPLY

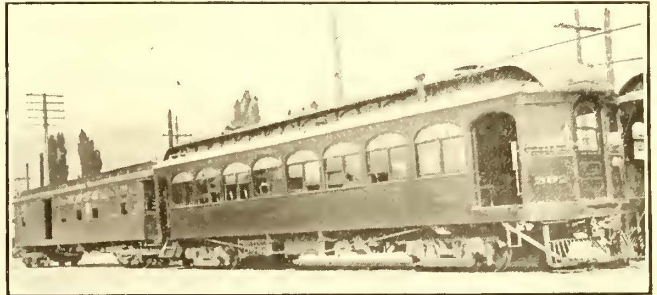
The Salt Lake & Ogden road within the coming year will have two independent sources of power. One of these is from the high-tension supply lines of the Telluride Power Company and the other is a generating station which the railway company is building near the midpoint of its line. For the first year of operation a contract for power was made with the Telluride company.

POWER-STATION BUILDING

The site of the steam power station is at Lagoon directly

charge from the condenser is utilized to warm the water in a bathing pool.

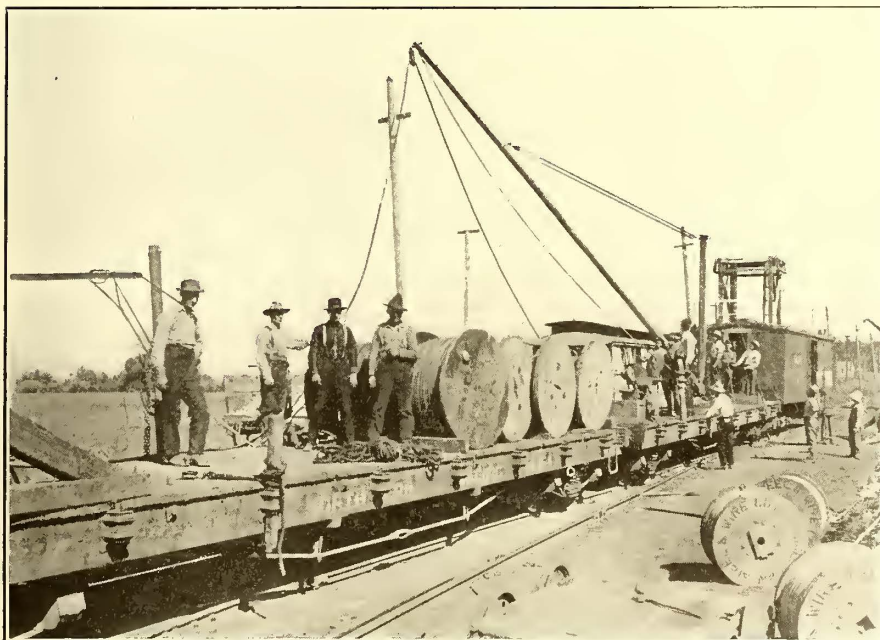
The new power station building is a steel-frame structure with concrete foundations and brick curtain walls. It is 106 ft. 6 in. wide by 143 ft. long. The floor space is subdivided by a fire-resisting wall into a boiler house and an engine room. A bay in the engine room 49 ft. long x 25 ft. wide incloses the high-tension buses and switching apparatus. The boiler and engine room roofs are carried on structural steel girders spanning from wall to wall. These girders carry 8-in. I-beam pur-



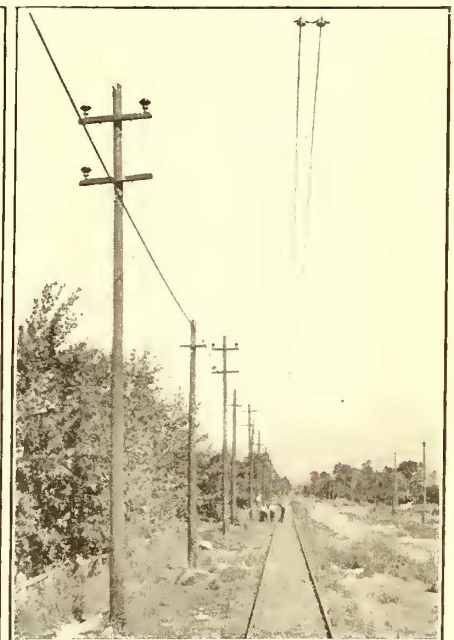
Salt Lake & Ogden Railway—Train at Salt Lake Terminal

lins which support a roof of reinforced concrete that is protected by a tar and gravel coating.

Coal is received over an elevated track supported on a steel floor structure and a wing wall so arranged that a storage space directly beneath the receiving track is opposite the boiler firing aisle. The boiler equipment includes one 306-hp, two 250-hp and four 150-hp Heine boilers equipped with American underfeed stokers and force draft. The boiler-plant auxiliaries are located on the boiler house floor. This boiler house has no basement. Ashes will be removed by a belt conveyor which will carry them to overhead bins from which they may be loaded into cars.



Salt Lake & Ogden Railway—40-ft. Derrick for Stringing Feeder Lines and Setting Poles



Salt Lake & Ogden Railway—Track Construction Inside of Town Limits

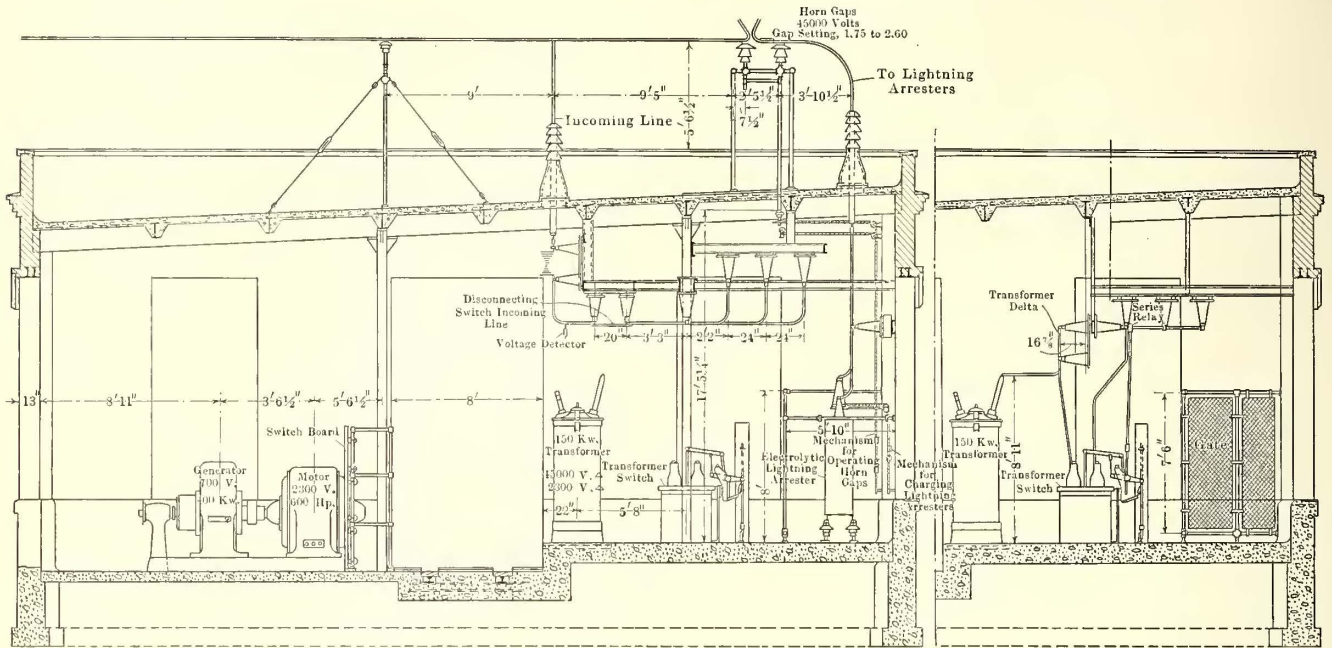
across the tracks from an extensive summer garden and amusement park, which has for several years been operated successfully by this company. The park was described and illustrated in the Oct. 2, 1909, issue of the *ELECTRIC RAILWAY JOURNAL*, page 522. A steadily flowing stream from the nearby mountains passes through the park and its waters are stored to form a lake. This water supply determined the location of the generating station at Lagoon and, as will be described later, condensing water is obtained with a lift of less than 3 ft. The dis-

The initial generating equipment includes two Allis-Chalmers cross-compound Corliss engines belted to two 400-kw General Electric, 2200-volt, three-phase, 60-cycle generators, and a 400-horizonal type Curtis turbo-generator connected for operation either on high-pressure steam or the exhaust from the reciprocating engines. Exciting current for the generators is furnished by a turbine-driven unit. A condenser equipment of the Le Blanc type will serve the two engines as well as the turbine.

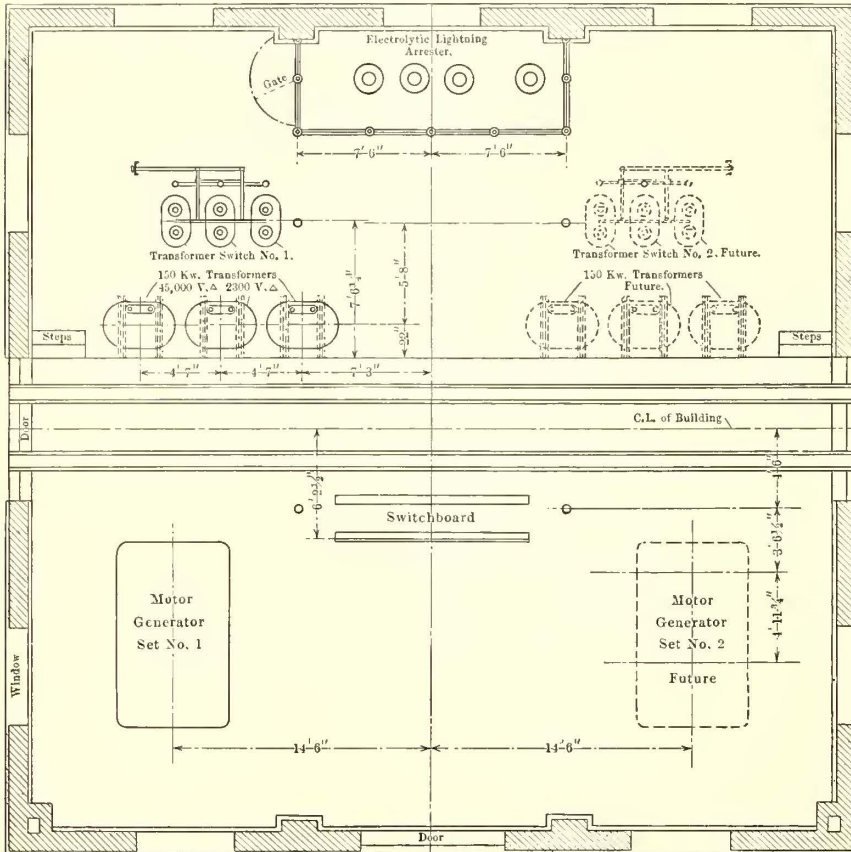
CONDENSING WATER SUPPLY

The supply of condensing water is taken from the large lake at Lagoon, 560 ft. distant. An intake well has been built of concrete at the shore of the lake and duplicate supply conduits have been laid. The intake well is subdivided into two water-tight sections. From each of these sections a 16-in. cast-

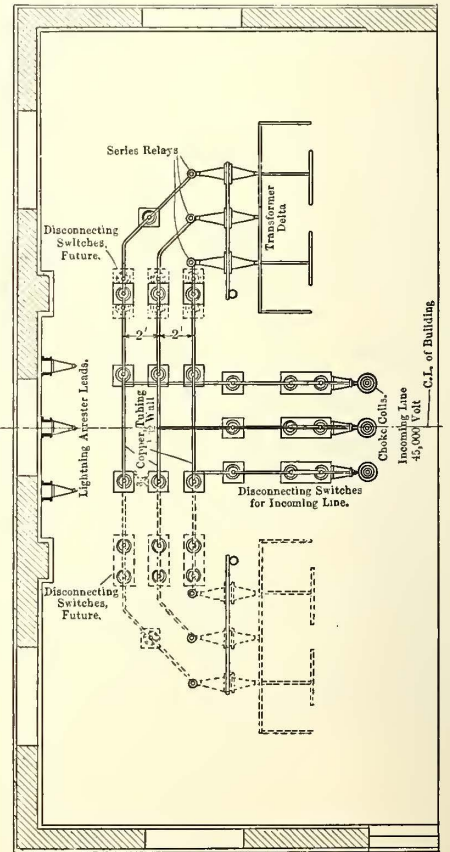
the conduits, its intake valve may be closed and its section of the intermediate well may be emptied by a boiler-feed pump. Meanwhile the condenser may be supplied by the duplicate intake pipe. The conduits have sufficient fall to discharge refuse into the intermediate well. The water level in the intermediate well normally is about 2 ft. below the water inlet to the con-



Salt Lake & Ogden Railway—Cross-Section of Substation Showing High-Tension Apparatus



Plan showing Location of Apparatus.



Plan showing H.T. Wiring, (Looking Up.)

Salt Lake & Ogden Railway—Floor Plan and High-Tension Connections in Substation

iron pipe carries water by gravity to an intermediate well close to the power house. Each of the intake pipes is fitted with screens and a valve at the intake end. The intermediate well also is subdivided so that each intake system is independent. With this arrangement, if it is desired to clean either one of

denser so that the circulating pumps have comparatively little work to do. The circulating water after having passed through the condenser is discharged through 900 ft. of 20-in. wood-stave pipe into a swimming pool in Lagoon Park. The overflow from this pool flows into the main reservoir from which the cir-

culating water is taken and which is fed by the stream earlier mentioned.

ELECTRICAL WIRING

The generators deliver 2300-volt current through oil switches and buses located in the engine room basement to a bank of 150-kw transformers which raise the potential to 45,000 volts. The transformers are delta-connected on both sides. A sectional elevation through the high-tension bay shows in general the arrangement of the low-tension switch gear beneath the engine room floor, the main control board in the engine room and the transformers and lightning arresters in the high-tension bay. All the high-tension connections within the power house are made of 5/8-in. copper tubing mounted on post-type insulators. The buses into which are connected the high-tension leads from the transformers are supported under the ceiling of the high-tension bay. Parallel with the transformer bus is a similar bus for the outgoing lines. Both buses may be sectionalized with hand-throw switches. The line bus is connected with the transformer bus through K-10, 45,000-volt solenoid-operated switches. Similar switches are installed for each outgoing line.

The high-tension bay with its exposed 45,000-volt connections is so arranged that all of the wiring is in plain sight and any disturbance may quickly be located and segregated. Facility of access for inspection and repairs is provided by a mezzanine floor and provision is made for handling the transformers on industrial railway tracks built in the floor. The wiring is so laid out that practically all leads are suspended and thus the floor space is clear for the movement of employees and apparatus. The transformer leads are fitted with special potheads which permit of quick disconnection in case it is necessary to run on open delta or to replace a transformer. All 45,000-volt leads pass in or out of the building through the roof. They are insulated from the reinforced concrete roof slabs by large nested porcelain roof entrance insulators installed as shown in the accompanying engravings of the power house and substations.

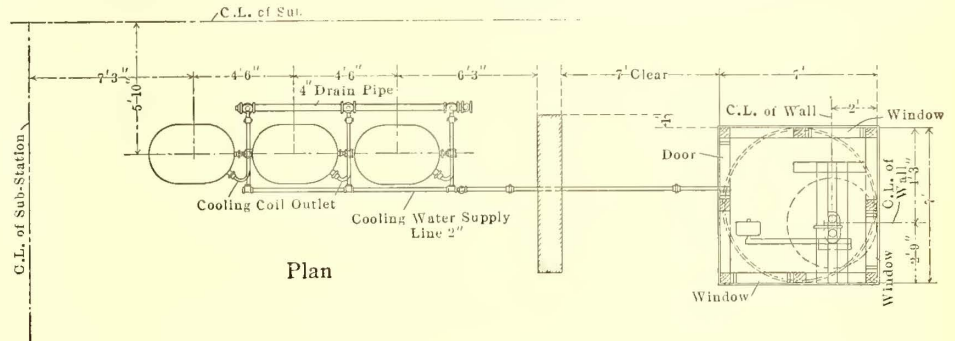
LIGHTNING ARRESTERS

Three high-tension lines extend out of the power station, one in each direction along the railway company's right-of-way, and the third to connect with the transmission system of the Telluride Power Company. All three outgoing lines have similar protection against disturbance from lightning. This protection is afforded by banks of electrolytic lightning arresters having horn-gap discharge points above the roof of the building, which are shown in the vertical section through the high-tension bay. Lightning arrester connections are made with copper tubing. The bank of electrolytic lightning arresters is installed within a protecting framework on the floor of the high-tension bay directly behind the transformers. From the tops of the arresters the leads pass directly up and through the roof to one side of the horn gaps. The other side of the horn gaps connects with the outgoing line. Electrolytic lightning arresters require charging and so an operating mechanism has been provided with which the horn gaps may be closed to supply current to the aluminum cells which form the arresters. This operating mechanism has a latch to prevent accidental closure of the horn gaps.

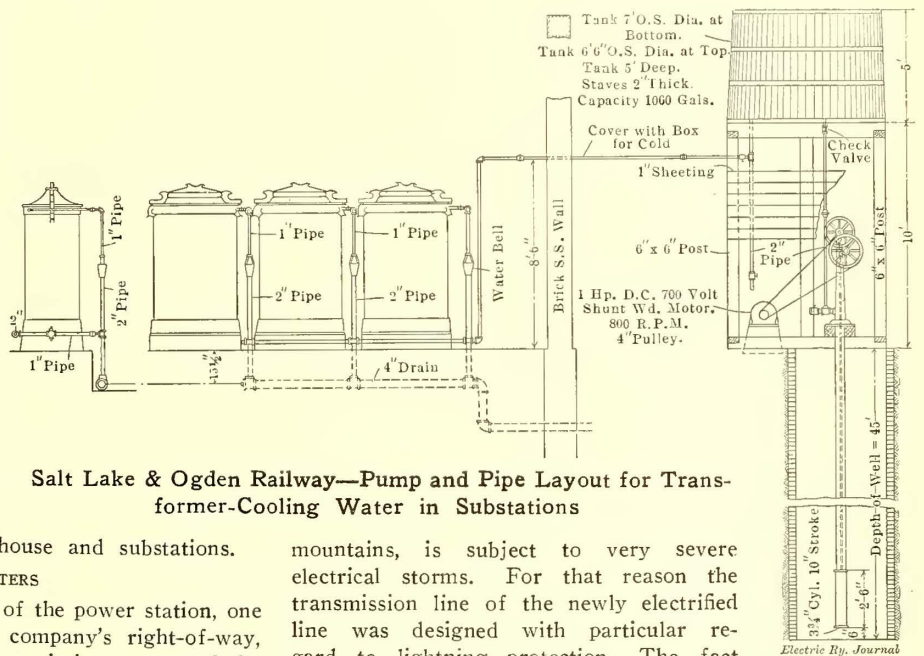
TRANSMISSION LINE

The transmission wires are carried on an independent pole line built of 45-ft. cedar poles with 8-in. tops and 12-in. butts set 6 ft. in the ground. The transmission poles are set 150 ft. apart on tangents and 80 ft. on curves, while the trolley poles are spaced 80 ft. apart throughout. The butts of the transmission poles, as well as those of the trolley suspension, were treated with Carbolineum. Where wet ground made it necessary the poles are set in concrete, barrels being used for forms. An accompanying engraving shows the general dimensions and arrangement of the transmission poles. The transmission circuits consist of three No. 14 copper or aluminum wires carried on 8 1/2-in. triple petticoat porcelain insulators supplied by the Ohio Brass Company. Two 4-in. x 5-in. x 8-ft. cross-arms are used, the wires being spaced 7 ft. apart.

The valley of the Great Salt Lake, closely shut in by high



Plan



Salt Lake & Ogden Railway—Pump and Pipe Layout for Transformer-Cooling Water in Substations

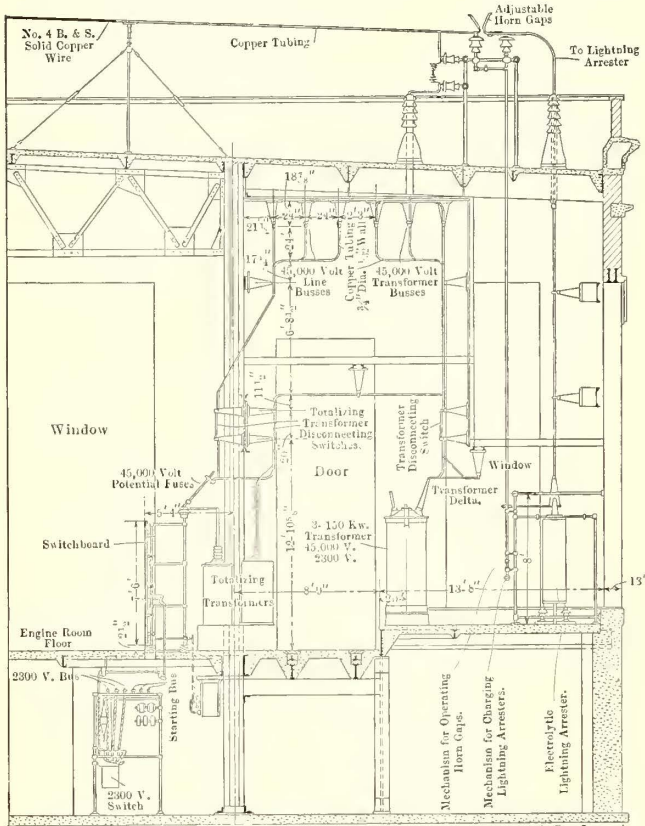
mountains, is subject to very severe electrical storms. For that reason the transmission line of the newly electrified line was designed with particular regard to lightning protection. The fact that during the first eight months of operation up to the time this article was written the transmission system had not experienced a shutdown indicates the thoroughness of construction and the excellence of the design. A No. 8 galvanized-iron guard wire is strung on top of the poles for lightning protection, its support being a galvanized channel iron fastened with lag screws to the pole top. To the fact that the protecting ground wire is grounded at every pole may be credited the freedom from lightning troubles enjoyed by this transmission line.

SUBSTATIONS

The trolley wire and feeders are supplied with 700-volt direct-current from four motor-generator substations located about 10 miles apart. One substation is installed within the power house at Lagoon. The substation installations are similar and each includes one 400-kw motor-generator set receiving 2300-volt a. c. and delivering 700-volt d. c. Banks of three 150-kw water-cooled oil-insulated transformers receive current from the trans-

mission line at 45,000 volts potential and deliver it to the motors at 2300 volts. The generating and substation apparatus is chiefly of General Electric manufacture.

The building design of the substations conforms to that of the power house, having concrete foundations, floors and roofs with brick side walls. A floor plan of one of these substations



Salt Lake & Ogden Railway—Section Through High-Tension Bay of Power House

is shown. This design is standard for all stations. The building provides a generous amount of floor space for the accommodation of duplicate motor-generator sets and attendant apparatus. An aisle and tracks between the high and low-tension sections of the substation furnish an economical means for handling heavy apparatus directly into the substation on cars.

In general the wiring plan of the substations is similar to that in the power house. All high-tension leads are brought into the building through roof insulators. The circuits of the 45,000-volt, three-phase power line pass through choke coils just below the roof insulators, thence through disconnecting switches to underhung buses supported on post-type insulators. From these buses connections are made to K-10 oil switches which throw the transformers onto the line. All the high-tension connections are made with $\frac{3}{4}$ -in. copper tubing. The extreme simplicity of the high-tension connections in one of these substations is shown in the plan. The arrangement of the roof entrances and the location of the larger apparatus are shown in a sectional view.

The substations, as well as the power house, are protected from lightning discharges by electrolytic arresters, the horn gaps of which are installed above the substation roofs. The aluminum cells are placed directly under the high-tension entrances and are inclosed in a grillwork to protect against accidental contact. A special mechanism has been installed to facilitate the operation of the horn gaps and the transferring of the fourth electrolytic arrester cell from the ground side to the line side for charging. This mechanism essentially consists of rope drive for the moving parts with special stops attached to the ropes, indicating the extent of travel for completing the movements necessary to close the horn gaps and to transfer the end cell. Arrester discharges are indicated by an alarm bell.

TRANSFORMER WATER SUPPLY

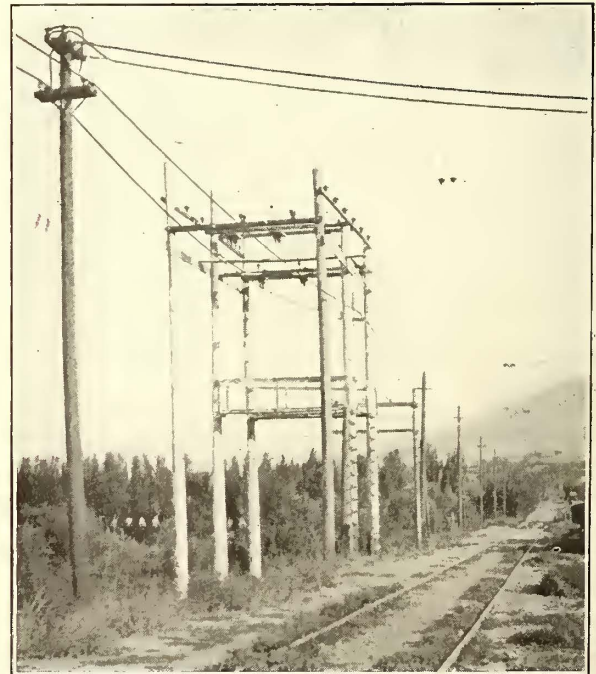
An independent plant has been installed at each substation to supply cold water for the transformers. One of these plants is shown in elevation by the engraving on page 703. Water is taken from a well by a 1-hp, 700-volt shunt-wound motor, driving a Rumsey pump which discharges into a storage tank having a capacity slightly more than 1000 gal. The pump and its driving motor are installed within the inclosure surrounding the supports for the storage tank.

OVERHEAD LINE CONSTRUCTION

The overhead construction of the road is of particular interest because of the care taken to gain permanence and because an especially large amount of copper has been installed. An accompanying engraving shows a cross sectional view of the right of way and indicates the arrangement and dimensions of the poles and fittings supporting the trolley and feed wires. Span construction with 80-ft. pole spacing along the track and 35-ft. spacing across the track has been used throughout the length of the line. Two No. 0000 grooved trolley wires have been installed over the present track and one of these wires is so arranged that it can, at comparatively small expense, be shifted on the span wire to a position over the second track which the company expects to build. The span wires are supported by 35-ft. poles on one side and 30-ft. poles on the other. Every trolley span pole has been back-guyed with a 6-in. anchor. A variety of anchors has been utilized. The anchors have $\frac{5}{8}$ -in. rods and are connected with the pole tops by $\frac{3}{8}$ -in. steel strand cables.

In the cities where the poles could not be guyed they were set in concrete for the full distance below ground. On the right of way all poles were anchored with a concrete collar 24 in. in diameter extending 18 in. below the ground and 5 in. above. The butts of the poles were treated with Carbolineum for a length of 8 ft.

The poles on one side of the track carry two-pin cross arms, on one pin of which a 750,000-circ. mil feeder cable has been installed for the full length of the road. The south section of the road, 5 miles in length, where the heavy switching will be done, is fed by the two such cables. Westinghouse type M. P.



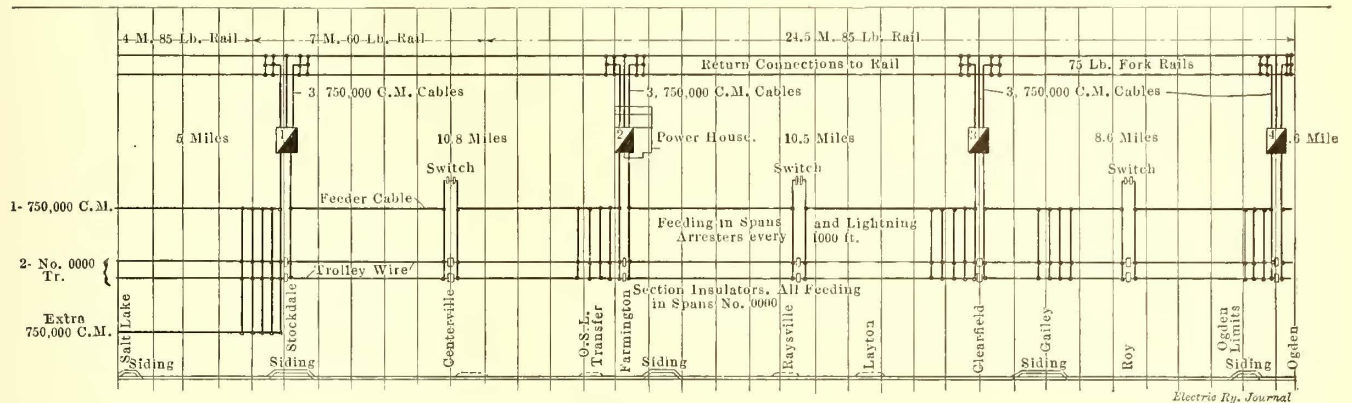
Salt Lake & Ogden Railway—Switching Tower at Power House

lightning arresters are installed on every eleventh pole, at which points trolley feeding taps also are made. The lightning arrester ground wires are No. 4 B. & S. solid copper, which for a distance of 7 ft. above the ground are inclosed in sections of $\frac{3}{4}$ -in. standard wrought-iron pipe terminating in malleable

points 6 ft. below the ground surface. It is planned to supplement the trolley line arresters with electrolytic arresters placed in the substations.

Two pairs of telephone wires, one of No. 12 galvanized iron and the other of No. 10 copper, have been erected. The iron wire line is used by the traffic department and the copper line is

position, but any one may quickly be dropped at the will of the dispatcher. The dropping of the semaphores is effected by an installation of Gill selectors supplied by the United States Electric Company. These selectors do not require an independent signal line, but are operated over the dispatcher's telephone circuit. The dispatcher is provided with a separate key



Salt Lake & Ogden Railway—Feeder Diagram

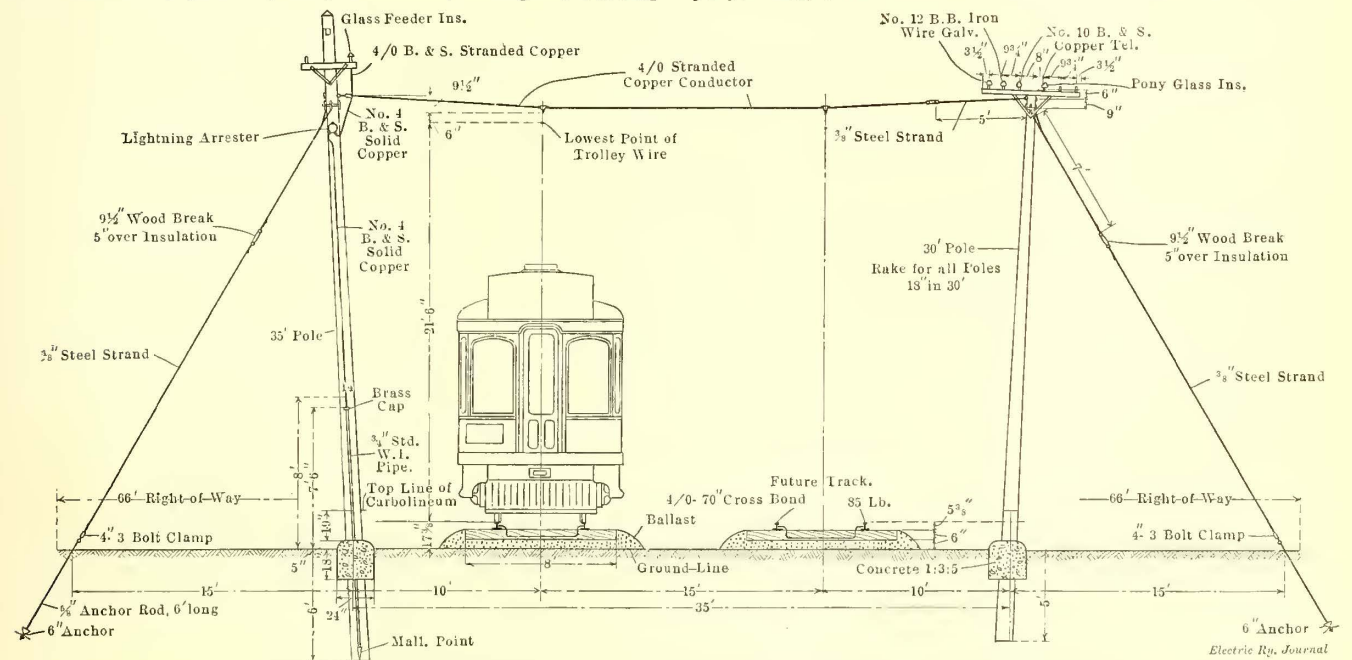
for the dispatcher and for a system of dispatcher's signal boards operated by telephone selectors.

So far as possible special tools were used to facilitate the construction of the pole line and overhead wiring. A hand derrick with a 40-ft. boom, as illustrated, was mounted on a flat car and used for setting poles. This derrick also was used to place the feeder and trolley wires at the pole tops. So far as possible all of the work of fitting up the span and guy wires and serving them into the strain insulators was done at a field shop at one point on the road. In this way considerable labor was saved and the speed of the work could be accelerated because the wire men were protected from the weather and could use heavier tools than would be convenient to carry along the road. In the towns and cities all poles are painted a dark green and each trolley pole is plainly numbered, the figures reading

for each semaphore and by turning this key certain impulses are sent over the telephone line. These impulses will cause to operate only that selector switch controlling the semaphore corresponding with the sending button turned by the dispatcher. The semaphores are returned to the clear position by the train crews which are stopped by them.

ROLLING STOCK

The initial motor-car equipment of the road consists of 10 three-compartment cars built by the Jewett Car Company. The 40 coaches used by the company when the road was operated by steam are brought into service as trailers. Some of these coaches are being remodeled for electrical operation and 10 trail-car bodies of the same dimensions as the new motor cars are now under construction at the shops of the Niles Car Company, Niles, Ohio.



Salt Lake & Ogden Railway—Standard Overhead and Track Construction

alternately from the north and the south. The overhead fittings for the trolley and feeder installation are of the Westinghouse type, but the pole hardware was supplied by the Western Electric Company.

DISPATCHERS' SIGNALS

The safety of train operation is assisted by the use of an equipment of dispatchers' signals with stop boards located at all sidings. Normally all these boards are held in the clear

The motor cars, which have a seating capacity of 60 passengers, are designed to conform as nearly as possible to standard M. C. B. specifications. The following are the dimensions of the cars:

Length over buffers.....	55 ft. 0 in.
Length over corner posts.....	41 ft. 0 in.
Length over center to center of trucks.....	35 ft. 0 in.
Width over all.....	9 ft. 0 in.
Height from bottom of sill to top of car.....	9 ft. 7 in.
Wheel base.....	6 ft. 6 in.
Weight complete.....	80,000 lb.

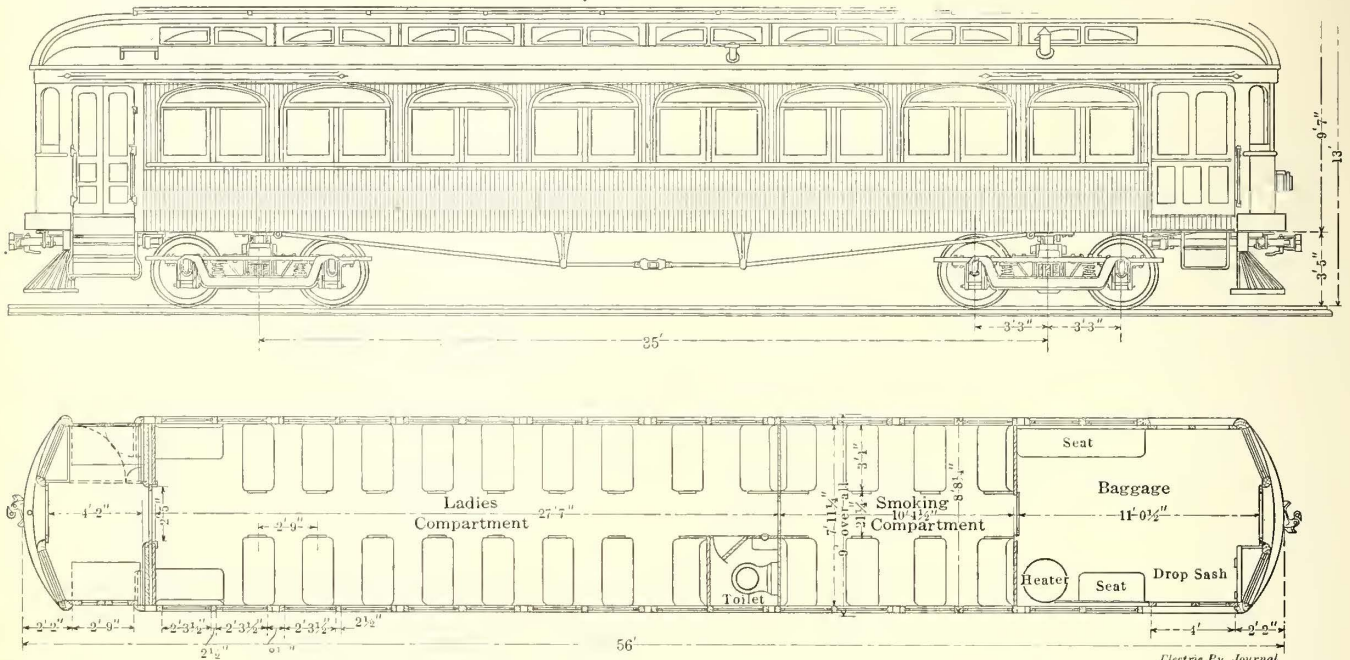
The interiors of the cars are finished in solid mahogany with full-vaulted Empire ceilings. The main compartment has 15 reversible and four stationary seats of the Hale & Kilburn No. 199 type. The smoking compartment has four reversible and four stationary seats.

The baggage compartment occupies a space 11 ft. long at the front end of the car and has two sliding doors. Two fold-

m.p.h. They are geared to 53 m.p.h. so that the run between Salt Lake and Ogden may be made in less than an hour.

TRAIN SERVICE

The operation of the road is handled by a train dispatcher located at Salt Lake. Twelve trains are operated each way daily, the headway being 1 hour and 20 minutes. For the regular run, making 16 stops between Salt Lake and Ogden, 1 hour

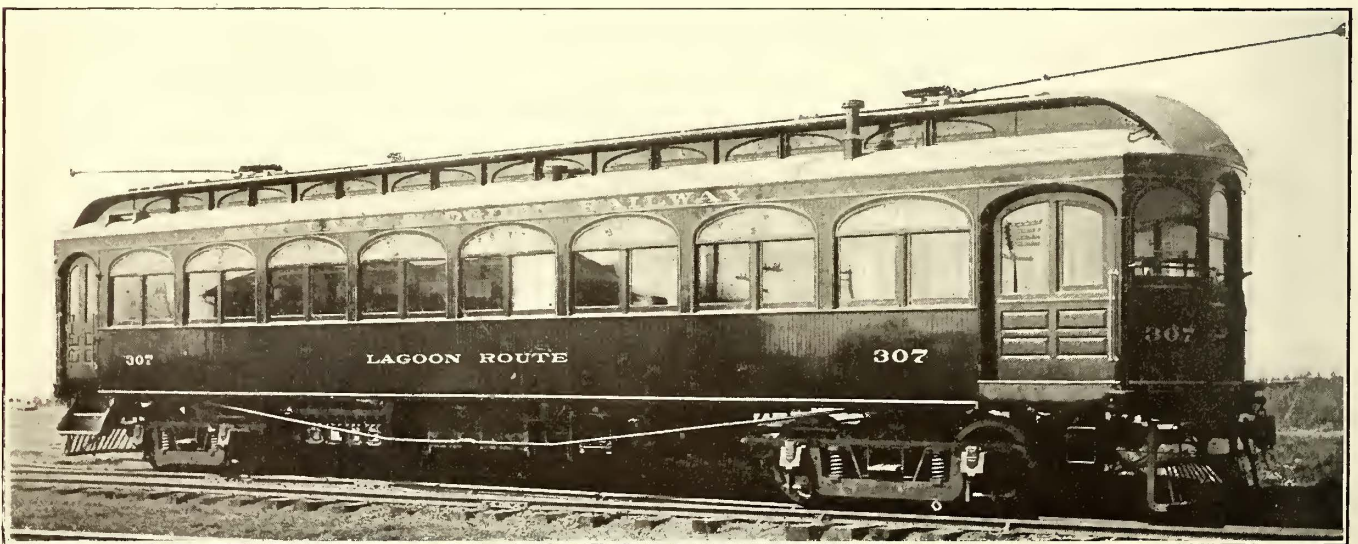


Salt Lake & Ogden Railway—Elevation and Plan of Standard Motor Car

ing seats are placed along the side walls. The vestibules, which are 4 ft. 6 in. long, have end doors for use during train operation. The front end of each car is set off as a motorman's cab. The cars are built for single-end operation, but are equipped with double-end control.

The cars are equipped with Janney radial M. C. B. couplers and McConway & Torley draft gear adapted for train operation in heavy interurban service. Other equipment installed

and 10 minutes is required. Three of the trains are operated on a "flyer" schedule, making but four stops en route and requiring only one hour for the trip. Agents are located at Bountiful, Centerville, Lagoon, Kaysville and Layton, and at the terminals. Since the road was electrified and extended to Ogden the passenger traffic has more than doubled and is increasing rapidly. Between 150 and 200 through passengers are carried each way daily and many more local passengers. This



Salt Lake & Ogden Railway—Standard Motor Car

on these cars includes: Baldwin class 78-30 trucks, Symington ball-bearing centerplates, Woods roller side bearings, Keystone air sanders, Edwards window fixtures, Curtain Supply Company's ring curtain fixtures, Duner toilet fixtures, Westinghouse AMM brake equipment, General Electric 205-B motors, General Electric type M automatic control and Peter Smith hot-water heating system.

The cars are designed for a schedule speed of about 30

increase in traffic has been made in spite of the fact that the rates have been increased over those charged during the steam period, and also in spite of the steam railroad competition. The company sells its local tickets at a rate of practically 2½ cents a mile. In addition it issues 500-mile mileage books for \$8.75, or at the rate of 1¾ cents a mile. These books can be used unrestrictedly. Under steam operation the Salt Lake & Ogden Railway charged 80 cents one way and \$1.60 round trip

between Salt Lake and Ogden. Under electrical operation the corresponding rates are \$1 and \$1.80. The steam roads, especially the Oregon Short Line, have bettered their service considerably, even placing a "flyer" in service which makes the trip in 45 minutes. The bulk of the traffic, however, goes to the electric railway, as the passengers seem to prefer the cleaner ride, the regular schedule and also the facility of boarding cars on the street.

FREIGHT AND EXPRESS

In addition to the passenger traffic the company handles baggage and an express, milk and general freight business. At present the total traffic averages 9000 car miles a day. Although a good, substantial local freight business has been built up this summer, this is being discouraged now in an effort to build up the express business.

Local freight is not solicited except in carload lots. A through freight train is operated every other day. Express is carried on every train. The rates for both express and freight are identical with those charged for corresponding service by the steam railroads. The company does not operate under the regulations of the Interstate Commerce Commission, but conforms in every respect to standard steam railroad practice. Interchange of freight is now made between the Oregon Short Line and Rio Grande roads at Salt Lake and with the Union Pacific at Ogden and the electric railway receives a fixed switching charge for cars turned over to a steam road.

At present the carload freight is handled by steam locomotives, but orders have been placed for two electric locomotives of a heavy type capable of handling 10-car trains. The bulk of the foreign traffic consists of coal for the company's own plant and for the consumers along the line. About 75 per cent of the foreign freight passes through Salt Lake. An average of five or six cars of freight is shipped out daily, the shipments consisting principally of brick and the products of the canning factories on the road.

In the way of local business the company hauls into Salt Lake about 30 to 40 cars a week of brick, vegetables, fruit, etc. Under a contract with the City of Salt Lake all garbage of the city is hauled to a dump 6 miles north. The railway company furnishes the cars and power, unloads the cars and sets fire to the dumping. The spur to the dump crosses the Oregon Short Line, the crossing being protected by an automatic electric block signal. Another remunerative class of freight is the manure which the company hauls from the city and distributes to the farms along the line.

PERSONNEL

The work of placing the road on a firm operating basis is in the hands of the superintendent, Robert H. Grinnell, formerly of the Chicago City Railway.

The officers of the Salt Lake & Ogden Railway Company are: President, Simon Bamberger; vice-president, Sidney M. Bamberger; secretary and treasurer, J. B. Bean; auditor, W. E. Jones; general station agent, Roy Needham.

The selection of system and the design of conversion from steam to electricity were placed in the hands of H. A. Strauss, consulting engineer of Chicago, and the construction of the entire system was carried out by the Falkenau Electrical Construction Company, of Chicago, as general contractors.

FLANGE WEAR ON ST. CLAIR TUNNEL LOCOMOTIVES

Since electric operation of the St. Clair Tunnel of the Grand Trunk Railroad was begun the driving wheels of the locomotives have been subject to excessive flange wear. After 10 months' operation, when the locomotives had made only 80,000 miles, it was necessary to turn the driving wheels and form new flanges. To do this 5/16 in. of metal had to be cut off of the treads and the operation was expensive owing to the cost of removing and replacing the wheels and the loss of good metal. Under normal conditions the tires should last six years. The following information regarding the nature and probable cause of the excessive wear has been furnished this paper by W. D. Hall, superintendent of power plant and electrical equipment of the St. Clair Tunnel:

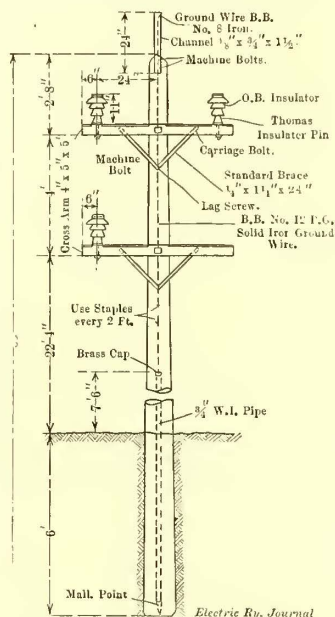
The three locomotives in use each consist of two duplicate half-units. Each half-unit is mounted on three pairs of driving wheels 62 in. in diameter. No guiding wheels are used and the rigid wheel base is 16 ft. The total weight of each half-unit is 67½ tons, which is evenly divided on the three pairs of driving wheels. The motors are each of 250 hp and are geared to the driving axles. The height of the center of gravity of the locomotives is 51 in.

Almost all the flange wear takes place on the leading wheels at each end of the half-units, which are turned end for end at regular intervals to distribute the wear as evenly as possible. The flange wear on the interior wheels is very slight and wear on the tread of any wheel is barely perceptible. The depth of the flanges is 1¼ in. and the minimum thickness allowed is 1 in. The steam locomotives which formerly were used for hauling trains through the tunnel did not show excessive flange wear on any wheels.

While some of the flange wear on the electric locomotives is due perhaps to the frequent application of the brakeshoes in descending the 2 per cent grades in the tunnel, there is no doubt that it is mainly due to curve resistance encountered in the tunnel yards. Conditions have been improved very much since last June. Up to that time various wheel flange lubricators had been tried out, but satisfactory results were not obtained, mainly on account of the heating of the tires due to the almost continuous braking which is necessary in descending the long approaches.

Mr. Hall designed an apparatus which would spray oil on the wheel flanges and one which would do this only when the tires required lubricating to enable them to take the curves with as little resistance as possible. By pressing an electric contact button at any controller or, in the case of a steam locomotive, by opening a small air valve, oil is sprayed on the flanges of the leading wheels of each locomotive from one lubricator. The action of the combination of oil and air not only lubricates the flanges, but cleans them from grit as well, as the spray forces the dirt and grit to the outer edge of the flange. When two or more locomotives are coupled together the pressing of a button on any locomotive will cause the leading wheels of each locomotive to be lubricated. For steam locomotives, or where electric current is not available, the action of the lubricator is the same except that it is controlled by an air valve placed near the operator and controlled by hand. This device has been giving very satisfactory results since all the electric locomotives were equipped.

The first lubricator of this design was tried out and has been in continuous operation since July 10, 1910, but a sufficient time has not elapsed to determine just what saving has been effected.



Salt Lake & Ogden Railway—High-Tension Pole Details

MEETING OF CENTRAL ELECTRIC TRAFFIC ASSOCIATION

The Central Electric Traffic Association met in Lima, Ohio, on April 12, 1911. After transacting routine business the rest of the day was spent in studying the various changes noted in the Interstate Commerce Commission's Tariff Circular 18-A.

METROPOLITAN STREET RAILWAY REORGANIZATION

After several postponements, the hearing before the New York Public Service Commission, First District, on the plan for reorganization of the Metropolitan Street Railway was resumed on April 6. Testimony in relation to the value of the property was offered on behalf of the joint committee of bondholders.

TESTIMONY OF CHARLES F. UEBELACKER

Charles F. Uebelacker, chief engineer of Ford, Bacon & Davis, submitted a table showing a division of the appraisal cost of

Under examination by Mr. Mathewson, Mr. Uebelacker said that he took the actual cost of reproduction of the system as a unit and apportioned it between the several companies. If the companies had been constructed separately, the cost would have been greater than the cost as a single company. Similarly the development charge was for the production of a single property. The development charge for organizing and putting in operation twenty companies would undoubtedly exceed that for the production of a single company. On some items of cost of construction and equipment nothing was allowed for sub-

TABLE I—COST OF REPRODUCTION NEW AS EXISTING OF THE PROPERTY OF THE METROPOLITAN STREET RAILWAY SYSTEM AS OF OCT. 1, 1910, AS ESTIMATED BY FORD, BACON & DAVIS

		Item.	Total.
I. <i>Development.</i>			
1. Development period (obtaining rights and capital).			
A. Rights.			
a. Time and expense of development organization and legal and technical departments.	Inventory priced	\$ 3,061,980	
b. Cost of property owners' consents.	Estimated	2,529,700	\$ 5,591,680
B. Capital.			
a. Time and expense of development organization and legal and technical departments.	Inventory priced		438,600
C. Interest on development expenditures during development period.	Computed		802,417
2. Construction period (expenditure of capital to completion of construction).			
A. Rights (completion).			
a. Time and expense of permanent organization.	Inventory priced	\$ 183,000	
b. Initial payments for franchises and trackage rights.	Estimated	4,814,800	4,997,800
B. Capital (completion).			
a. Time and expense of permanent organization.	Inventory priced	\$ 1,233,750	
b. Payments to underwriting syndicates.	Estimated	2,500,000	3,733,750
C. Interest on development expenditures during construction period.	Computed		2,533,407
Total cost of development.			\$ 18,097,654
II. <i>Construction.</i>			
1. Permanent organization—time and expense on construction.	Inventory priced		\$ 732,250
2. Cost of franchise security deposits.	Estimated		740,000
3. Cost of reproducing land (exclusive of special value for street railway purposes).	Appraisal by W. H. Wheelock		13,808,987
4. Cost of construction and equipment based partly on labor and material and partly on sub-contracts, and as of Jan. 1, 1909, or dates shown in inventories.			
a. Straight track and paving, electric.	Inventory priced	\$13,983,662	
b. Special track and paving, electric.	" "	2,319,189	
c. Horse track and paving, straight and special.	" "	1,317,657	
d. Ducts laid with track.	" "	1,485,169	
e. Ducts laid separate from track.	" "	858,854	
f. Feeder cables and telephone system.	" "	3,524,468	
g. Power plant and sub-station apparatus.	" "	4,256,939	
h. Buildings.	" "	8,157,900	
i. Equipment of buildings.	" "	608,609	
j. Rolling stock, electric.	" "	8,148,019	
k. Rolling stock, horse.	" "	710,399	
l. Fixed tools and appliances.	" "	221,013	
m. Fourth avenue tunnel.	" "	466,356	
n. Incidentals.	" "	3,901,024	49,959,258
5. General contractor.	10 per cent of Items 4 a-n		4,995,926
6. Cost of engineering.	5 per cent of Items 4-5		2,747,759
7. Interest and taxes during construction.	Computed		7,333,723
8. Furniture and fixtures, implements and apparatus.			
a. Stores and supplies.	Inventory priced	\$ 1,518,512	
b. Office furniture and fixtures.	" "	170,953	
c. Floating tools, wagons, etc.	" "	131,886	
d. Incidentals.	5 per cent of Items 8 b and c	15,142	1,836,493
9. Working capital.	Compiled from receivers' balance sheet		1,182,434
Total cost of construction, as of dates of inventories.			\$ 83,336,830
10. Cost of construction added from dates of inventories to Oct. 1, 1910.			771,756
Total cost of construction, as of Oct. 1, 1910.			\$ 84,108,586
Total cost of reproduction, as of Oct. 1, 1910 (subject to exceptions as noted below).			\$102,206,240

NOTE:—The above estimate does not include any: (a) "Going concern" value, of the character recognized by authoritative decisions. (b) Value of claims against various street surface railway companies, described in lot 13 of supplemental decree of foreclosure of "4 per cent mortgage." (c) Special value of land for street railway purposes, as distinguished from ordinary purposes. (d) Profits of promotion. (e) Discounts on securities. (f) Special value of existing franchises. (g) Reorganization assets not included in estimated cost of reproduction. (h) Net investment in superseded property.

reproduction new as of Oct. 1, 1910, between the thirteen corporations composing the Metropolitan system. The total cost of construction amounted to \$84,108,586, or, with development expenses, to \$102,206,240. With the reorganization assets and the net investment in superseded property the total was \$120,561,885. The values for the system as a whole are shown in Tables I and II, published herewith.

Charles F. Mathewson, counsel for the joint reorganization committee, stated that this total was exclusive of some other elements of value that had not been valued separately.

contracts or sub-contractors' profits. Straight track and special track work and other items to which reference was made involved sub-contractors' profits, but no allowance therefor was made in the estimate. Sixty-seven per cent of the track of the Metropolitan was actually constructed by sub-contractors. If profits for sub-contractors were to be computed it would be fair to figure them, if put on the basis of percentage on payroll and material furnished by the contractor, at 7½ or 10 per cent, or, if put on the basis of so much per unit completed, probably 15 or 20 per cent. On straight track alone, at

15 per cent, this would be \$1,500,000. The allowances for incidentals and general contracts did not include anything for sub-contractors' profits.

Mr. Mathewson stated that such profits should be allowed, but that it was thought better to show what these additional items would be than to add them in the first instance.

In explaining how he computed the value of incidentals illustrated in Table III Mr. Uebelacker said he used his judgment as to the detailed estimate summarized by each item. Wherever possible he took individual instances of actual construction and checked his judgment. If he found that the instance which he had taken showed a rather lower result than his judgment had indicated, he reduced the figure to correspond with the actual result. If he found that the example showed a higher result than his judgment, he almost always considered it an exceptional case and did not raise his estimate. The net result was an average of 8.8 per cent for incomplete inventories and incidentals, whereas his judgment had always indicated about 10 per cent for that item. An estimate for contingencies, made in advance, would vary somewhat with the information available, but Mr. Uebelacker's allowance for such items, in addition to the amount

as a long-continued strike. A small item was added under buildings for ordinary delay.

The allowance of 10 per cent for contractors' profit on certain items was a customary allowance for that purpose on work

TABLE II—SUMMARY OF CAPITALIZABLE ASSETS.

1. Cost of reproduction of Metropolitan Street Railway System.....	\$102,206,240
2. Reorganization assets not included in Item 1, consisting of (a) cash, and (b) bonds (\$1,200,000) and stock (\$300,000) of Central Park, North & East River Railroad Company, as estimated by reorganization committee, at least.....	5,000,000
	\$107,206,240
3. Add net investment in superseded property below....	13,355,645
Total.....	\$120,561,885

This summary does not include any:
 (a) "Going concern" value, of the character recognized by authoritative decisions.
 (b) Value of claims against various street surface railway companies, described in lot 13 of supplemental decree of foreclosure of "4 per cent mortgage."
 (c) Special value of land for street railway purposes, as distinguished from ordinary purposes.
 (d) Profits of promotion.
 (e) Discounts on securities.
 (f) Special value of existing franchises.

TABLE III—DETAILS OF INCIDENTALS.

Item	Track Paving and Special.	Cars and Equipment.	Power Plant and Cables.	Buildings and Equipment.	Total.
(a) Incomplete inventories.....	\$ 209,000	\$ 81,453	\$ 189,318	\$ 171,326	\$ 651,097
(b) Breakage and waste material, rehandling material.....	d	5,098	d	67,831	99,733
(c) Delays.....	d	c	d	68,530	68,530
(e) Weather damage.....	d	c	d	c	d
(f) Accidents above insurance policies, careless blasting, etc.....	50,160	d	2,610	17,130	69,900
(g) Temporary work.....	d	4,180	590,000	77,094	671,274
(h) Tracing, demurrage, express, etc.....	48,000	d	c	34,264	82,264
(i) Miscellaneous oil, waste, ice, etc.....	46,658	4,452	1,200	2,500	54,810
(j) Broken and lost tools, etc.....	167,195	4,242	31,178	85,663	288,278
(k) Lights for night work.....	d	3,239	400	1,000	4,639
(l) Mistakes and poor work removed.....	12,000	d	28,000	85,663	125,663
(m) City and government inspection and permits.....	414,848	d	400	4,000	419,248
(n) Storeyard rental and wages.....	127,645	43,490	d	102,795	273,930
(o) Cost record office.....	41,798	2,257	15,955	17,132	77,142
(p) Drying out and testing machinery.....	d	17,640	23,000	1,250	41,890
(q) Wear and tear during construction.....	d	c	d	c	d
(r) Pay roll insurance.....	208,994	3,699	5,000	85,663	303,356
(s) Fire insurance.....	d	1,045	4,037	8,566	13,648
(t) Sub-contractor's bonds.....	104,497	32,033	39,887	42,831	219,248
(u) Fidelity bonds.....	1,440	c	c	c	1,440
(v) Paymasters' wages and expenses.....	95,600	2,299	c	37,692	135,591
(w) Supervision, power, watching, cleaning, etc.....	d	39,872	c	171,326	211,198
(x) Telegraph, telephone, traveling, stationery, etc.....	40,000	11,280	2,600	34,265	88,145
Total incidentals.....	\$ 1,567,835	\$ 256,279	\$ 960,389	\$1,116,521	\$ 3,901,024
Total cost.....	20,005,945	7,845,884a	7,779,908	8,766,509	44,398,246b
Per cent of incidentals.....	7.8	3.3	12.3	12.7	8.8b

a Electric cars and equipment only. No allowance made for incidentals on horse cars.
 b Does not include horse cars, fixed tools and appliances and Fourth Avenue Tunnel, for which no allowances for incidentals have been made.
 c Amount so small as to be disregarded.
 d Included elsewhere.

TABLE IV—INTEREST AND TAXES DURING CONSTRUCTION.

Item.	Principal, Including Incidentals.	Years from Beginning Work to Use.	Interest Period—Years.	Rate of Interest.	Tax Rate.	Carrying Cost. (A)
Permanent organization.....	\$ 732,250	5	2 1/2	6 Comp.	—	\$ 115,188.78
Franchise security deposits.....	740,000	5	2 1/2	"	—	116,407.92
Land.....	13,808,987	3	3	"	1.4	3,270,955.00
Fourth Avenue tunnel.....	466,356	2	1	"	1.4	34,706.21
Track paving, ducts and feeders.....	25,096,749	1	3 1/2	"	1.4	1,398,798.67
Power plant and substation apparatus.....	5,217,228	2	1	"	1.4	388,266.11
Buildings and equipment.....	9,883,030	1 1/2	3 1/2	"	1.4	550,843.03
Rolling stock and horses.....	8,812,562	1 1/4	1 1/2	"	1.4	81,574.03
Fixed tools and appliances.....	221,013	—	—	"	1.4	—
General contractors' profit.....	4,969,794	—	—	"	—	—
Engineering.....	2,733,386	2	1 1/2	"	—	250,924.83
Stores and supplies.....	1,518,512	5	5	"	1.4	636,616.63
Office furniture and fixtures.....	170,953	—	—	"	1.4	—
Floating tools, wagons, etc.....	131,886	—	—	"	1.4	—
Working capital.....	1,182,434	5	5	"	1.4	495,720.25
						\$7,340,001.46

(A) Includes 6 per cent interest compounded annually on amount of tax payments, over one-half of interest period.

which he could fix definitely when he had complete specifications and plans, was usually 15 per cent, and he expected then that the full estimate would just about cover the actual cost. Under the heading of power plant and cables, there was \$500,000 for temporary work. That was the net cost—that is to say, the difference between the construction cost and the sale price of the apparatus—to the Metropolitan of the temporary steam plants used during the construction of the Ninety-sixth Street power house.

No allowance was made under incidentals for any delay, such

where the constructing company agreed to pay for the materials and payrolls plus a certain percentage for the profit. If the contractor took the risk, a fair percentage, depending on the nature and size of the work, would be 15 to 20 per cent.

The general contractors' profit was not applied to furniture or cost of land, but was calculated on rolling stock. The values for rolling stock were based on the piece prices per car body, truck, pair of wheels, etc., and while it was possible that the expense would not be so great as for other items, he thought that 10 per cent was a fair average for all the items.

Engineering expense would be much greater in New York, with its vast number of sub-surface constructions, than where there were fewer obstructions of that nature. In order to show what obstructions existed test pits were dug. The figure of 5 per cent was the usual allowance for large engineering contracts, which did not cover all of the expenses of engineering.

In computing the allowance for interest and taxes during construction shown in Table IV Mr. Uebelacker judged from his experience what time would be required from the commencement of work until the work should be completed far enough to earn money for each of the headings in the estimate. He charged against the investment thus determined 6 per cent interest, compounded annually, and added to that as a tax rate 1.4 per cent per annum. He did not figure interest on fixed tools and appliances or interest or taxes on general contractors' profit. The period during which interest would be computed on some of the elements of construction was made very short; for instance, on rolling stock and horses only about 45 days' interest was allowed. When it was considered that 12

tem in substitution for the horse system was reasonable and prudent at the time. Similar changes in Chicago, and undoubtedly in other places, also were capitalized by the consent of the city.

TESTIMONY OF FRANK R. FORD

Frank R. Ford, of Ford, Bacon & Davis, testified that he thought it was possible to make a fair estimate of development expense by the use of a percentage of what was called construction cost, but that the actual cost was likely to be largely in excess of that. The cost should be not less than about 25 per cent of the construction cost. The figures submitted represented 24 per cent. In the cases of Detroit, Chicago and Cleveland, and in other cases, Mr. Ford did not find any instance where the development figures were less than 25 per cent and they extended from that up to over 100 per cent of the cost of construction. In the 1899 valuation of the Detroit system by a State commission headed by Prof. M. E. Cooley, the physical property was appraised at \$8,000,000, and the value of franchises or intangible properties was fixed by Prof. E. W. Bemis at \$8,478,563. In the Chicago valuation the com-

		Development and Permanent Organization				Legal Department			Technical Department	Contractor	
		Organizing Company	State and Local Authorities	Property Owners Consents	Other Rights and Consents	Financing	General	Property Owners Consents	Construction	Engineering	Construction
Development-Period	Inception of Product.	Preliminary Syndicate					General Counsel Organization Rights Financing			Preliminary Estimate & Plans	
	2 Years	Development Syndicate									General Engineering Design
Construction-Period	4 Years		Charter Franchise Certificate of Necessity.	Consents of Property Owners				Consents of Property Owners		Evidence and Advice	
	6 Years	Capital Obtained.	Approval of Capital			Negotiations with Bankers and Investors					
	8 Years				Contracts and agreements with City	Organization of Underwriting Syndicates and Sale of Securities			Construction Contracts.	Detailed Design Engineering Inspection and Supervision	Purchase of Material Construction Work
	10 Years	Beginning of Partial Operation.	Permanent Organization		Departments and Officials other Corporations	Preparation and Issue of Securities			Injunctions and Claims		
Operation-Period	12 Years										

Electric Ry. Journal

Chart Showing Estimated Time of Reproduction, Prepared by Ford, Bacon & Davis

months would elapse after commencement of the work before any given track earned money, he charged three-quarters of a year interest on the ground that the material, which was the bulk of the cost, would have to be provided ahead of the completion of the work. It would be logical either to add for the general contractors' profit more than the 10 per cent allowed or to add to the interest allowance a sum for interest on such profit.

The item of furniture and fixtures, implements and apparatus, was based on an inventory. The allowance for working capital was taken from the balance sheet of the receivers. It was composed of cash in banks, cash in treasurer's department, petty cash, prepaid accounts, prepaid insurance and accounts receivable, less accounts payable.

Mr. Matheson said the usual amount for working capital was 10 per cent of the revenue.

The net investment in superseded property, shown in Table V, was discussed by Mr. Uebelacker. These were not the total values of the systems named, but the net values of the superseded property, less salvage. The installation of the cable sys-

mission representing the city, headed by B. J. Arnold, agreed upon a total value of \$50,000,000, of which the values of franchises and other intangible property, covering the same items of development as are specified in this case, represented approximately 43 per cent of the physical construction. This percentage included the extra value of the cable systems as going concerns. In the 1908 Cleveland valuation the value of the physical property was determined as \$14,994,614 and of the franchises and other intangible or development costs as \$8,994,995, or 60 per cent. In the final Cleveland settlement in 1909, Judge Tayler's valuation of these development items, so far as it was possible to separate them, represented over 25 per cent of the value of the physical property, or between 30 and 35 per cent if the differentiation could be made definitely. In the 1910 Detroit valuation the physical property was estimated by Mr. Barcroft to be worth \$11,121,725. The value of the development items, or franchises or tangible property, made by Prof. H. C. Adams, of the Interstate Commerce Commission, equaled \$2,810,615 to \$4,246,208, or from 25 to 38 per cent of the physical value.

The development charge was made for the Metropolitan system as one corporation and would have been somewhat higher if separate estimates had been made of the cost of reproducing the rights and capital of each of the constituent corporations. The total was divided pro rata, in proportion to the construction cost, among the 13 corporations. A chart, published herewith, shows an estimate of the time that would be required to reproduce the system, considered as one company. Mr. Ford estimated that the development period would be six years and the construction period five years, based on the time required for development and construction of properties in this and other cities.

Mr. Ford also submitted a detailed inventory of development items, similar to that presented by him in the Coney Island & Brooklyn Railroad case and published in the *ELECTRIC RAILWAY JOURNAL* of Dec. 25, 1909, page 1266.

The sum of \$5,000,000 did not seem to Mr. Ford to be an unreasonable amount for cost of the time and expenses of the development syndicate and its organization and the permanent organization which would follow it up to the time of construction.

The cost of property owners' consents, estimated by Mr. Ford at \$2,529,700, was based upon \$2.50 per front foot, or \$13,200 per mile of street front. This was based in part on some records of the Metropolitan company showing past costs of \$1.92 and \$1.98 per street front. He believed the figure which

TABLE V—SUMMARY ESTIMATED NET INVESTMENT IN SUPERSEDED PROPERTY.
(ESTIMATED COST LESS SALVAGE.)

1. Horse car system.....	\$ 6,640,439
2. Cable car system.....	5,371,698
3. Compressed air equipment.....	386,794
4. Thirty-fourth Street storage battery equipment.....	956,714
Total.....	\$13,355,645

he submitted was a moderate estimate of what it would cost to get these consents in Manhattan streets. This did not cover any legal costs or court proceedings, but did cover title search. Construction of such a system as that of the Metropolitan company would be effected under competitive conditions, and in some cases it would be impossible to secure consents on certain streets and the work would have to be discontinued and begun on other streets.

The method of estimating \$4,000,000 as the initial payment for franchises was to consider the payments imposed by the Board of Estimate and Apportionment for other franchises granted recently in New York City. An average of 10 franchises in Queens Borough showed that the initial payment was 11 per cent of the gross earnings as estimated or as they proved to be. In Bronx Borough the ratio was 17 per cent, and in Manhattan Borough, in the case of a road that was not built, it was 30 per cent.

The estimated payment of 2½ per cent, or \$2,500,000, to an underwriting syndicate might be considered, Mr. Ford said, as insurance on obtaining the capital. This was the same commission that the Pennsylvania Railroad Company paid in 1903 for the underwriting of an issue of \$75,000,000 of stock. The cost of franchise security deposits consisted of the interest for deposits required under the law, figured at 6 per cent, less the rate of interest that could be secured upon them.

A report filed with the commission giving the cost of track work showed that during the period of reconstruction of the electric system on Manhattan Island the actual rate of construction was about 24 miles per year, single track, from 1897 to 1903. From those records Mr. Ford assumed that 30 miles per year would be a reasonable amount of construction from the standpoint of both the city and the company, which would mean an actual working time of four years, but, due to the interference of the winter weather, would have to be spread over a period of five years. The Chicago companies were allowed a period of three years for rehabilitation, but this period began about a year later for one company than for the other, making a total period of about four years for an expenditure of \$60,000,000. The Metropolitan company was assumed to spend over \$80,000,000. Mr. Ford thought it would require fully

three years to construct the power system used by the Metropolitan company.

The hearing was adjourned until April 18.

DETAILS OF SUGGESTIONS OF T. E. MITTEN FOR REHABILITATION IN PHILADELPHIA

On April 10, 1911, E. T. Stotesbury, of Drexel & Company, Philadelphia, Pa., addressed a letter to J. R. C. McAllister, chairman of the finance committee of the Councils of Philadelphia, in response to the request of the committee contained in the resolution which it adopted on April 5 urging that a statement should be submitted showing more in detail the work it is intended to do than the summary of this work contained in the announcement made by T. E. Mitten and published in the *ELECTRIC RAILWAY JOURNAL* of April 15, 1911, page 682. In his letter transmitting the statement from Mr. Mitten Mr. Stotesbury said:

"As you are no doubt aware, the task of improving the street car service of Philadelphia has not been one of my own seeking, and has only been considered by me in the interests of the public welfare.

"After receiving the petition in October last requesting that I enter the board of directors of the Philadelphia Rapid Transit Company with such associates as I might select and thereafter 'control the policy and the business of the company,' I determined that additional capital would be required, to provide which a new bond issue of \$10,000,000 should be created.

"As you know, all the details concerning this bond issue have been satisfactorily arranged, and the published report of the company's condition as of Dec. 31, 1910, submitted by Vollum, Fernley, Vollum & Rorer, chartered accountants, shows that \$1,500,000 in current assets has been set aside for renewals, as per my requirements.

"The plans and the policies as outlined in Mr. Mitten's communication herewith are those which, in my opinion, should be followed."

Mr. Mitten's letter to Mr. Stotesbury follows in part:

"The agreement with the city, effective on July 1, 1907, provides for a monthly payment of certain sums by the company, constituting a sinking fund, which, at the expiration of the present ordinance on June 30, 1957, should, with its accumulations, be sufficient to enable the city to exercise its option and purchase the capital stock of the Philadelphia Rapid Transit Company at par.

"The \$30,000,000 derived from the Philadelphia Rapid Transit Company's stock issue, which was paid in at par, has now been fully expended, and while not so expressly stated in the agreement it was, nevertheless, clearly intended that the property represented by this expenditure should be maintained intact and renewed from time to time out of the company's earnings and not from the proceeds of new securities.

"To insure the proper maintenance and renewal of the property an annual expenditure of an amount equaling 15 per cent of gross earnings is considered necessary. The expenditure in this regard has not heretofore been in excess of an amount equaling 12 per cent of gross earnings, the result being evidenced in the gradual depreciation of the physical property.

"The earnings of the company are not as yet sufficient to bear the cost of operation, including this 15 per cent, in addition to the payment of its fixed charges; the shortage for the current year ending June 30, in this regard, will be in excess of \$600,000. To meet this and the estimated shortage of the two succeeding years a fund of \$1,500,000 in current assets has been set aside, as per your requirement. This, when used, will entirely exhaust the present available current assets of the company.

"The earnings of the year ending June 30, 1914, as estimated, should be sufficient to bear the 15 per cent cost for maintenance and renewals, the increased fixed charges due to the introduction of new capital at the rate of \$2,000,000 annually, and also

pay the contribution to the sinking fund as required by the city agreement.

"The earnings for the year ending June 30, 1915, and thereafter, as estimated, should be sufficient to pay all costs, including fixed charges and the allowance for maintenance and renewals as aforesaid, and in addition thereto produce an annually increasing surplus, excepting only as this estimate may be interfered with by unforeseen contingencies, the building of unremunerative extensions or the assumption of like burdens entailing additional costs.

"The results as estimated are based upon a 4 per cent annual increase in gross earnings; the actual increase, 1902 to 1909, was at the rate of 4.2 per cent per annum.

"The rate of fare under the city agreement, as now interpreted, requires the payment of 5 cents, with an additional 3 cents for an exchange ticket, and the maintenance of 210 transfer points at which a continuation of the 5-cent ride is given by the issuance of a transfer ticket without the payment of additional fare. These rates are considered as fixed, no change being permissible under the agreement without the consent of both parties.

"It has not been estimated that the present cost of operation can be materially decreased, the economies resulting from the introduction of larger cars being practically offset by the cost of improved service due to the greatly increased seating capacity which will be necessary in order to properly serve the public during the hours of heaviest traffic and the semi-annual increase in wages of trainmen, as already promised by the company in its published notice, recently arbitrated.

"It must be borne in mind, however, that as the more scientific management of the property and increased efficiency of the employees result in increased earnings the scale of wages paid should be correspondingly advanced.

"Of the 15 per cent of gross earnings heretofore mentioned as necessary to appropriate for maintenance and renewals, approximately 10 per cent will be expended in ordinary maintenance; an amount equaling 5 per cent of gross earnings, being a sum in excess of \$1,000,000 per annum, is thus available for replacements and renewals.

"Barring unforeseen contingencies, the realization of this estimate, which is reasonably conservative, will enable the company to pay interest on \$2,000,000 new capital annually, and with the aid of \$1,500,000 now set aside for that purpose, as aforementioned, carry out the spirit and intent of its agreement with the city by maintaining the physical integrity of the property out of earnings and without the issuance of additional securities therefor.

"The proposed \$10,000,000 bond issue would, if marketed at an average price of 96, produce \$9,600,000, of which approximately \$1,600,000 would be required to pay present outstanding capital obligations which mature during the next five years, leaving an amount approximating \$8,000,000 available for the capital requirements of the company.

"The funds available to complete the rehabilitation which will constitute both the renewal of present property and the acquisition of new and additional property during the five-year period ending June 30, 1916, will be as follows:

Net proceeds of bonds after deducting \$1,600,000 to pay maturing obligations, as aforementioned, approximately.....	\$8,000,000
From earnings, through renewal account, approximately.....	5,500,000
Total available.....	\$13,500,000

"It is estimated that the work to be completed during the above five-year period will be as follows:

1300 cars of the most modern type, with cross seats and center aisles, having nearly double the seating capacity, will be required to replace present equipment at an estimated cost of..	\$6,500,000
150 miles of heavy standard track will be required to replace worn-out tracks where a lighter type of rail had proved inadequate. This at an estimated cost of.....	4,500,000
Total cost.....	\$11,000,000

"Approximately one-half of this amount, say \$5,500,000, represents the additional cost of the new cars and track over that which is to be replaced and, therefore, is a proper charge to capital account.

"The remaining \$5,500,000 should be charged against current

earnings through the renewal account, the company thereby maintaining the physical integrity of the property out of earnings, as it should. After the deduction of \$5,500,000 for capital expenditures, as above, there should remain about \$2,500,000 available for other improvements, including additional power requirements and extensions.

"The proper development of an adequate power supply and the charges for new track connections incident to the scientific rerouting of car lines, both of which must be immediately undertaken, will consume such a large portion of this available \$2,500,000 as to make it unsafe to undertake extensions in excess of those here listed and which are now considered necessary to construct.

Twenty-ninth Street from Columbia Avenue to Ridge Avenue, with connections at York and at Dauphin Streets.....	\$33,650
Twenty-second Street, Montgomery Avenue to Ridge Avenue;	
Twenty-first Street, Ridge Avenue to Montgomery Avenue;	
Twenty-second Street, Susquehanna Avenue to York Street...	28,658
Nineteenth Street, McKean Street to Passyunk Avenue.....	7,011
Nineteenth and Twentieth Streets, between Passyunk Avenue and Porter Street; also along Porter Street between Nineteenth and Twentieth Streets.....	24,241
Snyder Avenue, from Front Street to Twenty-third Street.....	135,440
Total estimated cost.....	\$229,000

"Extensions and additions to property not embraced herein will necessarily require the issuance of additional securities, and only such should be undertaken within the next three-year period as will add a sufficient amount to the gross earnings of the company to pay the increased cost of operation, together with interest on the added investment."

CONVENTION OF THE MISSOURI ELECTRIC ASSOCIATION

The fifth annual convention of the Missouri Electric, Gas, Street Railway and Water Works Association was opened at the Hotel Jefferson, St. Louis, Thursday morning, April 13, by President R. J. Irvine, of Marshall, with an attendance of about 50 members. The convention was welcomed to St. Louis in a speech by Mayor F. H. Kreismann. Following the reports of the association's secretary, N. J. Cunningham, of Springfield, a number of new company members were voted into the association.

On Thursday afternoon W. H. Reeves read a paper on "Centrifugal Pumps." This was followed by a paper by Prof. E. A. Flowers, of the University of Missouri, on "Lubrication." Professor Flowers reported to the association progress and results already obtained in a series of experiments he is conducting to study cylinder and bearing lubrication and friction under actual service conditions with various temperatures, pressures and speeds. Ex-Judge Daniel G. Taylor, of St. Louis, then explained to the association a plan of employees' and public liability insurance conducted on a reciprocal arrangement between the public-service corporations subscribing to it. This plan is designed to avoid the heavy business-getting and administration expenses of the old-line companies, instituting better inspection and better selecting risks and reducing the cost of insurance to member companies. Following the banquet at the Hotel Jefferson Thursday evening, W. D'A. Ryan, illuminating engineer for the General Electric Company, delivered an address on "Illumination and Street Lighting," illustrated by several hundred lantern slides.

On Friday papers were presented on "Illumination," "Electric Vehicles," "Ornamental Street Lighting," "District Steam Heating," and "Gas Manufacture."

The officers elected were: President, F. E. Murray, Louisiana; vice-presidents, P. A. Bertrand, Jefferson City; J. E. Harsh, Joplin, and C. L. Clary, Sikeston; secretary and treasurer, N. J. Cunningham; executive committee, R. J. Irvine, of Marshall, H. Spoehrer, of St. Louis, P. W. Markham, R. Scott, of Kansas City, and C. C. Barnard; advisory committee, P. A. Bertrand, W. A. Bixby, of Springfield, and Alten S. Miller, of St. Louis; finance committee, S. M. Locke, of Mexico, H. D. Hibbler, of Washington, and R. D. Boyce. Upon the invitation of J. E. Harsh, of the Empire District Electric Company, of Joplin, Mo., the association voted to hold its next convention in that city.

MEETING OF THE COMMITTEE ON CITY RULES

A meeting of the committee on city rules of the American Electric Railway Transportation & Traffic Association was held at 29 West Thirty-ninth Street, New York, N. Y., April 14 and 15. Those present were: H. W. Fuller, chairman, general manager Washington Railway & Electric Company; D. A. Hegarty, general manager Little Rock Railway & Electric Company; M. C. Brush, assistant to vice-president Boston Elevated Railway, and C. B. Buchanan, superintendent of railways Virginia Railway & Power Company, Richmond, Va. F. I. Fuller, vice-president Portland Railway, Light & Power Company, Portland, Ore., and Marshall M. Phinney, president Northern Texas Traction Company, Boston, Mass., were unable to be present.

In opening the meeting of the committee Mr. Fuller announced that at the meeting in January the committee had been instructed by the executive committee to take up three subjects in connection with a revision of the standard rules for city operation. One of these was a revision of the present city rules. The second was to draft a set of station or carhouse rules. The third was to draft a set of rules for the government of train crews on prepayment cars. It was also decided to prepare a short appendix to each code giving the titles of such subjects as might properly be made the subject of local rules. The committee was induced to do this because it was found that several companies, particularly among the smaller roads, had taken the standard code of the association and, considering that it was a complete code for the operation of any road, had adopted it bodily and had issued copies of it to their trainmen. Mr. Fuller explained that the Standard Code of Rules was intended to be complete only in so far as a general code could be made complete and that in all cases it should be supplemented by other rules relating to local conditions whose wording necessarily had to be special. Such wording could not be drafted by any general committee, but if an appendix was added to the codes giving the subjects which should properly be taken up by such local rules it would be of help to many roads.

The committee believes that if the proposed changes in the code are submitted to member companies early in the year, the members will have time to consider the changes and offer criticisms and suggestions which can be embodied in the code to be considered by the association next fall. An urgent plea will, therefore, be sent to member companies at an early date to examine these rules carefully and to forward promptly any comments which they may have to make upon them. It was also decided not to number these new rules or to make any changes in the numbering of the rules in the standard code until a decision should be reached as to the changes to be made and the number of new rules to be adopted. Following is a list of the changes tentatively adopted at the meetings on April 14 and 15 in the code of operating rules:

OPERATING RULES

RULE NO. 2.—"RESPONSIBILITY"

The committee recommends the amendment of this rule so as to incorporate to a very large extent the recommendations of the city rules committee of 1910 and to cover the operation of prepayment types of cars. The amended rule reads as follows:

The motorman is held responsible—
 (a) For the safe running of the car.
 (b) For the proper operation of the machinery of the car.
 (c) For running the car according to schedule.
 (d) For the safety of passengers boarding or leaving car by way of the front platform.
 (e) For the proper setting of the front sign.
 (f) For the proper display of headlight.
 The conductor is in charge of the car and of the passengers, and is held responsible—
 (g) For the safety of passengers boarding or leaving the car by way of the rear platform, and for the convenience of all passengers.
 (h) For the collection and proper accounting of fares.
 (i) For the proper setting of the side and rear signs.
 (j) For the proper display of rear signal.

The committee believes that the changes as incorporated make the above rule applicable to all types of cars except center-entrance cars and those single-end cars which do not permit the passengers to leave by way of the front platform.

The question of a divided responsibility with regard to the setting of signs is eliminated.

The rule as it now appears in the code reads as follows:

The conductor is in charge of the car and is responsible—
 (a) For the stopping and starting signals.
 (b) For the safety and convenience of the passengers.
 (c) For the collection and proper accounting of fares.
 The motorman is held responsible—
 (d) For the safe running of the car.
 (e) For the proper operation of the car and its machinery.
 (f) For running the car according to schedule.
 Conductors and motormen will see that route and destination signs are properly displayed and will be held jointly responsible therefor.

RULE NO. 10.—"BELL SIGNALS"

The bell signals in the present city code differ somewhat from those in the code adopted by the interurban rules committee. At a conference between two members of the interurban rules committee and the city rules committee in January it was agreed to submit at the next regular meetings of the two committees a rule reading as follows:

From conductor to motorman—to be given on motorman's signal bell:
 1 Bell—Stop at next crossing or station.
 2 Bells—Go ahead.
 3 Bells—Stop at once.
 4 Bells—Back car slowly.
 5 Bells—(Not needed for city use, except locally.)
 Motorman to conductor—to be given on conductor's signal bell:
 1 Bell—Come forward.
 2 Bells—Pull trolley down to roof.
 3 Bells—Set rear brake.
 4 Bells—Signal to conductor that motorman desires to back car.
 5 Bells—Watch trolley, and danger signal to conductor to look out for obstructions adjacent to track.

The signals in the city code at present are as follows:

From conductor to motorman—to be given on motorman's signal bell:
 1 Bell—Stop at next crossing or station.
 2 Bells—Go ahead.
 3 Bells—Stop immediately.
 4 Bells—(Given when car is standing). Back car slowly.
 From motorman to conductor—to be given on conductor's signal bell:
 1 Bell—Come forward.
 2 Bells—Watch the trolley and danger signal to conductor.
 3 Bells—Set rear brake.
 4 Bells—Signal to conductor that motorman desires to back the car.

At the meeting of the interurban rules committee April 11 and 12, however, the majority of the interurban rules committee decided that it would be impracticable in interurban operation to adopt the proposed compromise code of bell signals, especially Bells 3 and 4 of motorman to conductor. In consequence the city rules committee believed that it would be better to retain the bell code as given in the present city code and as published above.

The committee also believed that the fourth paragraph of Rule 10, as adopted at the 1910 convention, should have added to it "on a double-end car," printed in italics below. This paragraph will then read:

When car is standing, and motorman desires to back for any reason, he will give the conductor four bells, but must not move the car until the conductor has answered with four bells to signify 'All is clear behind.' However, when it is necessary to back for any distance, or whenever any danger would be likely to result from backing, motorman must always change ends on a double-end car.

RULE NO. 15.—"LEAVING CAR"

The committee decided to suggest in Rule 15 the insertion of the word "temporarily" as printed in italics in the rule below, which otherwise is taken from the 1909 code.

When necessary for conductor to leave his car temporarily, he must notify the motorman to protect passengers and car. Should passengers board car during absence of conductor, motorman will notify conductor of the number and location of such passengers upon his return.
 Cars in commission must not be left unprotected; either conductor or motorman always remaining in charge.

This rule is intended to cover those cases where the conductor leaves the car to signal at railroad crossings, to operate details on grades and do similar work. Where the conductor should leave the car for a longer time, as at terminals or in case of sickness, the motorman on prepayment cars is called back to the rear platform to guard the fare box, as covered by a new rule given under Rules for Prepayment Cars.

RULE NO. 21.—"STANDING ON STEPS"

The changes recommended in Rule 21 consist in the omission of the word "steps" inclosed in brackets in the rule as printed below and the addition of the final sentence printed in italics.

Permit no person to ride or stand on the [steps], buffers, dash, fenders or roof. Passengers should be fully inside the car or safely landed on the platform before the signal is given to start. *Starting signal should not be given before passengers are fully off the steps or running board of the car.*

RULE NO. 20.—"EJECTMENTS"

This rule was also subject to a conference between the inter-

urban rules committee and the city rules committee, and the language finally agreed upon as satisfactory to both the inter-urban rules committee and the city rules committee was as follows:

Ejectments shall be made for two causes:

Failure to pay proper fare.
Disorderly or offensive conduct.

Ejectments shall be made by the conductor with the assistance of the motorman, after the car has been brought to a stop at a regular stopping place for passengers, using only such force as is sufficient to expel the offending passenger, with a reasonable regard for his personal safety, without the use of harsh language or the display of ill temper.

A passenger must not be ejected at a point where he is liable to be exposed to danger, and extraordinary precaution must be observed during bad or inclement weather, late at night, or when the passenger is intoxicated.

A child of tender years, a person of unsound mind, or a person in such feeble or helpless condition as to be unable to take care of himself must not be ejected.

Report all ejectments as required by Rule 25.

The rule recommended takes the place of both Rule 29 and Rule 30 in the present code, which reads as follows:

Ejectments shall be made by the conductor, with the assistance of the motorman, after the car has been brought to a stop, using "only such force as is sufficient to expel the offending passenger, with a reasonable regard for his personal safety." No passenger shall be forcibly ejected from the car for any cause whatsoever without order from an inspector, starter or official of the company, unless the conduct of the passenger is dangerous or grossly offensive.

Any person ejected from a car must be put off at a regular stopping place.

No passenger will be put off at a point where likely to be exposed to danger.

Particular attention must be paid to this rule during bad and inclement weather, late at night, or when a passenger is intoxicated.

RULE NO. 116.—"CHANGE"

The committee decided to recommend that the rule on "change" adopted at the Atlantic City convention be amended by the addition of a paragraph reading as follows:

A conductor must not accept from a passenger a bill or coin of larger denomination than two dollars, unless he can furnish change for the same at once. If change cannot be furnished, ask passenger presenting same to leave car, secure change and take following car. If the passenger refuses to leave, eject and report as required by Rule 25—

so that the rule as amended will read:

When necessary to give change, first register fare, and immediately thereafter give change, stating amount received and amount returned. Should a conductor have any dispute with a passenger in regard to change, he must make a report in writing to the superintendent.

Previous to taking charge of the car, conductors will provide themselves with at least two dollars for the purpose of making change.

A conductor must not accept from a passenger a bill or coin of larger denomination than two dollars, unless he can furnish change for the same at once. If change cannot be furnished ask passenger presenting same to leave car, secure change and take following car. If the passenger refuses to leave, eject and report as required by Rule 25.

The committee makes this recommendation because it is firmly of the belief: First, that it is time for the railway companies to take firm stand as to the denomination of the bill or coin for which the conductor must supply change, and, second, a recent decision affecting a member company would seem to make important that the conductor should not accept a tender in excess of \$2 unless he is sure that he has the necessary change. It was stated that California was the only State in the Union in which a court had required a conductor to change a coin or bill of higher denomination than \$2.

RULE NO. 117.—"REGISTER"

The committee decided to recommend that the name of this rule be changed from "register bell" to "register," and that the wording of the rule as now shown in the code—

Be careful to see that register rings each fare—

be eliminated and that the following wording be substituted:

Registers must be set to read "in" or "out" in accordance with the direction the car is going, and must be set at zero before leaving on any half trip.

Turn the car into the carhouse with the register locked.

Conductors must be careful to see that register rings each fare, and that the dial shows it. In order to protect themselves from errors in forgetting to register, it is well for them to count their money at the beginning of each day and at the end of day to turn in any surplus above that which the register calls for, making a note of same on back of day card.

RULE NO. 122.—"REFUSAL TO PAY"

The committee recommended that this rule be changed by the addition of the words printed in italics and the omission of those inclosed in brackets.

When a passenger refuses to pay fare or presents defective coin, transfer or ticket, upon which, in the judgment of the conductor, the passenger is not entitled to ride, the conductor must retain or *make careful note of such defective coin, transfer or ticket* and secure the names of as many witnesses to the fact as possible, whereupon the car must be stopped and the passenger requested to leave. *Eject if necessary and report as required by Rule 25.*

If the conductor is not sure whether or not the passenger has paid fare or whether the fare (coin, ticket or transfer) tendered is good, then the passenger must be allowed to ride and [if the passenger fails to comply with such request] the facts of the case must be brought to the attention of the first inspector, starter or official who is met and the conductor must act according to instructions received from such inspector, starter or official. A note must be made of the incident on the back of the day card.

When a passenger who refuses to pay fare requests to be allowed to leave the car, the car must be stopped and the person permitted to alight.

RULE NO. 210.—"RUNAWAY CAR"

The committee suggests the changes in Rule 210 shown as follows, the new words being printed in italics and the portions omitted being inclosed in brackets:

While descending a grade, should it not be possible to stop a car equipped with two motors by means of brake, the motorman must immediately [turn off hood switch], reverse and advance controller cylinder to last position. In the event of car being equipped with four motors, simply reverse to stop.

Should a car equipped with two motors start to roll backward while ascending a grade and the brakes be unable to hold it [the hood switch must be immediately turned off and] the controller cylinder *must be advanced to last position.* Should the car be equipped with four motors, if the reverse is set in forward position the car will stop.

It was felt that if the hood switch was left in, the power on the wire might be of some assistance in stopping the car. Even if the circuit-breaker opened or the fuse blew, the car could be stopped as quickly if the hood switch had been left in as if it had been turned off.

RULE NO. 213.—"POWER OFF LINE"

The committee recommends that the rule submitted by the former committee to the convention of 1910, reading as follows:

When power leaves the line, cars must be stopped clear of all crossings or danger points. The overhead switch must then be thrown off and the light switch thrown on and the car started only when the lights burn brightly—

be adopted with the addition of the following words: "and then operated at half speed for a distance equal to one city block," so that the rule recommended reads as follows:

When power leaves the line, cars must be stopped clear of all crossings or danger points. The overhead switch must then be thrown off and the light switch thrown on and the car started only when the lights burn brightly and then operated at half speed for a distance equal to one city block.

This rule to take the place of the present rule in the code, which reads as follows:

When the power leaves the line the controller must be shut off, the light switch must be turned on and the car started only when the lights burn brightly, but motormen must never allow their cars to coast when power is off the line except to clear crossings or dangerous points.

RULES TO BE ADDED TO THE PRESENT CODE OF CITY RULES

The following rules were suggested for addition to the present code of city rules as new rules:

OBSTRUCTIONS IN RAIL

Should a car at any time run over a bolt, nut or other hard substance on the rail, the car should be stopped and the obstruction removed if possible. If it cannot be removed, the motorman must report to first inspector or starter.

DISABLED CONDUCTORS OR MOTORMEN

Should a conductor or motorman be disabled or compelled to leave his car, the conductor or motorman of the following cars for the same destination must move up so that but one car may be detained.

Conductors must turn in for the actual number of fares registered, making note on back of day card thus: "Left Car No. . . . at . . . going . . . with . . . cash and . . . tickets registered." Conductor must also note on back of day card the reading of the totalizers on both cars. Registers must not be set at zero until car is switched back or terminal is reached.

In case any accident disables the motorman while the car is in motion, the conductor must at once throw off the overhead switch or circuit breaker and apply rear brake to stop car.

FOG, SNOW, SLEET, RAIN

During fog, heavy rain, sleet or snow storm, cars must be operated entirely with a view to safety. The car must be operated at such speed and with such precaution that it can be stopped in time to avoid collisions with cars and vehicles.

Motormen must slow down when approaching stops and sound gong or whistle.

In all cases of fog, or in case of wet snow which clings to windows, cars must be operated with front vestibule window open.

CARS WITHDRAWN FROM ROUTE

If for any reason a car is withdrawn from service, side-tracked or turned back, the conductor must transfer any passengers to the next car on the same route in the following manner:

Take passengers to the car to which they are to be transferred and see that the conductor understands that they are transferred and that he knows the number of passengers and the number of the car taking them.

The conductor receiving passengers under these circumstances will not attempt to collect or register any fare for such passengers but must enter the number of passengers received and number of the car from which they came on the back of his day card.

PASSENGERS RINGING BELL

Passengers have a right to ring bell to stop car, and conductors should bear this in mind. They must, however, try in a polite way to discourage passengers from doing so.

CONDUCT OF PASSENGERS

Conductors will not allow passengers to put their feet on the seats, or children to stand on the seats.

KNOWLEDGE OF ELECTRICAL EQUIPMENT

Motormen are required to acquaint themselves with the mechanical and electrical equipment of cars in order that they may be able to cut out a motor or replace a fuse, when necessary.

Motormen should familiarize themselves with the sounds made by the

car while running, and if any unusual sound is noticed, should endeavor to find the cause and report it. If they cannot find the cause they should report the fact of the unusual sound at the earliest possible moment. They should observe carefully whether the car takes its natural speed on all positions of the controller, and, if not, report same.

They should apply to proper authority for instruction in any matter they do not thoroughly understand.

ROUNDING CURVES

Power must be shut off and brake applied on approaching curves, allowing car to enter the curve on its own momentum with brake partly on. Before movement is lost brake should be released and power applied.

Cars must not be stopped on curves except when it is unavoidable.

CARS PASSING ON CURVES

Motormen must not attempt to pass on curves unless they are sure of safe clearance. (See special orders at depot from which cars are operated.)

TOPICS FOR LOCAL OPERATING RULES

The following are subjects suggested as an appendix to the operating rules, as they give the titles of topics which could very well be treated as local regulations of each company:

Riding on front platform.

Unnecessary making of signs and signals.

Arrests.

Transportation of employees.

Transportation of dogs.

Transportation of newspapers.

Regulation of heaters.

Smoking on cars.

Electrical storms.

Test for electrical car trouble.

Delay by teamsters.

Protection of car during fog, snow, rain and sleet.

Ventilation of cars.

Peddling on cars.

CARHOUSE OR STATION RULES

The following is a list of the carhouse or station rules which the committee thinks should be made standard, and the subjects which ought to be treated in local rules.

APPOINTMENT

Trainmen will be assigned to work in the order of the dates of assignment.

BADGES AND PUNCHES

The official badges and punches will be furnished by the company, and are always to remain its property. They are the official tokens that the wearer is in the employ of the company, and must never be allowed out of the possession of the employee to whom issued. If lost, such loss must be promptly reported at the office.

EXCHANGING DUTIES

Employees must not engage substitutes to perform their duties, nor exchange duties without permission.

LEAVE OF ABSENCE

Leave of absence will be granted only on account of illness, or for rest and recreation.

No employee will be excused from duty to engage in any other occupation or business, nor will his position be held open while so engaged, except by special arrangement with the superintendent.

SUSPENSIONS, DISMISSALS

Disobedience of orders, violation of rules, or neglect of duty will always be considered a sufficient cause for dismissal. Discharged employees shall immediately turn in their badges.

PAY WHEN OFF DUTY

Employees will not receive pay while absent or suspended from duty for cause.

RE-EMPLOYMENT

An employee discharged from the company's service will not be re-employed in any other department, without the consent of the head of the department from which he was discharged and the sanction of the management.

RELIEF

Motormen and conductors who are to be relieved must remain on duty until the relief has taken charge of the car.

CONDUCTORS' SUPPLIES

Conductors, before taking car, will obtain from the station office such transfers, change, day cards and other supplies as are required by the regulations.

ASSIGNMENT OF WAGES

Employees must not make any assignment of wages, except with the consent of the management.

SAFETY OF EMPLOYEES

All persons are cautioned to exercise care in crossing pits and walking through cathouse. Employees must never move a car until certain that no one is working over, under or about it.

FIRE

Employees will exercise great care to guard against fire.

TOPICS FOR LOCAL CARHOUSE RULES

Temporary Assignment to Foreign Divisions.

Distant Reliefs.

Penalty for Failure to Report.

Reporting for Emergency Service.

Rating, Daily Assignment to Work and Excuses.

Gratuities, Fees and Bribes.

Soliciting Subscriptions.

Sick Report.

Shortage, Overage.

RULES FOR PREPAYMENT CARS

The following is a list of the standard rules suggested for the operation of prepayment cars to be added as an appendix to the standard code of rules for city operation:

FOR CONDUCTORS

1. POSITION

The conductor's position under all ordinary circumstances is at the rear, in the place provided for him. While the car is at a standstill, taking on and discharging passengers, he must watch both the entrance and exit and see that passengers board and leave the car by the proper openings. The conductor should not leave his position at rear at places where several passengers are likely to board or leave the car.

2. FARE COLLECTION

The conductor must register every fare promptly when collected. He shall not allow unauthorized passengers to pass into the car without paying fare, except when forced to absent himself owing to accident or other cause. When passengers enter interior of car without paying fare the conductor must enter car and collect fare as soon thereafter as his duties on the rear platform permit, returning at once to his position at the rear. Conductors shall request incoming passengers to "have your fare ready, please."

3. MAKING CHANGE

When a passenger presents a bill or coin which would cause delay in making change, and others are waiting to enter car, the conductor shall politely request passenger to step aside on the platform until he has opportunity to make change.

4. NO ONE TO REMAIN ON REAR PLATFORM

The conductor shall request passengers to enter the car and to move forward, endeavoring to keep exit and entrance portions of the platform clear at all times.

5. TRANSFERS

Conductors will be governed by the existing regulations regarding the acceptance and issuance of transfers. If the validity of a transfer is in doubt, request the passenger to step aside until the matter can be decided in the usual way.

6. PREVENTING ACCIDENTS

Conductors shall see that all incoming passengers are safely on the platform before giving "go ahead" bells, and that those leaving the car at rear end do not step off while car is in motion.

7. LEAVING CAR

When conductor is obliged to leave car for any purpose, except the flagging of crossings or other regular duty, the motorman shall close front end of car, shall take conductor's position and shall proceed as required by Rule 15 of the General Code.

8. PASSENGERS RIDING TO END OF LINE

Conductors shall be careful to collect the fares from passengers riding to the end of the line and returning on same car.

9. PACKAGES ON PLATFORM

Conductors shall not allow bundles, packages or anything else to remain on rear platform.

10. COMFORT OF PASSENGERS

The conductor's position at the rear must not interfere with the proper care of passengers as required by the General Code.

FOR MOTORMEN

1. POSITION

The motorman's position is on the front platform, except when he is relieving the conductor, as provided in Conductor's Rule No. 7.

2. EXIT DOOR TO BE KEPT CLOSED

The exit door of front platform must not be opened while car is in motion, and must be closed before car is started.

3. PERSONS NOT ALLOWED TO BOARD AT FRONT

No person shall be permitted to board the car at front platform.

TOPICS FOR LOCAL PREPAYMENT OPERATING RULES

Doors to be kept closed.

LUGANO AND TESSERETE 1000-VOLT DIRECT CURRENT RAILWAY

There has been in operation since July 28, 1909, a single track, 1000-volt, direct-current railway between Lugano and Tesserete in the canton of Tessin, Switzerland. This line is 8 km (about 5 miles) long. A small portion of the line in Lugano is laid with grooved rail, weighing 34 kg per meter (68 lb. per yard), but the rest of the line consists of T-rail, weighing 22.5 kg per meter (45 lb. per yard). The trolley potential of 1000 volts direct current is secured from motor-generator sets in a converter station at Tesserete. The station is supplied by a 25,000-volt transmission line. This converter station also has a reserve equipment consisting of 485 cells of 160 ampere-hour capacity. The trolley wires are single-insulated despite the high potential. Porcelain section breakers and horn lightning arresters are also parts of the overhead equipment. The rolling stock comprises three 60-passenger motor cars, two 52-passenger trailer cars and four 6-ton capacity freight trailers. A standard train comprises one motor car and one trailer or freight car, weighing in all 38 to 39 metric tons. The passenger motor cars are 15 m over buffers and 14 m over the body and 2.7 m wide. The motive equipment per car consists of four 45-hp, 500-volt motors, which are always operated two in series except in starting, when the four motors are in series. The electrical equipment was furnished by the Alioth Company, of Münchenstein, near Basle, Switzerland. The cost of the line was \$262,000.

MEETING OF INTERURBAN RULES COMMITTEE

The report of the Chicago meeting of the interurban rules committee of the Transportation & Traffic Association which was published in the *ELECTRIC RAILWAY JOURNAL* of April 15, page 675, gave a summary of the action taken on the rules up to the time of going to press with last week's issue of the paper. It included the revisions made in all rules up to and including Rule 222. At the closing session of the committee meeting the following changes in the Denver code of rules were approved:

Rule 230 was amended to read as follows:

"Delayed Trains.—All regular trains or sections of a regular train when becoming minutes late must report to the dispatcher, and will also report for each successive minutes lost. If unable to get the dispatcher by company or long-distance telephone the train may proceed on its time-card rights.

"All regular trains, or sections of a regular train, after they have become two hours late will lose their time-card rights."

For Rule 232 of the Denver code the committee agreed to substitute Rule 115 of the 1910 code. A new rule similar to one used by the Illinois Traction System was inserted as No. 232½. This rule follows:

"When a train running in sections takes a siding for an opposing train, the conductor of each section of such train carrying signals for the following section will hold the main line with danger signals until the section for which the signals are being carried is also in the clear, or until the dispatcher may modify the order."

The following paragraph was inserted in Rule 252 after the first paragraph of that rule:

"Where trainmen other than the conductor and motorman are employed on any train, it shall be the duty of the conductor to read all orders received to such other trainmen."

The titles to Rules 255 and 256 were amended by the insertion of the word "train" before the word "orders." Rule 256 was changed so that the conductor would receive an order and the motorman would repeat it. The amended rule follows:

"How to Obtain Train Orders.—To obtain train orders at telephone stations the conductor will call the dispatcher and report train number and location. The dispatcher will give such orders as are necessary to the conductor, who will write the same plainly, and without (unauthorized) abbreviation, on the blank provided for that purpose, with sufficient carbon copies for each member of the crew, and when he has finished writing the order he will read it to the dispatcher, who will O. K. the same if correct. The conductor will thereupon sign his name to the order. The motorman will then read the order to the dispatcher and, if correct, the dispatcher will complete the order by giving the initials of the Superintendent or other designated authority, and the time of completion, which initials and time of completion, together with the signature of the motorman, shall be promptly written upon the order by the motorman, after which the order shall be in full force and effect.

"If for any reason the line should fail before the dispatcher completes an order it is of no effect and must then be treated as though it had not been given."

In place of the optional Rule 256 included in the Denver code the following rule, which the Railroad Commissioners of Indiana have made obligatory to use in that State, was substituted:

"How to Obtain Train Orders.—To obtain train orders the motorman or conductor, whichever is more convenient, will call the dispatcher, announce his train and location and give his serial order blank number, which will be repeated by the dispatcher, who will then give such orders as are necessary. The one taking the order will write the same plainly, without abbreviation, with carbon copy, on the blank provided for the purpose. When he has finished writing the order he will repeat it to the dispatcher. If correct, the dispatcher will O. K. the same. The one taking the order will then give his name to the dispatcher and at the same time sign the order.

The one who has not taken the order will then repeat it without abbreviation to the dispatcher and give his name and at the same time sign the order. If correct, the dispatcher will then give the initials of the superintendent or other designated authority and the train order number, which must be repeated back to the dispatcher by the one then at the telephone. If correct, the dispatcher will say "Complete at" (giving the time), which completes the order and puts it in full force and effect. If for any reason the dispatcher does not complete the order, it is of no effect and must be treated as if it had not been given. After the order is completed the motorman and conductor will each take a copy of same.

"Where it is not practicable for both members of the crew to leave the car at the same time, at important places designated by the bulletin, or, in emergency, at other places, after authority has been given by the train dispatcher on duty at the time, one member of the crew may receive and complete the order, the second member being required to read the order aloud to the one who has taken and repeated it before the train is started, the dispatcher making a full record of the facts and reasons on his record book for every order completed by his instructions in this manner."

Rule 258 was changed to conform with Rule 256—that is, the agent must complete the order in the same manner as a conductor. Following this rule the committee agreed to insert as optional a rule which is now being considered by the Railroad Commissioners of Indiana with a view of making it obligatory for use in that State. This optional rule follows:

"Issuing Orders at Stations.—To obtain orders at stations where there are operators the operator will call up the dispatcher (or answer the telephone call, as the case may be), announce his station, the train for which the order is intended (unless same is given by dispatcher) and give his serial order blank number, which will be repeated by the dispatcher, who will then give such orders as are necessary. The one taking the order will write the same plainly, without abbreviation, with carbon copies, on the blanks provided for the purpose. When he has finished writing the order, he will repeat it, without abbreviations, to the dispatcher and give his name, and at the same time sign the order. If correct, the dispatcher will say 'O. K. at ——' (giving the time, which shall be entered upon the order by the operator). The operator will deliver the order to the conductor or motorman of the train for which it is intended, who will read the order in full to the dispatcher, giving his name, and at the same time signing the order. If correct, the dispatcher will then give the initial or name of Superintendent or other designated authority, and the train's order number, which must be repeated back to the dispatcher. If correct, the dispatcher will say 'Complete at ——' (giving the time), which completes the order and puts it in full force and effect. If for any reason the dispatcher does not complete the order, it is of no effect and must be treated as if it had not been given.

"The one who has not repeated the order to the dispatcher will read it aloud to the one who did.

"The motorman and conductor will each take a copy of the order, the operator retaining a copy."

The last part of Rule 261, beginning with the words "If the train," was eliminated, and the word "motorman" was changed to "conductor." Rules 272 and 273 were also eliminated.

DUTIES OF EMPLOYEES

Rule 300 was revised to read: "Train dispatchers report to and receive their instructions from ——." In Rule 303 the words "signed for" were eliminated, making the rule read "every motorman and conductor has a copy of each new timetable." The following new rule was substituted for Rule 304:

"The dispatcher going off duty must make a written transfer advising the dispatcher coming on duty of all orders not executed, and fully advise him on all matters pertaining to the movement of trains or duties not performed."

Rule 305 was amended to read: "They must report promptly all defects or failures of telephone lines or signal apparatus to the proper authority."

In Rule 310 the word "superintendent" was omitted and a blank space left. Rule 311 was changed to read "Before going on duty they must."

Rules 313 and 315 were eliminated and Rule 316 was amended to read:

"They will report promptly by telephone to the proper officer any defective switch or target lights, switch locks, defective wires, track or cars noticed by them. If defect is serious or considered dangerous, train crews must not leave the point unless relieved by order of the _____."

Rule 318 was changed to read: "Train orders received by motormen and conductors must be sent daily to the _____ unless otherwise directed."

At the end of Rule 322 the words "or other designated authority" were added after the word "superintendent."

Rule 352 was amended to read:

"Motormen while operating cars are permitted to answer questions of superior officers, to hold necessary conversation with conductors concerning their duties and to give proper instructions to students only. All other conversation while car is in motion is forbidden."

Rule 353 was changed by the substitution of the words "the motorman" for the word "they" in the next to the last line. In Rule 355 the word "apprentices" was changed to "students." After the words "being driven ahead" in Rule 358 the words "or alongside of train" were added.

Rule 361 was amended to read, "When necessary to back a train, it must be done under the protection of a flag," and it was suggested that this rule should be inserted after Rule 221 under the heading "Movement of Trains."

Rule 364 was changed as follows:

"Testing Brakes.—Motormen on all trains must test air brakes by applying and releasing brakes after starting from a terminal and before running one thousand feet (1000 ft.) or at any point where the make-up of their train has been changed, and also before approaching railroad crossings apply the air brake sufficiently to know that it is in good working order.

"Hand brakes must be tested at least once during each trip."

Rule 365 was amended to read: "In case of failure of air brakes cars will be run in on siding until repaired."

REINFORCED CONCRETE CARHOUSE AT SAN DIEGO

In January of this year the San Diego Electric Railway, San Diego, Cal., completed a new car storage building of reinforced concrete construction. This building is 194 ft. x 269 ft. inside dimensions. It is divided by firewalls into three storage bays, having a total of 15 tracks, which are constructed of 91-lb., 7-in. T-rail. The rail also serves the purpose of a girder. The total storage capacity is about 100 cars measuring from 34 ft. to 46 ft. in length. This capacity will meet all requirements for three years, after which time another building of similar size will probably be constructed on a block of land now owned by the company opposite the present building.

Only minor car repairs by night men are made in this building. All overhauling, painting, etc., is done at the repair shops adjoining the power station. The pits are of the open type, the space between the tracks being furnished with plank walkways. However, concrete gangways are provided for transverse communication from bay to bay through the gravity fire doors. All tracks have steel spring bumpers and wheel stops.

The building fronts south and has no doors. Owing to the mild climate of this region it is not considered essential to close up a building of this nature at any time. It may be of interest to know that since 1904 the San Diego company has stored most of its rolling stock on vacant property which adjoins its power station. For a long time the officials believed that the housing of cars from four to six hours out of twenty-four was unnecessary. However, they finally came to the conclusion that the additional cost of maintenance from storing cars in the open was more than the interest on the construction cost of a building.

The building is equipped with an automatic sprinkler system which is supplied by the city pressure and an emergency tank of 30,000 gal. capacity erected over the roof. It cost approximately \$100,000.

PLATFORM BARS IN CHATTANOOGA

The Chattanooga (Tenn.) Railway & Light Company has recently applied a pivoted platform bar to the center vestibule post of its cars, as shown in the accompanying illustrations. These bars were installed in consequence of injuries which had resulted to passengers who left a moving car at railroad crossings while the conductor went ahead to flag the crossing. With



Platform Bar in Service Position

this device a passenger cannot leave the car without deliberately passing under or raising the bar, which has been lowered by the conductor before alighting. The lettering on the inside of the bar is "Don't get off car while bar is down." The lettering on the outside is "Don't board car while bar is down." During



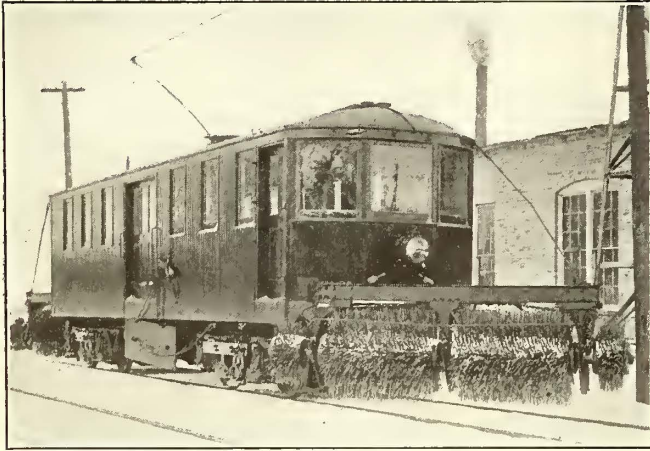
Platform Bar Folded Against Vestibule Post

the past year the company was called upon to settle damage claims of from \$3,000 to \$3,500 due to platform accidents at crossings, but this simple precaution relieves the company from all liability from this source. The bars were installed by J. W. Smith, superintendent of the company.

In connection with the power station and transmission line improvements which the Augusta Railway & Electric Company, Augusta, Ga., proposes to carry out the company will install ornamental poles for its trolley wires and feeders and clusters of tungsten lamps for street lighting. The transmission wires in Augusta will be placed underground in three of the principal streets.

NEW COMBINATION BAGGAGE CARS AND SNOW SWEEPERS FOR MICHIGAN UNITED RAILWAYS

The Michigan United Railways Company has recently equipped at its Albion shops two large snow sweepers that were built by the McGuire-Cummings Manufacturing Company. An illustration of one of the sweepers is presented. Each of the new machines is so constructed that it may be used during the winter months as a snow sweeper and converted for use as a baggage car during the summer. As the Michigan United Railways' electric system includes about 80 miles of third-



Combination Sweeper and Baggage Car for the Michigan United Railways

rail track, provision is made for operating either with third-rail or trolley current collectors and also small brooms are provided for cleaning the third-rail. These brooms are mounted on extensions of the main broom shaft.

The new combination sweeper and baggage cars have steel underframes and are mounted on McGuire-Cummings No. 28 trucks. The bodies are 38 ft. 8 in. long over end sheathing and 8 ft. wide. Each of the new cars is equipped with four GE-210 motors and K-34 D controllers. The brakes are supplied with air from an Allis-Chalmers B-4 compressor and the brooms are operated by GE-57 motors.

PITCH FILLER IN AKRON, OHIO

The record of the paving in Akron, Ohio, is interesting because the city has over 65 miles of paved streets, of which over



Brick Paved Street with Pitch Filler

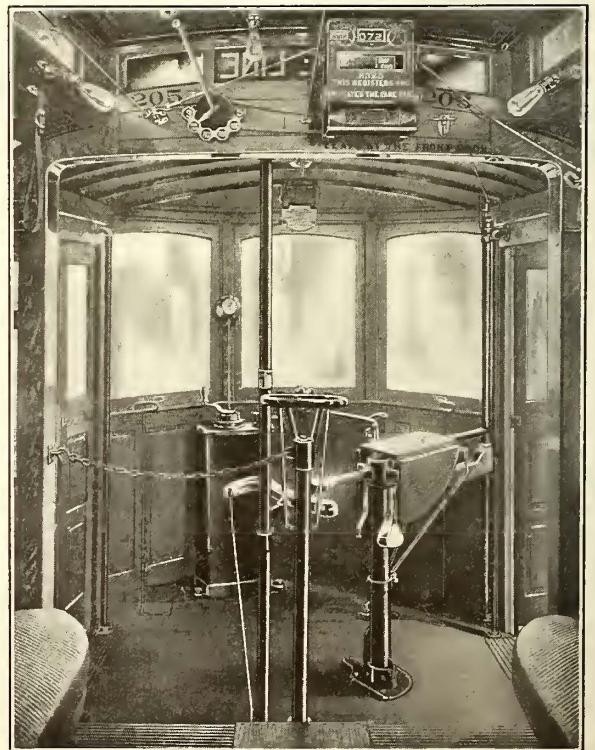
80 per cent are of brick. The first brick pavements laid in Akron were put down in 1890 on a sand base and paving pitch

was used for a filler. These streets after twenty years of continuous usage are in good condition to-day and nothing has been spent for repairs other than to replace portions torn up to make water, gas, sewer and electric connections. These pavements have been laid on crushed slag, crushed stone, gravel and cement concrete foundations. Subsequently the Akron authorities laid some brick pavement with cement filler under largely the same conditions, but the results were far less satisfactory, so that a return was made to paving pitch, and for the last ten years it has been used almost exclusively as a filler.

There are over 1,000,000 sq. yd. of brick pavement in Akron, 90 per cent of which is filled with pitch filler. In addition to this there are several thousand yards of stone pavement, all of which has been filled with pitch filler. The grade on these streets varies from less than 1 per cent to over 9 per cent, yet the filler has been found well adapted to all conditions, keeping the foundation dry and, therefore, firm. When necessary to take up the pavement for any reason the work can be done without breaking the brick, and when properly relaid it is impossible after a few weeks to tell where the pavement has been relaid. During the year 1910 about 2,000,000 lb. of paving pitch was used in the city, while plans for 1911 call for an additional large quantity. The largest private user of pitch filler in the city is the Northern Ohio Traction & Light Company in paving between tracks.

“TURN-IN CAR” AT DAYTON

The accompanying illustration shows the exit platform of car No. 205 of the People's Railway, Dayton, Ohio, as equipped with John F. Ohmer's combination of prepayment turnstile table and recording, indicating and printing register. In this case the turnstile arms and the two leaves of the table have been dropped to afford the maximum clearance for departing passengers. It is reported that this combination of turntable apparatus and registering mechanism is operating to the entire satisfaction of the railway management. The principal features of the “turn-in” car were first exhibited at the 1910 Atlantic City convention of the American Electric Railway Association, as mentioned on page 800 of the ELECTRIC RAILWAY



Turn-in Car Platform as Arranged for Exit Use

JOURNAL of Oct. 13, 1910. An illustrated description of this method as adapted for long and short platforms was published

on page 1209 of the *ELECTRIC RAILWAY JOURNAL* for Dec. 17, 1910, and reference to an early test of the Dayton equipment was made on page 388 of the issue for March 4, 1911.

RAPID TRANSIT PUBLICITY CAMPAIGN IN BROOKLYN

On March 2 the Brooklyn Rapid Transit Company made a proposal to the Public Service Commission for the First District, New York, to build certain subway and elevated railway extensions in the boroughs of Kings, Queens and Manhattan, New York City. Immediately after the submission of this offer the company started a comprehensive advertising cam-

TIME IS MONEY

THE ADOPTION OF THE B.R.T. PLAN MEANS TO BROOKLYNITES
WITH BUSINESS IN MANHATTAN AN AVERAGE SAVING OF

THIRTY MINUTES a day = Fifteen days a year

WE WILL TAKE YOU FROM	TO CITY HALL (N.Y.), IN 19 MIN.: TIMES SQ., 21 MIN.
RIDGEWOOD	" " " " 20 " " 22 "
EAST NEW YORK	" " " " 21 " " 28 "
BATH BEACH	" " " " 20 " " 15 "
GREENPOINT	" " " " 22 " " 29 "
SHEEPSHEAD BAY	" " " " " " " "

WRITE BROOKLYN RAPID TRANSIT COMPANY FOR PARTICULARS

Second Car Advertisement of the Brooklyn Rapid Transit Company

paigned in order to acquaint the public with the advantages of the proposed routes. The first step was to insert in all of the important general and local newspapers of New York and Brooklyn a map showing the proposed lines and their connections to existing rapid transit routes. In many cases, when the proposal first appeared, the newspapers were glad to use the map and parts of the text in their reading columns. The maps and summaries of the proposals were later reprinted as advertisements in all of the papers so as to familiarize the public with the merits of the plan.

Another form of advertising in the newspapers has been the insertion of short talks from day to day accompanied in some cases by excellent cartoons. One of these cartoons, entitled "Is This the Way to Boost Brooklyn?" shows a mob of conflicting people tearing up the map of Brooklyn. This pointed the moral that if the borough is to grow to the best advantage its transit development must be assisted in a united way by all the residents of that borough. Another cartoon showed that if the Brooklyn Rapid Transit Company's plan was accepted the Queensboro Bridge, which is now practically useless, would become a most important link in interborough transportation.

**Boost Brooklyn by boosting the
B. R. T. transit relief plan.**

**Get a map == all details == from
Brooklyn Rapid Transit Company.**

Fifth Car Advertisement of the Brooklyn Rapid Transit Company

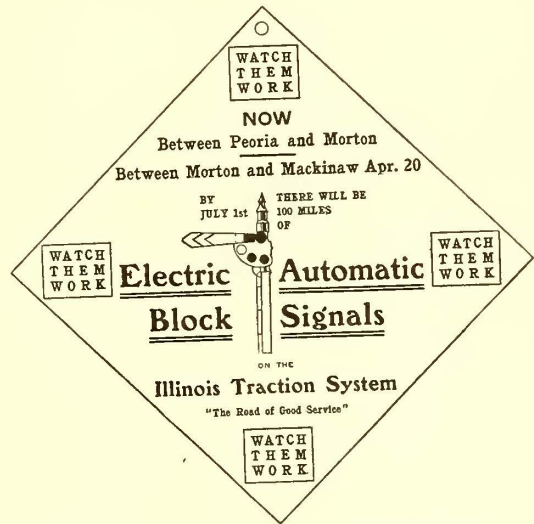
In addition to the first map, which was printed in black ink, a second map with colored areas has been issued to show the promised running times from points within these areas to the City Hall, New York. A third map gives the time which would be saved in traveling from specified points in Brooklyn and Queens Borough to prominent localities in Manhattan Borough. This timetable has also been printed as a circular. In addition, the company has issued local maps and descriptive matter devoted to showing the benefits which some of the proposed lines would bring to certain sections. Thus one sheet, entitled "The B. R. T. in South Brooklyn," gives the present and proposed running times along the most prominent routes and otherwise

discusses the relief measures that are intended for this district.

Besides advertising the merits of its proposal in the newspapers, the company has posted large maps with explanatory text on billboards. Framed copies of the map have also been hung up in real estate offices and in the headquarters of many social and civic organizations. All of this advertising has been supplemented by a series of 11 in. x 21 in. car announcements. The first announcement was simply "Watch this space to-morrow," and thereafter an argument has been presented every three or four days with each change of card. Two of these cards are reproduced. In all of these car announcements the public has been requested to write to the company for further particulars. This invitation has met with such hearty response that the company has already printed 20,000 pamphlet copies of its proposal as presented to the Public Service Commission. Many testimonials have been received from prominent citizens and civic organizations and will be used in future advertising matter.

**ANNOUNCEMENT OF BLOCK SIGNALS ON ILLINOIS
TRACTION**

On April 1 the Illinois Traction System made effective for train operation its first installation of automatic block signals. These signals are between Peoria and Morton. The signals between Morton and Mackinaw Junction, it is announced, will be put into use on April 20; also it is announced that by July 1 100 miles of track of the Illinois Traction System will be



Car Card Hanger of Illinois Traction System Announcing Installation of Block Signals

protected by automatic block signals. The publicity department, which is in charge of Fred G. Buffe, plans to base a widespread advertising campaign on the extensive new signal equipment of this road. This campaign will include various kinds of descriptive matter. The attention of passengers now is being called to the new block signals by means of car card hangers of the accompanying form. In the choice of signals and in their location the management has recognized their value as a means of establishing the confidence of the public and so the new advertisements about the signals ask the public to "Watch them work."

"The Strength of Oxyacetylene Welds in Steel," by Herbert L. Whittemore, has just been issued as Bulletin No. 45 of the Engineering Experiment Station of the University of Illinois. This bulletin gives the results of an extensive series of tests to determine the strength which may be developed in welded joints made by fusing thin steel plates together by means of the flame of an oxyacetylene blowpipe. It was found that with careful manipulation such a welded joint may be expected to have about 85 per cent of the strength of the plate material.

ELECTRIC RAILWAY LEGAL DECISIONS

CHARTERS, ORDINANCES AND FRANCHISES

Illinois.—Rights in Streets—Constitutional Provisions.

Const., Art. 11, Sec. 4, providing that no law shall be passed by the General Assembly granting the right to construct and operate a street railroad within any city, town or incorporated village without acquiring the consent of the local authorities having control of the streets or highways proposed to be occupied by such railroad, did not confer on cities and villages the exclusive control of their streets, and hence did not preclude the passage of act May 27, 1889 (Laws 1889, p. 223), giving to the Railroad and Warehouse Commission jurisdiction to determine the manner in which one railroad shall cross another in so far as it relates to crossings within the streets of cities and incorporated villages.

While a municipal corporation is vested with the control of the streets within its corporate limits, such control is not exclusive, but is subject to the control of the State.

Where a railway extending from Chicago to the City of Kankakee had been determined to be a commercial railroad, it could not be regarded as a street railroad and exempt from act May 27, 1889 (Laws 1889, p. 223), controlling the crossings of one railroad over the tracks of another, by reason of the fact that a part of its main line containing the contemplated crossing was located on one of the streets of a city. (*Chicago & S. Traction Co. v. Illinois Cent. R. Co.*, 92 N. E. Rep., 583.)

Oregon.—Charges—Unjust Discrimination.

The fare charged by an electric railroad company from the city limits of a city having more than 50,000 population to certain suburban towns was 15 cents, without transfer privileges, while that charged upon another division to certain other towns, which were a less distance from the city limits, was 10 cents, with transfer privileges. Held, that there was an unjust discrimination in charges in favor of the towns on the latter division, which the Railroad Commission properly corrected. (*Portland Ry., Light & Power Co. v. Railroad Commission of Oregon*, 105 Pac. Rep., 715.)

Pennsylvania.—Covenants—Construction.

A deed of land to a street railway company was in consideration of the company furnishing free electric current and issuing certain passes to members of the grantor's family "for such length of time, only, as they reside at their present residence." The family removed to another State for a short time, but subsequently returned, and for many years thereafter the street railway company furnished the passes and the electric current without objection. Held, that the company could not forfeit the privilege conferred by the deed because of the removal of the family, or because title to the property passed to another, where the family continued to occupy it. (*Humbert v. West Penn. Rys. Co.*, 77 Atl. Rep., 661.)

Texas.—Right to Occupy Highways—Objection by Third Persons—Right to Cross Steam Road—Character of Business—Delegation of Power to Street Railroads.

The commissioners' court having granted the right to a street railway company to use a road for the construction of its track upon petition of citizens owning the land in the vicinity and for whose use it was primarily constructed, the company could not be deprived of that right by objection of a steam railway company which had previously been permitted to cross the road.

No new servitude is imposed upon a public highway by constructing and operating a street railway therein whose cars are propelled by electricity for the transportation of passengers, and the right of such a city railway company to cross over the tracks of a steam railroad crossing such highway is subject to no conditions other than those to which the general public is subject in traveling over the highway.

That an electric railway carries mail, persons and property would not render it a commercial, and not a street, railway.

General Laws 1907, page 23, Chapter 15, conferring the power of eminent domain on interurban electric railway companies does not apply to street railways. (*Galveston, H. & S. A. Ry. Co. v. Houston Electric Co.*, 122 S. W. Rep., 287-8.)

LIABILITY FOR NEGLIGENCE

Georgia.—Passengers—Persons Having Safely Alighted from Car—Trespasser—Operation of Cars on Parallel Tracks—Duty to Use Gates or Bars.

Where a passenger has safely alighted from a car at his destination he ceases to be a passenger.

A passenger of a street railroad, who had just alighted from an open car on the side on which was a parallel track at a street intersection, and walked three or four steps between the tracks and then attempted to pass over the other track, was not a trespasser, and the railroad company owed the duty of exercising ordinary diligence to prevent injuring him.

Where a person knowingly and voluntarily puts himself in a place of immediate and obvious peril without necessity or propriety, and injury results to him in consequence, he cannot recover, notwithstanding the negligence of the person injuring him.

While, in the absence of statute or ordinance, no absolute duty rests on a street car company operating its cars on parallel tracks to equip them with gates or bars to prevent passengers from getting off on the side next to the parallel track, whether a failure to so equip its cars is negligence is a question for the jury in each particular case. (*Columbus Ry. Co. v. Asbell*, 66 S. E. Rep., 902.)

Massachusetts.—Rights of Travelers on Street—Collision with Wagon—Question for Jury.

Travelers on a street partly used by a street railway may use that part of the street as freely as any other, subject only to the limitation that they do not unreasonably interfere with the street railway cars and exercise ordinary prudence to avoid collision with them; and those in charge of street cars are bound to drive them in view of the travelers' rights, each owing the other a reciprocal duty.

In an action for injuries to the occupant of a wagon driving on the right-hand side of a street, by a street car striking the rear of the wagon, whether plaintiff was negligent and whether the motorman was negligent held, under the evidence, for the jury. (*Carroll v. Boston Elevated Ry.*, 91 N. E. Rep., 525.)

Michigan.—Action for Death of Passenger—Instructions—Duty to Warn Passengers of Danger.

In an action for death of a boy killed while riding as a passenger and seated on the steps and running board on the side of a street car, it was disputed whether he was hit by paving bricks piled by the city on each side of the track or whether another boy, after being knocked off, grabbed him in passing and pulled him from the car. The court charged that evidence was introduced showing the city piled the bricks near the track, and defendant had the right to use the street; that if the city piled the brick so close to the track as to endanger passengers riding on the steps or running boards of cars it was its duty to warn them of the danger and not permit them to remain where they might be brought in contact with the brick; and that if defendant failed under the circumstances to do this its negligence or failure of duty to its passengers rendered it liable, and it was no excuse to say the city piled its brick there. Held, to fully and properly instruct the jury as to whether a notice or warning was given. (*Moers v. Michigan United Rys. Co.*, et al., 123 N. W. Rep., 602.)

Missouri.—Derailment of Car—Authority of Employees—Negligence of Company—Damages.

A crew was sent out from car barns with a car to relieve a disabled car, and the crew failed to take the disabled car back to the barns but left it standing at the point of transfer, and, other cars coming up, a blockade was formed, to relieve which employees of the company, without authorization, took the disabled car and proceeded to the barn. On the way it was boarded by another employee, who took the place of the one acting as motorman, and thereafter the car, running at an excessive speed, jumped the track and injured a person on the sidewalk. Five minutes after the car started for the barn the company knew that the proper crew had not started back with the car, and though it had to travel over 5 miles through the heart of the city, nothing was done. Held, that as a matter of law the negligence of the company was shown, since either the employees were trespassers in taking the car, in which case it

was the duty of the company to stop it and see that competent persons were running it, or the men had authority to do as they did and the company would be liable for their negligence.

Where a seamstress, 51 years of age, was injured and both knees were badly wrenched and sprained and her left leg broken and the injuries were painful and permanent and the motion of her left leg was impaired and she had in the right knee an exudation down in the joint which had a tendency to stiffen it and sustained other severe injuries and was confined in bed five weeks, a verdict of \$5,000 was not excessive. (*Baker v. Metropolitan St. Ry. Co.*, 126 S. W. Rep., 764.)

New Mexico.—Effect of Contributory Negligence.

Although the general rule is that, even if the defendant be shown to have been guilty of negligence, the plaintiff cannot recover if he himself be shown to have been guilty of contributory negligence which may have had something to do in causing the accident, yet the contributory negligence on his part would not exonerate the defendant and disentitle the plaintiff from recovering if it be shown that the defendant might by the exercise of reasonable care and prudence have avoided the consequences of plaintiff's negligence. (*Thompson v. Albuquerque Traction Co.*, 110 Pac. Rep., 552.)

Montana.—Platforms—Injuries to Passenger.

Where a passenger arose from his seat as the car approached his destination, went out on the platform, and mentioned the name of the street to the motorman, which was the customary manner of signifying a desire that the car be stopped, and the speed of the car was reduced to about four or five miles an hour, and, under the impression that it was about to stop, he stepped from the platform to the first step of the car, and the car continued at a slow rate of speed for some distance beyond the crossing, when suddenly the speed was increased with a violent jerk and the passenger was thrown off and injured, it established a prima facie case of negligence. (*Knuckey v. Butte Electric Ry. Co. et al.*, 109 Pac. Rep., 979.)

New York.—Master and Servant—Injury to Servant—Action for Injury—Burden of Proof—Defective Appliances—Knowledge of Defects.

A motorman of one company who was injured while operating his car over the track of another company on a part of his route because the track was not properly sanded has the burden of showing which company owed him the duty of sanding that track.

A street railroad company is not liable for injuries to its motorman from defects in the track of another company over which he operated the car on the part of the route in the absence of knowledge of such defects. (*Powell v. Cohoes Ry. Co. et al.*, 120 N. Y. Sup., 336.)

Ohio.—Indemnity—Construction of Contract—Scope of Liability.

A contract for the rehabilitation of the tracks of a street railroad company, the work to be done without interfering with the operation of its cars, provided that the contractor should indemnify the company against all suits brought against it on account of claims for damages done or caused in the course of construction of the work, "or in consequence thereof," including injury to persons, land or buildings. At a place where the company switched its eastbound cars onto the westbound track to pass around a long excavation, 14 in. in depth, made by the contractor for replacing the eastbound track, a car was stopped in the night between street crossings, and a passenger alighting on the right-hand side fell into the excavation and received injuries for which she recovered a judgment against the company. Held, that the injury was not one received "in consequence" of the contractor's work but was proximately due to the negligence of the company's employees operating the car, who, with knowledge of the excavation, permitted the passenger to alight on that side of the car at an unusual place, and that the company could not recover on its indemnity contract. (*North American Ry. Const. Co. v. Cincinnati Traction Co.*, 172 Fed. Rep., 214-5.)

Oregon.—Crossing Accidents—Duty to Look and Listen—Operation—Care Required—Crossing Accident—Negligence.

It is presumptively negligent for a pedestrian to attempt

to cross a railway track without looking and listening when if he had looked and listened he would have discovered the approach of a car in time to have avoided injury, but he is not required to look or listen at any particular place or given distance from the crossing, but only to do so at the time and place necessary in the exercise of ordinary care.

Street railroad cars and the general public have an equal right to the reasonable use of the public highways, but there is a resulting mutual obligation resting upon each to exercise such right with reasonable care so as not to reflect injury upon another, and a street car company cannot, by running its cars at an unusual and unlawful speed at crossings, make its limited right a preferred right-of-way, nor can the driver of a vehicle escape responsibility for injuries resulting from his careless driving or lack of diligence.

When plaintiff's team reached the curb of a street on which there was a street railway, the rear of the wagon was about 35 ft. distant from the center of the nearer track, and the team was traveling about 6 m.p.h. An approaching car on that track was then about 240 ft. distant, and neither plaintiff nor the person with him observed that it was moving at an unusual speed. Held, that it could not be said as matter of law that the car was so close that reasonable men would say that plaintiff attempting to cross the track was not acting as a reasonably prudent man should act under the circumstances and hence plaintiff was not negligent as matter of law. (*Donohue v. Portland Ry. Co.*, 107 Pac. Rep., 964.)

South Carolina.—Release—Effect of Invalidity—Deduction from Recovery.

If a traction company by which plaintiff was injured furnished medical services as a consideration for plaintiff's release of damages, and the release was not binding because of plaintiff's ignorance thereof through mental deficiency, the value of the services could be deducted from any damages recovered by her. (*McKittrick v. Greenville Traction Co.*, 66 So. E. Rep., 289.)

Texas.—Passenger on Bumper of Crowded Street Car—Injury Resulting from Carrier's Negligence.

Where a passenger was allowed to ride with others on the bumper of a crowded street car as he had done before, and without knowing that it had been prohibited on the day in question, and he was injured by the negligence of the company in managing the car, and the passenger, aside from his occupying the dangerous position, was not negligent, the street railroad company was liable. (*Baumont Traction Co. v. Happ.*, 122 S. W. Rep., 610, 830.)

Virginia.—Liability to Passengers—Effect of Contract Between Carriers.

A contract between carriers as to the stopping of trains at an intersection of their roads cannot control or affect the degree of care which a carrier owes to its passengers to avoid collisions. (*Washington, A. & Mt. V. Ry. Co. v. Trimyer*, 67 S. E. Rep., 531.)

Washington.—Master's Liability for Injury to Servant—Assumption of Risk—Questions for Jury.

An employee does not assume the risks arising from his employer's negligence, which are not incidental to the business, when he has no actual knowledge of the same.

Defendant operated an electric railroad and at one terminal made up a train at night at a switch on a trestle. There was a light at the switch stand only and a platform extending for some distance. Plaintiff, as conductor, was sent one night to make up the night train and having run the motor car on the switch to a point where it would clear cars on the main track, which was in fact beyond the platform and at a place not lighted by the switch light, he swung off with his lantern. He had not been at the place for some time but knew that in the meantime the platform had been extended, although not how far, and seeing a plank below him and supposing it to be the platform dropped to it, but it proved to be only a single plank lying on the timbers below the level of the track, and he fell from the trestle and was injured. Held, that under the facts of the case the question of defendant's negligence in failing to provide a platform at the place or better lights and also the question of plaintiff's contributory negligence and assumption of risk were properly submitted to the jury. (*Puget Sound Electric Ry. v. Harrigan.*, 176 Fed. Rep., 488.)

News of Electric Railways

Progress of Negotiations in Toledo

The negotiations between the city of Toledo, Ohio, and the Toledo Railways & Light Company were continued during the week ended April 15, 1911. At the meeting on April 10 payments to the city of rentals for the use of bridges and for the pavement of the streets 18 inches outside the rails were discussed, but decision was deferred. The Schreiber ordinance provides that the company shall pay from \$100,000 to \$110,000 a year as rental for the use of bridges. Albion E. Lang, president of the company, stated that the company would pay the rental willingly, but that the expense would be borne by the patrons of the company eventually. Additional burdens for paving would also have to be charged against the patrons. Mayor Whitlock stated that the principle of requiring the company to pay money into the city treasury as rental or for other purposes was wrong.

Mr. Lang also objected to the section of the franchise to give the city power to order extensions and double tracks. It lacked safeguards to prevent over-development. A double track was not justified until the earnings of the single track were sufficient to pay the interest on the investment required for the additional track. Double tracks were needed on some of the routes and the company would make such improvements as soon as a settlement was reached. Plans would be made to reach all parts of the city more readily than can be done now. The negotiators felt that they should investigate plans in other cities before proceeding.

The problem of handling interurban cars was discussed briefly. It was stated that the company received no direct benefit from bringing interurban cars into the city, as the receipts were exhausted by the expenses incurred and the repairs made necessary by wear on the tracks.

On April 11 the subject of paving the streets for 18 inches outside of the outer rails of the tracks was again taken up and Mr. Lang agreed tentatively to the provision. Mayor Whitlock reserved the right to modify the phraseology of the Schreiber franchise relating to this point. The company is to pay its share of paving expenses in a lump sum, but it is not to be required to pay any part of expenses for paving within two and a half years of the expiration of its franchise. It is optional with the city as to which of the parties shall do the work, but an amendment was inserted that if a contractor for the city did it he must not interfere with the operation of cars. Pavement which is taken up must be restored in as good order as it was found.

The negotiators disagreed on the section of the ordinance which referred to the use of salt to remove snow from the tracks. The Schreiber ordinance would give the city full control over the matter. Mr. Lang insisted that the company should have freedom in this respect. In order to reach a tentative agreement the draft was amended to provide for the use of salt as permitted by the general ordinances, with the idea that the discussion would be resumed.

It was agreed that all tracks should be kept at the level of the streets and that the Council should direct the time and material for the company's portion of the street paving and maintenance of the tracks and roadways.

It was suggested that an official would have to be named to represent the city in the operation of the system after an agreement was reached and Mayor Whitlock suggested that the director of public service was the proper person for that duty.

The tentative ordinance was amended in relation to the use of salt at the meeting on the morning of April 12. The company must haul away the snow when it exceeds 6 in. in depth, if so directed by the city.

Mr. Lang intimated that the company would probably desire to install pay-as-you-enter cars when the road was rehabilitated, and the discussion of the section giving the city authority to order old cars to be replaced with new rolling stock was deferred. When the period of rehabilitation has been agreed upon this subject may be taken up again.

but the negotiators believed that it would be satisfactorily covered in that agreement. The clause to give the city the right to require attendants in the cars in addition to the motorman and the conductor was also held in abeyance.

Mr. Lang discussed the length of franchise in a number of cities as an introduction to the negotiations on the length of the period to be covered in this instance. A statement on this point was submitted for the consideration of the city.

An agreement was reached to the effect that the company should sprinkle and clean the portion of the streets which it occupies and keep clear paths at regular stops, except street crossings.

The company will carry no advertising on the outside of cars, except for baseball games and circuses, as provided in the tentative ordinance.

At the session on April 14 it was agreed that the city should not have the right to require the replacement of the overhead system during the first ten years of the grant, and then only after a notice of two years. The Schreiber draft provided that the city might order a change at any time.

An agreement was reached to the effect that the city may regulate the construction of pole and wire systems, but the company objected to the proposed right of the city to direct that the use of its poles be shared with any other company. Mayor Whitlock said that the idea was to prevent an excessive use of poles on the streets, but Mr. Lang said that it suggested a partnership which the company could not accept. A section of the proposed grant to give the city free use of the company's wires, tracks and other property was called incomprehensible by Mr. Lang. He said that the company would perform any service the city desired in return for proper remuneration. The matter was passed for the present.

The poles of the company's system may be used to carry the fire alarm and police telephone system, under an agreement which was easily reached. The company now has an arrangement with some of the telephone and telegraph companies for joint use of poles which has proved economical to all concerned, but there has never been an agreement of this kind with a competing railroad.

Subway Proposals in New York

The conferences in regard to subway proposals which have been held recently in New York by the Public Service Commission were enlivened on April 12, 1911, by a statement issued by T. S. Williams, president of the company, to the effect that the proposal of the Brooklyn Rapid Transit Company was not to be regarded as a club to assist the city in its negotiations with the Interborough Rapid Transit Company. Mr. Williams said, in part:

"Before the Brooklyn Rapid Transit Company filed its subway proposal it emphasized informally to the city's officials and the members of the Public Service Commission, with whom the plan was gone over, that the proposition was not to be regarded as furnishing a club to assist the city in its negotiations with the Interborough Rapid Transit Company.

"We insisted that the proposal should be treated on its merits as a plan primarily for solving Brooklyn's transportation needs; that it was not presented in antagonism to the Interborough Rapid Transit Company nor with any desire to compete with that company for Manhattan business, but solely with the view of giving Brooklyn, Queens and Richmond people through transportation from those boroughs into and through the business centres of Manhattan.

"It may be true, although we cannot believe it, that the Interborough Rapid Transit Company will attach as a condition of acceptance of the city's demands the exclusion of Broadway, Manhattan, as a distributing line for Brooklyn's, Queens' and Richmond's passengers, and, of course, if such a stipulation should be made, no city officer could

for a moment directly or indirectly accede to it. But, in order that the city's interests might not be jeopardized by such a situation, the Brooklyn Rapid Transit Company has assured the joint committee, in response to its inquiry, that it would in such an event include in its proposal of March 2 the entire triborough route for which bids were recently received, subject to such slight modifications as may be necessary to fit the route to our general plan and with such changes in specifications as would reduce the cost without diminishing the efficiency of operation. That assurance was given some weeks ago, and still stands."

Subsequently William R. Willcox, chairman of the commission, issued the following statement:

"No formal proposal has been received from the Brooklyn Rapid Transit Company other than that submitted on March 2, which contemplates an extension into Manhattan only as far north as Fifty-ninth Street. It is true that in our conferences we have asked Col. Williams, president of the company, whether he would be willing to extend his offer so as to operate the routes laid out north of Fifty-ninth Street and extending into the Bronx. Col. Williams informed the conferees that under certain conditions his company would include in its offer the operation of such lines.

"Both the question put to him by the conferees and his answer thereto were parts of the negotiations which have been going on for some weeks. As parts of such negotiations we have consistently refused to discuss them in public, just as we have refused to discuss such parts of the negotiations as affected the offer of the Interborough Rapid Transit Company. Whenever a formal proposal is made to the commission by any company it is promptly made public, and manifestly it would hinder our negotiations both with the Interborough and the B. R. T. Company if we should from day to day discuss the progress of those negotiations.

"That the conferees should use the Brooklyn Rapid Transit Company's offer as a club to compel better terms from the Interborough Company is just as absurd as if the statement were made that they would use the offer of the Interborough as a club to compel better terms from the B. R. T. Company. Both corporations are bidding for valuable concessions from the city government, and the conferees are earnestly and honestly striving to arrive at a decision which will be for the best interests of the city. If the fact that the two corporations are bidding against each other should result in obtaining from either a better proposal for the city than would have been possible without such competition, then it is for the interest of the city that such bidding be encouraged."

On April 17, 1911, Borough President McAneny of Manhattan expressed the opinion that the Brooklyn Rapid Transit Company offered an attractive proposition in case the Interborough Rapid Transit Company should not bid "quick and high." When President Shonts was asked to comment on the views of Mr. McAneny, as told in the newspapers, he said:

"I have not read the interview with Mr. McAneny. So far as I know there is only one definite subway offer before the authorities, and that is ours. We have had \$30,000,000 in cash lying in the banks for those elevated extensions since Nov. 1, 1910.

"These gentlemen said they wanted to talk matters over. At their suggestion, and not at ours, it was agreed that the negotiations should be kept confidential. We have not been asked to concede this or that, because at their suggestion it was said at the beginning that we would not discuss finalities until we were through with the preliminaries. We are still adhering to the word we gave not to discuss anything that went on in those conferences, and it is no use to ask me any questions on those matters.

"But, after all we have done, we are told that there is another performer in the ring, and if they crack their whip at us and tell us to jump high and quick, and particularly high, why, then we are going to wait until at least we see the spangles on the other performer before we say whether we will jump or not."

The Brooklyn Heights Railroad, the Nassau Electric Railway, and the Coney Island & Brooklyn Railroad have secured writs of certiorari to review the action of the Public Service Commission in giving the Manhattan Bridge Three-Cent Line a certificate of necessity in the Supreme

Court before Justice Greenbaum. The Manhattan Bridge Three-Cent Line proposes to operate not only on the Manhattan Bridge, but on Desbrosses, Washington, Canal and Vestry Streets, in Manhattan, and on Livingston and Fulton Streets, Flatbush, Atlantic and Third Avenues, in Brooklyn. This line, the Brooklyn Rapid Transit complains, is designed to draw its "most remunerative business by taking its short-haul traffic without furnishing better convenience" than the Brooklyn Rapid Transit Company can supply. One of the grounds of the Brooklyn Rapid Transit Company's complaint is that the new line proposes to operate over streets in both boroughs already occupied by street car tracks and cars at important junctions whose car lines at present occupy some of the streets in Manhattan on which the three-cent line wants to operate. The Brooklyn Rapid Transit Company alleges that the three-cent line cannot obtain the necessary consent of property owners.

Conference in New Jersey on Engineering and Operating Subjects

The Board of Public Utility Commissioners of New Jersey has called a conference with the street railways of New Jersey for Friday, April 21, 1911, at the offices of the board in the State House, Trenton, N. J., to consider the following subjects:

1. Track and roadway, with special reference to bridges, trestles, protection of same, curves and track construction.
2. Grade crossings of electric railways with those of steam railroads.
3. Station or waiting room facilities at transfer points.
4. Car equipment, with special reference to brakes, fenders and headlights.
5. Rails and gates for the protection of passengers when crossing bridges, trestles, passing around curves, etc.
6. Car signs, showing route and destination.
7. Standard regulations for government of conductors and motormen.

New Road Opened in Missouri.—The Jefferson City (Mo.) Bridge Company has completed and placed in operation between Jefferson City, North Jefferson and Cedar City an electric railway which connects with the Chicago & Alton Railroad and the Missouri, Kansas & Texas Railroad.

Work to Begin on Municipal Railway in San Francisco.—At a recent municipal conference called to consider the Geary Street, Park & Ocean Railroad, which is to be rehabilitated as a municipal railway, it was decided that construction work should be commenced at once on the roadbed and the overhead lines. The roadbed is to be built by contract and the overhead line by the Board of Public Works.

Bion J. Arnold to Report on Traffic in Los Angeles.—The City Council of Los Angeles, Cal., has retained Bion J. Arnold to report upon transportation problems in Los Angeles with a view to securing plans for the co-ordination of all transportation lines, including the proposed municipal railroad, and their development in accordance with the assumption that within fifteen years the city will have a population of 1,000,000.

Fire in New York Communicated to Rolling Stock.—A spectacular fire on April 13, 1911, which destroyed the grand stand at baseball park known as Polo Grounds, in New York, communicated to the adjoining elevated structure of the Interborough Rapid Transit Company, and four elevated motor cars and three trail cars on a siding on the structure were destroyed and ten other cars were damaged. The company has placed its loss at \$45,000.

Mr. Mortimer in Milwaukee.—On April 3, 1911, James D. Mortimer assumed his duties as acting president and general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., as the successor of John I. Beggs. Mr. Mortimer said to the newspapers when asked for a statement: "I have nothing to say. All my attention has been taken up familiarizing myself with the interests of the company and I will be engaged in this work for some time to come."

Address on Scientific Business Management.—Frederick Winslow Taylor, consulting engineer, Philadelphia, Pa., and ex-president of the American Society of Mechanical Engi-

neers, will make an address on "The New Conception of Business and Industrial Efficiency" in Carnegie Hall, New York, on April 28, 1911, at 8 p. m., under the auspices of the Civic Forum. Brief addresses will also be made by John Golden, president of the United Textile Workers of America, on the attitude of organized labor toward this movement, and by Frank B. Gilbreth, on its practical operation.

Meeting of New England Street Railway Club.—The regular monthly meeting of the New England Street Railway Club will be held at the American House, Boston, Mass., on the evening of April 26, 1911. Dinner will be served at 6:30 o'clock sharp. At 8 o'clock the regular business meeting will be held, after which Louis K. Rourke, commissioner of public works of Boston, will address the members of the club on "The Organization and Construction of the Panama Canal." Special attention is called to the fact that the meeting this month is held on the fourth Wednesday instead of the fourth Thursday.

Franchise Negotiations in Montreal.—When they were at Quebec the members of the committee which represented the city of Montreal agreed with the railway committee of the Legislature to enter into negotiations at an early date with the Montreal (Que.) Street Railway to renew the company's franchise. E. A. Robert, the president of the company, is reported to have said that he understood that the city had a new proposal in preparation. While the Montreal Street Railway was ready to take up the subject at any time it would not, in view of the promise made to the Legislature on behalf of the city, address the city in connection with franchise negotiations at this time.

Bridge Proposed for San Francisco Bay.—A project is being promoted by Allan C. Rush to erect a suspension bridge across San Francisco Bay so as to connect the Alameda County shore with San Francisco. The cost of the structure is estimated at \$16,000,000. The plan is for a suspension bridge with five piers, four spans and approaches on each side. The length of each span is to be 4560 ft. The height of the bridge above the water is to be 150 ft. The length of the water span of the bridge would be 18,240 ft., and including the two approaches 24,000 ft., or a little more than 4½ miles. It is proposed to have the bridge carry six car tracks, two driveways and two observation paths for foot passengers.

Block Signal Committee of Illinois Electric Railways Association.—The block signal committee of Illinois Electric Railways Association, of which John Leisenring, signal engineer Illinois Traction System, is chairman, has decided, with the approval of the executive committee of the association, to work in connection with the joint block signal committee of the American Electric Railway Transportation & Traffic and Engineering Associations, rather than to conduct a special investigation of its own. Mr. Leisenring attended the meetings of the joint committee at Chicago the latter part of March and will probably attend future meetings of the committee. The report prepared by the committee will then be taken up by the Illinois Electric Railways Association.

Chief Engineer Selected for Electrification Study at Chicago.—Horace G. Burt, formerly president of the Union Pacific Railroad, has been selected by the electrification committee of the Chicago Association of Commerce as chief engineer to take charge of the work of the committee in the preparation of a report on electrification of steam railroads in Chicago. The members of the committee are: Prof. W. F. M. Goss, of the University of Illinois; E. R. Graham, of D. H. Burnham & Company, Chicago, and H. G. Hetzler, president of the Chicago & Western Indiana Railroad. The permanent headquarters of the electrification committee will be established in the People's Gas Building, and after May 1, 1911, the committee will meet every second Friday afternoon.

LEGISLATION AFFECTING ELECTRIC RAILWAYS

ILLINOIS

A bill, agreed upon by railroads, shippers, consumers and labor, was accepted as a substitute for all pending railroad and commerce bills on April 12, 1911, and was reported favorably from the House committee on railroads.

To the amplified powers of the commission is specifically added the power to fix and regulate freight and passenger rates, to assume jurisdiction over express, steamboat lines and sleeping car companies, to sit in judgment in all conflicts between the transportation companies and the people, and to have access to the internal financial affairs of the transportation companies for the purpose of rate making or settling issues at stake. The Circuit Court of Sangamon County, sitting in Springfield, is constituted the court of appeal from the decisions of the commission, from which direct appeal is to the Supreme Court of the State. As the substitute bill is dissected by Orville F. Berry, chairman of the Railway and Warehouse Commission, it conserves to the commission all of the powers now granted, and confers upon the board these additional powers: Jurisdiction over the subject of demurrage, of refund of overcharge on freight rates and of return of overcharge on passenger rates; power to fix through routes and rates; power to fix joint rates; jurisdiction over express companies, steamboat lines and sleeping car companies; authority to require interchange of cars between common carriers; jurisdiction to determine rules or rates for storage and other charges incident to the transportation of freight; power to compel physical connection between common carriers; authority to establish switching rules and regulations and to fix the limits of switching districts; authority to investigate the general business management of common carriers in relation to the distribution of cars, granting of sidings, location of passenger and freight stations, and use and compensation for cars owned or controlled by common carriers.

MICHIGAN

The committee on railroads of the Michigan Senate has decided to postpone further consideration of the James bill to refer questions of renewal of franchises of electric railroads to the Railroad Commission, when the companies and municipal authorities fail to agree upon rates and terms.

NEW JERSEY

The House has its work well in hand, and is ready to adjourn on twenty-four hours' notice. The Senate has adopted a resolution to adjourn on April 21, 1911. The House has passed nearly 400 bills, while the Senate up to April 13, 1911, acted on only a few more than 200. As stated previously in the *ELECTRIC RAILWAY JOURNAL* the employers' liability bill has become a law, and only two administration measures are still pending, public utilities and corrupt practices. The conference committee on public utilities bills was expected to report a bill on the evening of April 18. It was understood that it would be the Egan bill modified in accordance with the ideas of the Democrats so as to retain the present Public Utility Commission in office.

OHIO

Governor Harmon has signed the bill which requires street railroads to sprinkle their rights-of-way within municipalities. A bill has passed the Senate to give the State Railroad Commission power to enforce the law relating to the use of power brakes on double-track electric railway lines. The Todd bill, introduced in the Senate, would empower municipalities to construct conduits and order the removal of overhead wires.

TENNESSEE

The bill introduced in the Tennessee Legislature to prohibit the use of prepayment cars on street railways has been rejected. A companion measure to prohibit the use of safety gates has also been rejected. Representative Cohn has introduced a bill to provide a public utilities board to consist of three members with power to regulate the rates, schedules, etc., of street railways, electric companies, etc., and authority to regulate issues of bonds and stocks.

WASHINGTON

An act creating a public service commission was approved by the Governor of the State of Washington on March 18. It makes the valuation of the property of every service company mandatory upon the commission. The members of the Railroad Commission constitute the first Public Service Commission. The sum of \$118,146 is provided to carry out the provisions of the act.

Financial and Corporate

New York Stock and Money Markets

April 18, 1911.

To-day's trading on the New York Stock Exchange was the most active since March 2, total sales aggregating 549,187 shares, against the 100,000 of yesterday's market. A decline was experienced in the prices of the majority of securities traded, and decreases of 1 to 3 points were registered at the close.

Money rates continue easy. Quotations to-day were: Call, 2¼@2¾ per cent; ninety days, 2½@2¾ per cent.

Other Markets

The week on the Philadelphia Exchange shows an appreciable falling off in traction shares. To-day's trading resulted in a further decline in prices of Philadelphia Rapid Transit and Union Traction.

Aside from a few transactions in bonds Chicago tractions were not active during the short Easter week. General trading to-day has reflected the New York market, and heaviness, with price decline, has prevailed.

In Boston the market has been rather quiet since last report and trading has been light in traction shares. A few transactions have been made in Boston Elevated and in Massachusetts Electric and price changes have been nominal.

There has been fair trading in Baltimore during the week in United Railways bonds, with prices generally firm.

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

	April 11.	April 18.
American Light & Traction Company (common).....	a298	a287
American Light & Traction Company (preferred).....	a108	a106
American Railways Company.....	a44	a44½
Aurora, Elgin & Chicago Railroad (common).....	a44	a44
Aurora, Elgin & Chicago Railroad (preferred).....	a88	a88
Boston Elevated Railway.....	a128	a128
Boston Suburban Electric Companies (common)....	a16	a16
Boston Suburban Electric Companies (preferred)....	a75	71
Boston & Worcester Electric Companies (common)..	a11	9½
Boston & Worcester Electric Companies (preferred)..	44	44
Brooklyn Rapid Transit Company.....	77¾	76¾
Brooklyn Rapid Transit Company, 1st ref. conv. 4s....	84¾	83¾
Capital Traction Company, Washington.....	a126½	*126½
Chicago City Railway.....	190	a190
Chicago & Oak Park Elevated Railroad (common)....	3	3
Chicago & Oak Park Elevated Railroad (preferred)..	6½	6
Chicago Railways, pteptg., ctf. 1.....	93	a90
Chicago Railways, pteptg., ctf. 2.....	23	a23½
Chicago Railways, pteptg., ctf. 3.....	a10	a9½
Chicago Railways, pteptg., ctf. 4.....	a5	a5½
Cincinnati Street Railway.....	130	*130
Cleveland Railway.....	a97	a95½
Columbus Railway (common).....	a96	*96
Columbus Railway (preferred).....	100	*100
Consolidated Traction of New Jersey.....	a76½	a76½
Consolidated Traction of N. J., 5 per cent bonds....	a105	a105
Dayton Street Railway (common).....	a30	a30
Dayton Street Railway (preferred).....	100	100
Detroit United Railway.....	a71½	71½
General Electric Company.....	150½	150
Georgia Railway & Electric Company (common)....	a133¾	a133
Georgia Railway & Electric Company (preferred)....	a90	a91
Interborough Metropolitan Company (common)....	185½	177½
Interborough Metropolitan Company (preferred)....	53½	50¾
Interborough Metropolitan Company (4½s).....	78¾	78½
Kansas City Railway & Light Company (common)....	21½	21½
Kansas City Railway & Light Company (preferred)....	70	70
Manhattan Railway.....	139	137
Massachusetts Electric Companies (common)....	a17	a16½
Massachusetts Electric Companies (preferred)....	87½	a87
Metropolitan West Side, Chicago (common).....	23	24
Metropolitan West Side Chicago (preferred).....	70	67
Metropolitan Street Railway, New York.....	*15	15
Milwaukee Electric Railway & Light (preferred)....	110	110
North American Company.....	71	70½
Northern Ohio Light & Traction Company.....	a45	45
Northwestern Elevated Railroad (common).....	23	a21½
Northwestern Elevated Railroad (preferred).....	a103	a104
Philadelphia Company, Pittsburgh (common)....	a53	a53
Philadelphia Company, Pittsburgh (preferred)....	a43	a43
Philadelphia Rapid Transit Company.....	a18¾	a16¾
Philadelphia Traction Company.....	a83¾	83¾
Public Service Corporation, 5% col. notes (1913)....	100½	100½
Public Service Corporation, ctf. 5.....	105½	a106
Seattle Electric Company (common).....	a106½	a106
Seattle Electric Company (preferred).....	a98	a98
South Side Elevated Railroad (Chicago).....	70	a71
Third Avenue Railroad, New York.....	9½	a10
Toledo Railways & Light Company.....	a7½	a7½
Twin City Rapid Transit, Minneapolis (common)....	a108½	a108½
Union Traction Company, Philadelphia.....	a44¾	a44¾
United Rys. & Electric Company, Baltimore.....	18¾	18¾
United Rys. Inv. Co. (common).....	40	42½
United Rys. Inv. Co. (preferred).....	70	72
Washington Ry. & Electric Company (common)....	a37	37
Washington Ry. & Electric Company (preferred)....	a89	89
West End Street Railway, Boston (common).....	a90	a90
West End Street Railway, Boston (preferred).....	103	103
Westinghouse Elec. & Mfg. Co.....	a66	a66
Westinghouse Elec. & Mfg. Co. (1st pref.).....	a17¾	a17

aAsked. *Last sale.

Organization of Tri-State Railway & Electric Company

The stockholders and directors of the Tri-State Railway & Electric Company met on April 14, 1911, at East Liverpool and organized as follows: President, J. G. White, of J. G. White & Company, Inc., New York, N. Y.; vice-president, J. H. Pardee, of J. G. White & Company, Inc.; second vice-president, Edward McDonnell, East Liverpool; treasurer, R. B. Marchand, of J. G. White & Company, Inc.; secretary and assistant treasurer, George H. Faulk, East Liverpool; assistant treasurer, T. W. Moffat, of J. G. White & Company, Inc.; general manager, W. R. W. Griffin, East Liverpool; directors, J. G. White, New York; J. H. Pardee, New York; Edward McDonnell, East Liverpool; W. Carl Ely, Buffalo; Horatio G. Lloyd, Philadelphia; James Hilbert, W. R. W. Griffin, George H. Faulk and George H. Owen, East Liverpool.

The new company has taken over and will operate the urban and interurban railways, electric light, bridge and other properties formerly controlled by the Beaver County Light Company, the Midland Electric Light & Power Company, the Ohio River Passenger Railway, the East Liverpool Traction & Light Company, the Steubenville & East Liverpool Railway & Light Company, the Steubenville & Wellsburg Traction Company, the Tri-State Traction Company, the Steubenville, Wellsburg & Weirton Railway, the Wellsburg Electric Light, Heat & Power Company, and has also acquired an interest in the running rights over the bridge of the Steubenville Bridge Company between Steubenville and Middle Ferry, W. Va.

Arrangements have been made to construct an electric railway between Steubenville and Weirton, W. Va.

The active management of the properties will be assumed by J. G. White & Company, Inc. W. Caryl Ely, Buffalo, and Edward McDonnell, East Liverpool, and their associates, retain their interests in the properties.

Annual Report of the New Orleans Railway & Light Company

The income account of the New Orleans Railway & Light Company for the years ended Dec. 31, 1910 and 1909, is as follows:

	1910.	1909.
Year ended Dec. 31.....		
Operating revenue:		
Railroad department.....	\$4,206,303	\$4,101,546
Electric department.....	1,072,546	1,027,898
Gas department.....	966,373	904,881
Total operating revenue.....	\$6,245,222	\$6,034,325
Operating expenses:		
Railroad department, including depreciation..	\$2,557,490	\$2,403,076
Electric department, including depreciation....	564,455	525,806
Gas department, including depreciation.....	399,793	400,019
Total operating expenses.....	\$3,521,738	\$3,328,901
Net operating revenue.....	\$2,723,484	\$2,705,424
Deduct operating taxes.....	502,954	481,750
Operating income.....	\$2,220,530	\$2,223,674
Miscellaneous income.....	24,313	8,569
Gross income.....	\$2,244,843	\$2,232,243
Income deductions:		
Interest on funded debt.....	\$1,544,092	\$1,498,889
Other interest charges.....	10,591	13,967
Dividends on New Orleans City Railroad stock, proportion payable to minority stockholders..	4,438	4,745
Amortization of debt, discount and expense....	35,597	47,222
Miscellaneous deductions.....	6,836	6,947
Total deductions.....	\$1,601,554	\$1,571,770
Net income.....	\$643,289	\$660,473
Miles of track.....	201	198

Hugh McCloskey, the president, says in part:

"The operating revenues of the properties for the year increased \$210,897, or 3.5 per cent.

"Our average railroad revenue per passenger this year was 4.06 cents against 4.1 cents in 1909. Of the passengers paying fare 23.9 per cent used transfers this year, whereas last year the percentage using transfers was 22.6.

"The operating expenses of all the companies for the year 1910 were \$3,521,737, an increase of \$192,836 over the preceding year. This is mainly due to charging into operation this year the sum of \$150,000 for depreciation, which was distributed among the various operating departments

as follows: Railroad department, \$112,000; electric light department, \$18,000; gas department, \$20,000; total, \$150,000.

"For the year ended Dec. 31, 1910, net income amounted to \$643,288, against \$660,473 the preceding year, a decrease of \$17,184. Charging the \$150,000 referred to above into operating expenses this year for past depreciation explains the reason for a decrease.

"Charges were made to the property accounts during the year to the amount of \$765,835 for betterments, improvements and the acquisition of new property.

"The Magazine substation and emergency house were completed. Two 500-kw motor-generator sets, panels and instruments were installed therein complete. One additional 500-kw motor-generator set was installed at the Valence Street substation, together with feeders, transformers and three regulators. A site was purchased at the corner of North Pierce and Iberville Streets, and a fire-proof substation of 5420-kw ultimate capacity was erected for city arc lighting, commercial and power and railway distribution. One 1000-kw railway motor-generator set was installed complete and is now in daily service. At the Claiborne station the old engines were connected to the new condenser system. These engines are now in first-class operating condition. One additional 500-kw transformer was installed at the Dryades substation. Two artesian wells, one at the magazine shops and the other at the Arabella barn, were installed, giving us all the water needed there except for drinking purposes.

"Fifty new cars were purchased and placed in operation. It is pleasing to be able to assure you that the physical property and equipment of the company in every branch has been maintained in a good state of repair and its efficiency considerably improved."

The surplus account for the year ended Dec. 31, 1910, is as follows:

Balance, Dec. 31, 1909.....	\$3,159,829
Additions:	
Adjustments of accounts of prior period.....	\$1,398
Net income of all companies operated, after eliminating inter-company transactions.....	643,289
Total additions.....	644,687
	\$3,804,516
Deductions:	
Depreciation reserve.....	\$1,000,000
Electric car replacements.....	155,281
Electric cars scrapped.....	11,653
Reconstruction of Claiborne power house tunnel....	33,831
Reconstruction of portion of Dauphine track.....	1,723
Cost of moving tracks, Carrollton Avenue.....	3,442
Expenses relative to threatened strike.....	17,367
Amortization of commission on loans, proportion applicable to year 1909.....	14,407
Reserved for uncollectible accounts.....	12,300
Adjustments of accounts of prior period.....	9,891
Premiums on redeemed securities.....	3,992
Miscellaneous adjustments.....	1,707
Dividends to minority stockholders (except dividends on New Orleans City Railroad stock, charged to income).....	4,554
Dividends on preferred stock of New Orleans Railway & Light Company.....	249,875
Total deductions.....	1,520,023
Balance, Dec. 31, 1910.....	\$2,284,493

Statistics of traffic are as follows:

Year.	Revenue Passengers.	Transfers Redeemed.	Revenue Mileage.	18-Hour Cars.
1909	78,643,680	17,816,746	18,718,605	117,072
1910	80,408,085	19,246,906	19,021,429	118,775

British Columbia Electric Railway Company, Ltd., Vancouver, B. C.—Gross earnings for the year ended June 30, 1910, were £628,763, as compared with £478,146 in the preceding year. The net revenue, including income from investments in subsidiary companies, was £226,803, as compared with £190,444. The number of passengers carried was 34,476,804, as compared with 25,183,739. The balance available for dividends was £139,391 last year, as compared with £123,417 in the preceding year. Dividends of 6 per cent were paid in each year on the preferred ordinary stock and of 8 per cent on the deferred ordinary stock. The company charged against the revenue account for the year the following sums: Provision for renewals and maintenance (from which £15,242 was taken for adjustment and expenditures on renewals during the year), £46,426; special provision against depreciation in value of certain obsolete steam plants, £3,000; bonus to employees, £11,333; amount added to capital amortization fund, £2,098.

Cleveland, Youngstown & Eastern Railway, Cleveland, Ohio.—Robert D. Beatty, secretary of the Cleveland, Youngstown & Eastern Railway, having about 38 miles of electric railway extending from Cleveland to Garrettsville, Ohio, consisting of power house, rolling stock, building, etc., is offering the property for sale. The road passes through Chagrin Falls, Troy and Hiram, and has a contract with the Cleveland Railway enabling the Cleveland, Youngstown & Eastern Railway's cars to reach the Public Square of Cleveland. Outstanding bonds about \$8,000 per mile. The construction of about 13 miles of additional track will connect the Cleveland, Youngstown & Eastern Railway with the Mahoning & Shenango Railway & Light Company lines, opening up a territory containing about 250,000 people only about 70 miles from Cleveland.

Columbus, Mount Vernon & Mansfield Traction Company, Columbus, Ohio.—The Interurban Securities Company, Columbus, Ohio, is offering an issue of \$750,000 of 5 per cent bonds of the Columbus, Mount Vernon & Mansfield Traction Company at \$850 for each \$1,000 bond with a bonus of \$400 in the fully paid non-assessable stock.

Detroit (Mich.) United Railway.—Additional first consolidated mortgage 4½ per cent bonds of the Detroit United Railway to the amount of \$1,066,000, due in 1932, have been listed on the New York Stock Exchange. The total amount of bonds of this company listed to date is \$12,433,000. The bonds just listed were issued for 75 per cent of the cost of betterments and improvements which exceed \$1,422,000.

Eastern Wisconsin Railway & Light Company, Fond du Lac, Wis.—The Eastern Wisconsin Railway & Light Company has been authorized by the Wisconsin Railroad Commission to issue \$76,000 par value of its 5 per cent 20-year first mortgage gold bonds, of the par value of \$1,000 each, to be secured by the refunding and extension mortgage executed by the company to the Milwaukee Trust Company, Milwaukee. The funds to be derived, in so far as possible, are to be used to pay the obligations incurred in making additions and extensions to the system, and also to reimburse the reserve, working capital and surplus accounts for the funds taken from these accounts and used in paying for the extensions and additions.

Fort Smith Light & Traction Company, Fort Smith, Ark.—All of the \$650,000 of 6 per cent gold notes of the Fort Smith Light & Traction Company, dated Jan. 1, 1910, have been called for redemption at 101 and interest on May 1, 1911, at the office of the Continental & Commercial Trust & Savings Bank, Chicago, Ill.

Havana (Cuba) Electric Railway.—Additional consolidated mortgage 5 per cent bonds of the Havana Electric Railway to the amount of \$1,847,000, due in 1952, have been listed in the New York Stock Exchange, making the total amount listed to date \$9,634,000, \$366,000 of the \$10,000,000 issue having been canceled by the sinking fund. Of the bonds just listed \$1,147,000 has been issued to retire \$331,000 of first mortgage bonds and against cash to retire the remaining \$762,000 of first 5 per cent bonds called for payment on or before Jan. 1, 1912; \$700,000 has been issued for future corporate purposes, and \$81,000 has been exchanged for \$81,000 of second mortgage 6 per cent bonds.

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.—A quarterly dividend of 1½ per cent has been declared on the \$800,000 of common stock of the Honolulu Rapid Transit & Land Company, payable on March 31, 1911, to holders of stock of record of March 27, 1911. By declaring this dividend the annual rate has been increased to 6 per cent, contrasting with 4 per cent in 1908, 1909 and 1910, 3 per cent in 1907, 3¼ per cent in 1906 and 4 per cent in 1904 and 1905.

Interstate Railways, Philadelphia, Pa.—The entire issue of \$1,000,000 of 6 per cent cumulative preferred stock of the Interstate Railways has been subscribed, \$500,000 in cash by the holders of the common stock and \$500,000 in exchange for the overdue coupons of the 4 per cent bonds of the company.

Las Vegas Light & Power Company, Las Vegas, N. Mex.—The property of the Las Vegas Light & Power Company was sold under foreclosure on April 3, 1911, to J. M. Cunningham, vice-president of the company and

president of the San Miguel National Bank, for \$126,500. The purchase is said to have been made by Mr. Cunningham in the interest of the Federal Light & Traction Company, New York, N. Y.

New Orleans Railway & Light Company, New Orleans, La.—Seven New Orleans banking houses are offering at 87½ and interest to yield 5.80 per cent \$800,000 of "refunding and general lien 5 per cent gold bonds" of the New Orleans Railway & Light Company, dated Nov. 1, 1909, and due Nov. 1, 1949, but redeemable at 105 and interest on Nov. 1, 1919, or any interest date thereafter. The proceeds of the bonds are to be used to reimburse the company to the extent of 75 per cent of the cost of extensions and improvements made necessary by the expansion of the business. The bankers say that during the last six years approximately \$7,000,000 has been spent on construction and improvements and that about \$1,300,000 of this amount has been supplied from net earnings. All the preceding bonds of this issue, with the exception of \$81,000,000, were printed in French and were sold in France, and the bonds which are now being offered constitute the first public sale in America of this refunding and general lien issue.

Oklahoma Railway, Oklahoma City, Okla.—John W. Shartel, vice-president and general manager of the Oklahoma Railway, has explained as follows the certificate of the increase in the capital stock of the company from \$3,000,000 to \$15,000,000 and the increase in the amount of authorized bonds from \$3,000,000 to \$12,000,000, mentioned in the ELECTRIC RAILWAY JOURNAL of April 15, 1911, page 688: "We started in 1904 with \$1,000,000 capital and issued \$1,000,000 in bonds. In 1906 we found that this was inadequate and had to buy up the old bonds at a premium, increasing our capital stock and issuing \$3,000,000 in bonds. We have now had the same experience again and this time decided to make the increase large enough to care for the development for some years to come."

Piedmont (N. C.) Traction Company.—The Piedmont Traction Company has filed with the Secretary of State of North Carolina a certificate of the increase in its capital stock from \$100,000 to \$1,500,000.

San Jose & Santa Clara County Railroad, San Jose, Cal.—The Southern Pacific Company is reported to have concluded negotiations in the interest of the Peninsular Railway, San Jose, for the purchase of the property of the San Jose & Santa Clara County Railroad and the San Jose Railroads, controlled by L. E. Hanchett and his associates.

Rio de Janeiro Tramway, Light & Power Company, Ltd., Rio de Janeiro, Brazil.—The fifth annual pamphlet report of the board of directors of the Rio de Janeiro Tramway, Light & Power Company, Ltd., for the year ended Dec. 31, 1910, has been made public. The gross revenues of the tramway, light and power, telephone and gas departments of the company for 1910 were \$10,960,179, as compared with \$7,527,559 for 1909, an increase of \$3,432,620. The net earnings of these departments for 1910 were \$5,393,092, as compared with \$3,068,306 for 1909, an increase of \$2,324,785. After the payment of all fixed charges, interest and general expenses there was a surplus for 1910 of \$2,337,142, which, with the amount brought forward from 1909, \$1,707,935, makes a total of \$4,045,078, which the board has appropriated as follows: \$250,000 to meet the needs of the sinking fund for the year on first mortgage bonds, \$300,000 to a general reserve fund account, two quarterly dividends of 1 per cent each and two of 1¼ per cent each, absorbing \$1,462,438, and the balance, \$2,032,640, carried forward. The following reference is made in the report to the tramway department: "As a result of the complete electrical equipment of the entire system, the operation of this department has been conducted in a much more efficient, rapid and economical manner than in previous years, with the result that the service has been very satisfactory to the public and the gross revenue has steadily increased. The suburbs are growing rapidly, due to the increased facilities afforded by the tramways, and this should increase the revenues of the suburban tramways in the next few years. During the year sixty-eight 13-bench motor cars were manufactured in the company's shops and a large addition has been made to the company's equipment in its freight department."

Virginia Railway & Power Company, Richmond, Va.—There have been listed on the New York Stock Exchange \$4,446,500 of preferred stock of the Virginia Railway & Power Company and \$7,450,000 of common stock of the company, issued under the reorganization plan. The exchange has also authorized the listing of \$253,500 of additional preferred stock on notice of sale, making the total amount of preferred stock authorized to be listed \$4,700,000.

Youngstown & Ohio River Railroad, Youngstown, Ohio.—Gross earnings in the calendar year 1910 were \$208,706, as compared with \$166,689 in 1909. Operating expenses were \$113,946, as compared with \$84,072. Net earnings were \$94,760 in 1910, as compared with \$82,617 in 1909. Taxes and rentals were \$12,468 last year, as compared with \$11,016 in the preceding year. Net earnings amounted to \$82,292 last year, as compared with \$71,601 the preceding year. Of the net earnings last year \$37,500 was applied to bond interest and \$15,000 to dividends on the preferred stock, leaving a surplus of \$29,792. Gross earnings last year were derived from the following sources: Passengers, \$150,731; freight, \$45,330; power, \$11,142; miscellaneous, \$1,503. As the number of miles of main track operated was 36, the gross earnings per track mile were \$5,800 and the net earnings per track mile \$2,632. The number of passenger car miles run was 494,556 and of freight car miles run 138,789. The passenger revenue per car mile was 31.91 cents and the freight revenue per car mile 36.65 cents. A total of 711,439 passengers was carried. The company operates its passenger service electrically and its freight trains by steam locomotives.

Dividends Declared

- Columbus (Ohio) Railway, quarterly, 1¼ per cent, preferred.
- Detroit (Mich.) United Railway, quarterly, 1¼ per cent.
- East St. Louis & Suburban Railway, East St. Louis, Ill., quarterly, 1¼ per cent, preferred.
- Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.
- Havana (Cuba) Electric Railway, quarterly, 1½ per cent, preferred; quarterly, 1½ per cent, common.
- Montreal (Quebec) Railway, quarterly, 2½ per cent.
- Railway Companies General, New York, N. Y., quarterly, 1 per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS COMPANY.						
Period.		Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1m.,	Mar.,	'11	\$308,731	.....	.....	.....
1 "	"	'10	305,529	.....	.....	.....
9 "	"	'11	2,995,358	.....	.....	.....
9 "	"	'10	2,810,163	.....	.....	.....
BATON ROUGE ELECTRIC COMPANY.						
1m.,	Jan.,	'11	\$9,836	\$5,882	\$3,954	\$1,975
1 "	"	'10	9,384	6,028	3,356	1,902
12 "	"	'11	110,627	69,311	41,316	23,394
12 "	"	'10	101,636	70,787	30,849	17,922
BROCKTON & PLYMOUTH STREET RAILWAY COMPANY.						
1m.,	Jan.,	'11	\$7,471	\$5,879	\$1,592	\$1,584
1 "	"	'10	6,875	6,861	14	1,799
12 "	"	'11	120,222	83,681	36,541	19,944
12 "	"	'10	130,575	93,735	36,840	21,311
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY.						
1m.,	Feb.,	'11	\$423,689	*\$236,907	\$186,782	\$97,808
1 "	"	'10	374,920	*216,755	158,165	101,248
2 "	"	'11	896,805	*493,048	403,757	197,830
2 "	"	'10	807,292	*453,176	354,116	201,616
EAST ST. LOUIS & SUBURBAN COMPANY.						
1m.,	Feb.,	'11	\$168,680	*\$99,341	\$69,339	\$45,204
1 "	"	'10	175,234	*99,485	75,749	44,882
2 "	"	'11	357,404	*202,351	155,053	90,440
2 "	"	'10	363,427	*202,524	160,903	90,035
GALVESTON ELECTRIC COMPANY.						
1m.,	Jan.,	'11	\$28,533	\$17,392	\$11,141	\$8,348
1 "	"	'10	27,694	21,099	6,595	6,261
12 "	"	'11	370,177	220,944	149,233	90,057
12 "	"	'10	369,546	221,813	147,733	75,168
ILLINOIS TRACTION SYSTEM.						
1m.,	Feb.	'11	\$531,028	*\$314,940	\$216,088	.....
1 "	"	'10	447,435	*270,459	176,975	.....
2 "	"	'11	1,100,970	*662,849	438,121	.....
2 "	"	'10	940,836	*559,202	381,634	.....
UNION RAILWAY, GAS & ELECTRIC COMPANY.						
1m.,	Feb.,	'11	\$251,685	*\$148,772	\$102,913	\$59,424
1 "	"	'10	242,593	*146,102	96,491	58,031
2 "	"	'11	528,067	*311,145	216,922	118,819
2 "	"	'10	506,468	*309,601	196,867	116,299

Traffic and Transportation

Meeting of Lake Shore Interurban Traffic Association

The members of the Lake Shore Interurban Traffic Association met at Erie, Pa., on April 13, 1911, and discussed the different local combinations of rates for travel to the various resorts in New York and Pennsylvania to provide a suitable tariff for the summer traffic over the interurban electric railways which touch and connect with Erie. The Lake Shore Interurban Traffic Association is composed of the following roads, and they intend to publish a joint tariff, both passenger and freight: Buffalo & Lake Erie Traction Company, H. C. Allen, passenger agent; Cleveland & Erie Railway, R. W. Palmer, manager; Chautauqua Steamboat Company, E. W. Sturdevant, passenger agent; Erie Traction Company, C. M. Hatch, general manager; Jamestown, Chautauqua & Lake Erie Railroad, E. W. Sturdevant, passenger agent; Meadville & Cambridge Springs Street Railway, F. Windle, superintendent; Chautauqua Traction Company, C. J. Moynihan, acting general passenger agent; International Railway, George H. Dreybus, traffic agent.

The association proposes to issue interline tickets and joint folders so as to encourage travel by electric railway. The joint tariff will be issued by C. J. Moynihan, as agent, for the lines interested. No permanent officers, at this time, have been elected, C. J. Moynihan being appointed as temporary secretary and R. W. Palmer as temporary chairman.

"Near-Side" Stops in Trenton.—The Trenton (N. J.) Street Railway has adopted the practice of stopping its cars on the near side of street crossings.

Clocks and Stools in Louisville.—The Louisville (Ky.) Railway is using clocks connected with the trolley circuit to register the time cars pass certain points. The company has furnished stools for motormen on all its lines.

Parlor Car Service Between Peoria and St. Louis.—The sleeping cars operated by the Illinois Traction System between Peoria, Ill., and St. Louis, Mo., have proved so successful that the management have decided to place parlor cars in service between the same points.

Park on Lake Pontchartrain.—The New Orleans Railway & Light Company, New Orleans, La., has purchased a property called Spanish Fort, on Lake Pontchartrain, and is filling in the ground and preparing to establish a summer resort and park. The tract contains 35 acres.

Peculiar Accident in St. Louis.—The platform sill clamps of a car of the United Railways of St. Louis broke off while the car was in motion on April 12, 1911, and the passengers who were standing on the platform were landed in the street with the platform. The passengers were only slightly injured.

Pay-as-You-Enter Cars in Knoxville.—The Knoxville Railway & Light Company, Knoxville, Tenn., in putting into service its new pay-as-you-enter cars, carried a half-page advertisement in the daily papers illustrating the cars and explaining how they are to be used. The new service was begun on April 2, 1911.

Reunion of Confederate Veterans in Little Rock.—A reunion of the Confederate veterans is to be held at Little Rock, Ark., on May 16, 17 and 18, 1911. The Little Rock Railway & Electric Company, in honor of the event, has had a special letterhead engraved calling attention to the reunion and giving the dates on which it is to be held.

Interurban Steam Freight Agreement.—The Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has made a traffic arrangement with the Pere Marquette Railroad whereby they will exchange freight at Michigan City and freight may be billed from points east of South Bend on electric railways into Chicago or to way points.

Coupon Ticket Books on the Oneida Railway.—On April 4, 1911, the Oneida (N. Y.) Railway placed on sale at \$5 each, with the permission of the Public Service Commission of the Second District of New York, coupon ticket books containing 600 coupons of a face value of 1 cent each, good

between all local stations. Not less than ten coupons are detached for any ride.

Shelter Recommended.—The Board of Public Utility Commissioners of New Jersey has recommended the Public Service Railway to erect a shelter at or near the corner of Hillside Road and Palisade Avenue, West Hoboken, provided consent of the governing body of the town and of abutting property owners can be obtained. At the corner mentioned there is a transfer point.

Long Island Traffic Not to Be Diverted.—P. H. Woodward, secretary to Ralph Peters, president of the Long Island Railroad, says that the statement was unwarranted that the company proposed to divert suburban traffic from the station of the Pennsylvania Railroad at Thirty-third Street and Seventh Avenue, New York, by way of the Queensboro Bridge and the Steinway Tunnel, as reported in the daily press.

Information Bureau in Allentown.—The Lehigh Valley Transit Company, Allentown, Pa., has opened an information bureau in the waiting room at the corner of Sixth Street and Hamilton Street, Allentown, under the supervision of the traffic department of the company. The bureau will also be the uptown office of the Electric Express Company for the receipt of small packages for shipment over the lines of the company.

Decision Affecting Indiana Interurban Line.—Judge Downey of the Circuit Court of Dearborn County, Indiana, has quashed the indictment against the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio, charging the company with not complying with the Indiana law which requires interurban railways to equip their cars with toilets. Judge Downey held that as the company has only 13 miles of track in Indiana it did not come within the statute. The case has been appealed to the Supreme Court.

Fare Complaint in New Jersey.—A delegation of residents of Bergen County appeared before the Board of Public Utility Commissioners of New Jersey recently and complained about the fare that is charged over the Public Service Railway Company's line from Coytesville to Edgewater Ferry, opposite 125th Street, New York. It was submitted that the action of the company in arbitrarily changing the fare was not justified. The board advised the petitioners to prepare a formal complaint to which the company will be required to make answer.

Hearing in Minneapolis Suit.—The hearing before the United States District Court at Minneapolis in the suit brought by the Twin City Rapid Transit Company, Minneapolis, Minn., against the city of Minneapolis, to restrain the city from enforcing the provisions of the ordinance to limit the carrying capacity of cars was set for April 18, 1911. The reasons of the company for carrying the case to the courts was explained in a statement made by W. J. Hield, vice-president and general manager of the company, as noted in the ELECTRIC RAILWAY JOURNAL of April 8, 1911, page 643.

Pensions for Michigan United Railways Employees.—The Michigan United Railways, Jackson, Mich., has announced through A. W. McLimont, vice-president and general manager, that the company is considering a plan to pension employees who have become disabled or incapacitated for work while in the employ of the company. This announcement follows the recent action of the company in financing a mutual aid and benefit association among employees in Lansing. It is proposed by the Michigan United Railways to follow the plan adopted by the steam railroads which have a pension system.

Petition for Increase in Fare Denied.—The Public Service Commission of the Second District of New York has denied the petition of certain residents of Dunkirk and Fredonia asking for a reduction of fare on the Buffalo & Lake Erie Traction Company's lines between Dunkirk and Fredonia. The present rate is 10 cents, with full transfer privileges in both Dunkirk and Fredonia. Further, the company issues a book of tickets allowing all the privileges of single fare, 24 rides for \$1.25, making a ticket charge of approximately 5¼ cents a trip. The commission believes that the

company is, under all the circumstances, charging a reasonable and just fare.

Car Delays on the Rochester, Syracuse & Eastern Railroad.—P. E. Emerson, superintendent of the Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y., has made public a tabulation of train delays which covers the sixteen months that the road has been in operation from Rochester to Syracuse. During that period 97.54 per cent of the trains have been operated on time. In March, 1911, 98 per cent of the trains made their schedule and in February 97.60 per cent. In the period covered by the report the company operated 74,358 regular trains and carried more than 5,000,000 passengers. Practically all of the delays were caused by heavy traffic. Car failures, power off, overhead troubles and connections at junction points represent small items in the detention report.

By-laws of Railway Voluntary Relief Association Revised.—The constitution of the Columbus, Delaware & Marion Railway Voluntary Relief Association, adopted in 1907, has been revised. A. F. Elkins, auditor of the Columbus, Delaware & Marion Railway, Columbus, Ohio, was associated with A. L. Necreamer, who is now secretary of the Central Electric Railway Association, in writing and adopting the constitution of 1907 and Mr. Elkins was chairman of the committee on revision. The constitution in the beginning was, of necessity, elastic. Perhaps the most important changes are a reduction in dues from \$6.00 a year to \$4.00 a year, and an increase in the sick benefits from \$5.00 a week to \$6.00 a week. No restrictions whatever are placed on the officers or employees of the company.

Fruit Growing in Eastern Washington.—The Spokane & Inland Empire Railroad, Spokane, Wash., has issued an artistic pamphlet in which the orchard belt of Eastern Washington served by the company is illustrated and described. The booklet was prepared by Charles E. Flagg, publicity agent, under the guidance of Waldo G. Paine, traffic manager. It comprises 16 pages, 7 in. x 10 in., and a cover. The typography and presswork are especially fine. There are several full-page illustrations of fruit printed in natural colors, and at the top of each page of text is a picture of an orchard or a scenic view reproduced in colors. The ornaments used throughout the booklet are halftone reproductions of fruit blossoms. The text, which comprises about 3000 words, contains a description of the Spokane country and its tributary orchard sections. Separate pages are devoted to describing the packing methods, presenting statistics on apple production, describing the superior transportation facilities offered by the passenger and freight service of the Spokane & Inland Empire Railroad and to a full page four-color map in perspective of the Palouse orchard belt in Eastern Washington served by the company. This map was made by Poole Brothers, Chicago, Ill.

New Jersey Board Dismisses Complaint.—The Board of Public Utility Commissioners of New Jersey has dismissed the complaint of the Seventh Ward Improvement Association of Jersey City against the Public Service Railway in regard to service from the Pennsylvania Railroad ferry at Jersey City to Greenville. The complainant alleged that the company refused to issue transfers to passengers for Greenville who had, by mistake, boarded a car marked "Culver Avenue." The board found that the company operated a greater number of cars between the ferry and Culver Avenue than it did between the ferry and Greenville. The district beyond Culver Avenue is sparsely settled and the board considered that the issuing of transfers at Culver Avenue would tend to overcrowd short-line cars and discommode passengers on the short line. The right of passengers to transfer at Culver Avenue would not expedite the journey of passengers to Greenville, as such passengers would be obliged to wait at Culver Avenue for the Greenville car, which could be as conveniently taken at the ferry or at points between the ferry and Culver Avenue. The board expressed the opinion that the fact that persons by mistake boarded cars properly marked was not a good reason why they should be transferred, free, to other cars. It was the duty of the traveler to choose the proper car route to reach his destination. The company could not be held responsible for mistakes made by travelers.

Personal Mention

Mr. J. T. Walmsley has resigned as general storekeeper of the Metropolitan Street Railway, Kansas City, Mo.

Mr. J. S. Coleman has been elected president of the Asheville & East Tennessee Railroad, Asheville, N. C., to succeed Mr. John H. Carter.

Mr. A. E. Harvey has been appointed superintendent of way of the Metropolitan Street Railway, Kansas City, Mo., to succeed Mr. E. H. Packe, resigned.

Mr. Stanley Howland, who has been general manager of the Asheville & East Tennessee Railroad, Asheville, N. C., has also been elected vice-president of the company to succeed Mr. R. S. Howland.

Mr. E. E. Johnson has been appointed general storekeeper of the Metropolitan Street Railway, Kansas City, Mo., to succeed Mr. J. T. Walmsley, resigned. Mr. Johnson was formerly receiver of cash of the Metropolitan Street Railway.

Mr. W. R. Putnam, formerly superintendent of the Menominee & Marinette Light & Traction Company, Marinette, Wis., has been appointed general manager of the Dakota Power Company, Rapid City, S. D., with which he became connected in the capacity of electrical engineer.

Mr. Horace G. Burt, formerly president of the Union Pacific Railroad, has been selected by the electrification committee of the Chicago Association of Commerce as chief engineer to direct the investigation to be conducted by the committee in regard to the necessity for the electrification of the railroads into Chicago.

Mr. J. H. Pallister, chief engineer of the power station of the Lincoln (Neb.) Traction Company, will hereafter perform the duties of the position of electrical engineer of the company, relinquished by Mr. N. A. Remmish, who, as noted in the *ELECTRIC RAILWAY JOURNAL* of April 8, 1911, has become general manager of the municipal electric lighting and pumping station at Alliance, Neb.

Mr. E. A. Stobart has been appointed general manager of the Mineral Wells (Tex.) Electric System to succeed Mr. L. M. Levinson, who, as announced in the *ELECTRIC RAILWAY JOURNAL* of April 15, 1911, has accepted the position of general superintendent of the syrup and sugar plantation of Pennick & Ford, Ltd., New Orleans, La. Mr. Stobart was formerly connected with the A. R. Nutt Company, Ft. Worth, Tex.

Mr. F. W. Bacon has been elected vice-president of the Lexington & Interurban Railways, Lexington, Ky., in charge of operation. He was formerly general manager of the New Jersey & Hudson River Railway & Ferry Company, Edgewater, N. J., with which and its predecessors he was connected for ten years. A biography and portrait of Mr. Bacon were published in the *ELECTRIC RAILWAY JOURNAL* of Jan. 7, 1911. Mr. Bacon has entered upon the performance of his new duties.

Mr. Morrison R. Lash has been appointed electrical engineer of the Union Electric Company, Dubuque, Iowa, to succeed Mr. W. N. Keiser, resigned, who has become connected with the G. M. Parsons Company, Newton, Iowa, as noted in the *ELECTRIC RAILWAY JOURNAL* of April 15, 1911. Mr. Lash was graduated from Rose Polytechnic Institute at Terre Haute, Ind., and after graduation engaged for several years in the electrical contracting business at Indianapolis, Ind. Subsequently he was connected with the sales department of the Western Electric Company for ten years.

Mr. Tudor Jones, whose appointment as traveling auditor of the Indiana Union Traction Company, Anderson, Ind., was noted in the *ELECTRIC RAILWAY JOURNAL* of April 8, 1911, was born at Lougher, Wales, on Oct. 25, 1885, and came to America in August, 1898. After completing his school course Mr. Jones was employed by the Indiana Union Company as ticket agent at Anderson, serving in that capacity from September, 1905, to March, 1906. He was then transferred to the accounting department, where he has since been continuously employed. He is thoroughly familiar with electric railway accounting, having served in the various capacities in the accounting department from clerk to general bookkeeper.

Mr. M. C. Ludlum has been appointed general manager of the Riverside (N. J.) Traction Company. Mr. Ludlum was graduated from Rutgers College in 1890. His first railway experience was gained with the Fourth Avenue Railroad, New York, N. Y., in storage battery work. He next became connected with the Camden (N. J.) Horse Railroad, which later was taken over by the Camden & Suburban Railway and is now part of the Public Service Railway of New Jersey. Mr. Ludlum next entered the employ of the Westinghouse Electric & Manufacturing Company, which he served for two years in the factory and on the road in railway equipment work. Subsequently he was with the Consolidated Traction Company, Newark, N. J., and the North Jersey Street Railway, now part of the Public Service Railway, for seven years as master mechanic and division superintendent. From 1900 to 1904 Mr. Ludlum was general manager of the Camden, Gloucester & Woodbury Railway. In 1905 he became connected with the Little Rock Railway & Electric Company, Little Rock, Ark., as general superintendent for a year. For the last four years Mr. Ludlum has been in business in Philadelphia.

OBITUARY

Edward W. Snowden, of the Union Spring & Manufacturing Company, Pittsburgh, Pa., is dead.

Charles W. Goodyear, prominent in business circles in Buffalo, N. Y., is dead. Mr. Goodyear was a director of the General Railway Signal Company and the Netherlands Tramways.

Edward A. Moseley, secretary of the Interstate Commerce Commission, died at his residence in Washington, D. C., on April 18, 1911, of heart disease. Mr. Moseley was sixty-five years old and had been secretary of the commission since its organization twenty-four years ago.

L. J. Forget, a director of the Montreal Light, Heat & Power Company and president for many years of the Montreal Street Railway until control was acquired last November by the Robert-McConnell interests, died at Nice, France, on April 7, 1911. Mr. Forget was born at Terrebonne, Que., on March 11, 1853, and was a prominent stockbroker at Montreal for twenty-five years, having founded the firm of L. J. Forget & Company in Montreal in 1876.

The tests of wheel guards and fenders by the Board of Public Improvements in St. Louis begun last week have been continued during this week. On April 11 the combined fender and wheel guard of B. L. Ingram was tested, but as the inventor had not been fully informed as to the height at which his fender was hung above the rail, the board agreed to allow him another trial. On April 12-13 the Seeley automatic wheel guard was tested. The trial showed this device was fairly efficient. On April 1 tests were made of the Doss fender. This device was very efficient in taking up dummies in the three tests indicated for fenders. A few additional entries have been received by the board during the current week. No official records of the performance of the individual fenders have been given out by the board and none will be available until after the tests have been concluded.

The following announcement was made prior to April 1, 1911, in regard to the sale of tickets by the consolidated electric railway companies at Los Angeles and their use over the consolidated lines: "Ticket exchange between the Los Angeles Pacific and Los Angeles and Redondo at Redondo, enabling a person having tickets on one line to use it on the other if desired. In future all tickets will bear the name of the Pacific Electric, rather than that of a constituent line of the system. Interchange of tickets between the Los Angeles and Redondo and the San Pedro narrow gage as far south as Hermosillo, which is on both roads. Sale for cash and on advertising account of books containing \$10 worth of 5-cent tickets for \$7.50, the tickets to be good on any line of the Pacific Electric Railway for paying a one-way fare. They are for use on interurban cars and when offered on cars in the city, two tickets will be taken up by the conductors, rather than the usual 5-cent fare."

Construction News

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

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

RECENT INCORPORATIONS

***Redwood City (Cal.) Railway**.—Application for a charter has been made in California by this company to build an electric railway from a point half a mile south of the county courthouse northeasterly to a point on San Francisco Bay, a distance of 5 miles. Capital stock, \$125,000. Directors: George A. Merrill, George W. Lovie, V. V. Greco, W. J. Drew and C. F. Morrison, all of Redwood.

Willimantic & Stafford Street Railway, Stafford Springs, Conn.—Incorporated in Connecticut to build an electric railway to connect Willimantic, Mansfield Center, South Willington, Spring Hill, Storrs and Stafford Springs. Capital stock, \$1,000,000. Incorporators: G. J. Kirby, Mansfield Center; L. J. Storrs, Mansfield; A. G. Gurley, C. S. Beach and Robert Mitchell. [E. R. J., Jan. 28, '11.]

Atlanta & Northwestern Railway, Atlanta, Ga.—Incorporated in Georgia to build a 47-mile electric railway to connect Cummins and Creighton, via Roswell and Alpharetta. Nearly all the rights-of-way have been secured. Officers: J. M. Ponder, Forsythe, president; J. R. Murphy, Atlanta, vice-president, and R. P. Jones, Atlanta, secretary. [E. R. J., April 2, '10.]

***Arkansas City, Wellington & Northwestern Railway, Wellington, Kan.**—Incorporated in Kansas to build a 100-mile electric railway to connect Arkansas City, Wellington, Conway Springs and Hutchinson. Capital stock, \$300,000. George Hunter, Wellington, president; W. H. Burkes, Wellington, secretary, and Roy Hitchcock, treasurer.

Dartmouth & Cow Bay Electric Railway, Dartmouth, N. S.—Chartered in Nova Scotia by this company to build an electric railway in Dartmouth and extend it to Cow Bay. Incorporators: Arthur C. Pyke, Halifax, and Robert Stanford. [E. R. J., April 8, '11.]

***Beaver Northern Street Railway, Beaver, Pa.**—Application for a charter will be made by this company in Pennsylvania to build an electric railway in the northern part of Beaver. Incorporators: J. S. Herron, F. J. Lobert, J. F. Hayes, E. A. Morton and Charles Pederson.

***Southern Traction Company, Dallas, Tex.**—Incorporated in Texas to build a 135-mile electric railway from Dallas to Waco, with a branch from Waxahachie to Corsicana via Ennis. J. F. Strickland, Dallas, president.

***Tyler Traction Company, Clarksburg, W. Va.**—Chartered in West Virginia to build an electric railway to connect Sistersville, Middlebourne and Shirley, and also in Tyler County. Capital stock, authorized, \$5,000,000. Incorporators: J. T. Ingraham, Pursley, W. Va.; W. J. Neuenchwander, E. A. Durham, A. C. Jackson, Joseph McKay, Henry W. McCoy, S. G. Messer and John Kincaid, all of Sistersville, W. Va.

FRANCHISES

***Burlingame, Cal.**—Ansel M. Easton has asked the Board of Trustees for a franchise to build an electric railway through Easton, which was recently annexed to Burlingame.

***Jackson, Cal.**—C. V. Vicini, Jackson; V. Brignola and C. E. Jarvis, Sutter Creek, have asked the Board of Supervisors for a franchise to build a 50-mile electric railway to connect Jackson, Sacramento, Stockton and other towns in Amador County.

Stockton, Cal.—The Tidewater & Southern Railroad, Stockton, has received a franchise from the Council to build its tracks on the French Camp road for about 1½ miles. This line will connect Stockton, Atlanta, French Camp, Escalon, Modesto, Cens and Turlock. K. C. Brueck, Stockton, president. [E. R. J., April 1, '11.]

Augusta, Ga.—The Augusta Railway & Electric Company, Augusta, has asked the City Council for a franchise to extend its lines in Augusta.

Chesterton, Ind.—The Calumet United Railway, Indianapolis, has received a franchise from the Town Board to

build its tracks over certain streets in Chesterton and extend it to East Chicago. This is part of a plan to build an electric railway to connect Michigan City, Chesterton, Porter, Cary, Aetna, East Chicago, Whiting and Hammond. James A. Slattery, Philadelphia, is interested. [E. R. J., Jan. 21, '11.]

South Bend, Ind.—The South Bend & Logansport Traction Company has received a six months' extension of time on its franchise to build its tracks to Plymouth.

***Paducah, Ky.**—James Campbell, Jr., and Charles C. Baldwin, Centralia, have asked the Fiscal Court for a franchise to build an electric railway outside the city limits of Paducah. This is part of a plan to build an electric railway from Paducah to Lone Oak.

Chattanooga, Tenn.—C. E. James and associates have received a franchise from the General Council to build five lines of track covering a large part of Chattanooga. [E. R. J., Feb. 25, '11.]

Knoxville, Tenn.—The Knoxville Railway & Light Company has asked the Council for a franchise to double-track Central Street from Broadway to the city limits.

Memphis, Tenn.—The Memphis & Rugby Railway, Memphis, has received a franchise from the County Court to build its tracks in Memphis northward from Chelsea and Paine Avenues, along the Hindman Ferry Road across the Wolf River. Luke Seawell, Charlotte, is interested. [E. R. J., March 4, '11.]

Murfreesboro, Tenn.—J. E. Manson, Murfreesboro, advises that the Tennessee Rapid Transit Company, promoters of this proposed electric railway to connect Nashville, Murfreesboro and Nolensville, require that the country through which it runs shall take stock to the amount of \$50,000 and give right-of-way. [E. R. J., April 1, '11.]

***Brownsville, Tex.**—Claude Pollard, representing the Brownsville & Gulf Railroad, Brownsville, has asked the City Council for a franchise to operate a line over the right-of-way controlled by this company to the new International Bridge in Brownsville.

Dallas, Tex.—George W. Works, Dallas, and associates, have asked the City Commission that the franchise received by them be transferred to the Dallas Street Railway for building an electric railway on Ross Avenue and Henderson Avenue, to the city limits. [E. R. J., March 4, '11.]

Clarksburg, W. Va.—The Fairmont & Clarksburg Traction Company, Fairmont, will ask the City Council for a franchise to extend its tracks in Clarksburg to the Fair and Racing Grounds, a distance of 5 miles.

Altoona, Wis.—The Chippewa Valley Railway, Light & Power Company has received a franchise from the City Council to build its tracks through Altoona.

Waukesha, Wis.—The Milwaukee Western Electric Railway, Milwaukee, has received a franchise from the City Council to build its tracks in Waukesha.

TRACK AND ROADWAY

Phoenix (Ariz.) Railway.—This company has completed and placed in operation its 10-mile extension between Phoenix and Glendale.

Couteau Power Company, Vancouver, B. C.—This company advises that the building of this proposed 20-mile electric railway between Vernon and Lumby is in the preliminary stage. The company's power house will be located at Shuwap Falls and it will furnish power for lighting purposes. Albert E. Ashcroft, Vernon, B. C., is interested. [E. R. J., April 1, '11.]

Hanford & Summit Lake Railway, Hanford, Cal.—This company will extend its line from Hardwick to Jamison, a distance of 26 miles. Work will begin within a month. The line will connect at Mendota with the Southern Pacific Company. John B. Rogers, 52 Eleventh Street, San Francisco, chief engineer. [E. R. J., Sept. 10, '10.]

Pacific Electric Railway, Los Angeles, Cal.—This company has completed and placed in operation its extension from Riverside north to the San Bernardino County line. This extension will eventually connect Riverside and San Bernardino. The company will double-track its California Street line at once.

San Francisco, Oakland & San José Railway, Oakland, Cal.—This company has placed contracts for building 10 miles of track with 70-lb. A. S. C. E. rails.

Indianapolis, Nashville & Southern Traction Company, Indianapolis, Ind.—This company advises that work will be begun within a few weeks on its proposed 108-mile electric railway to connect Indianapolis, Trafalgar, Nashville, Bloomington, Bedford, Mitchell, Orleans and French Lick. Officers: J. A. Johnson, 812 I. O. O. F. Building, Indianapolis, president; J. A. Shaffer, vice-president and electrical engineer; Thomas Wakeland, 812 I. O. O. F. Building, Indianapolis, secretary, and R. J. Espy, treasurer. [E. R. J., Jan. 28, '11.]

Tri-City Railway, Davenport, Ia.—This company is now building about 5 miles of new track.

Iowa Light & Traction Company, Eldora, Ia.—Plans are being considered by this company to begin work shortly between Tama and Waterloo on its extension from Oskaloosa to Waterloo.

***Keokuk, Ia.**—A company is being organized to build an electric railway to connect Quincy, Carthage, Navoo, Hamilton, Niota, Powellson and Warsaw, Ill. Keokuk will be the power center and terminal point. Henry E. Dayton, Quincy, president, and Fred Swann, Navoo, secretary.

Osceola & Southwestern Railway, Osceola, Ia.—This company advises that preliminary arrangements are being made to begin construction about June 1 on its 20-mile electric railway to connect Osceola, Lacell and Hopeville. The company is asking financial aid of the towns through which it will operate. Capital stock authorized, \$100,000. Bonds authorized, \$160,000. The power house and repair shops will be located at Osceola. Directors: John E. Barnard, James H. Jamison, R. M. Lewis, P. L. Fowler and Henry Stevens, all of Osceola. [E. R. J., April 15, '11.]

***Arkansas City & Wellington Northwestern Railway, Wellington, Kan.**—This company has awarded a contract to Fremont Hill, Wichita, for surveying the route of this line, which will extend from Arkansas City northwest to Conway Springs via Wellington. George H. Hunter, president.

Louisville, Lincoln Farm & Mammoth Cave Traction Company, Glasgow, Ky.—Plans are being made by this company to secure rights-of-way and extend its proposed line to Gallatin, Tenn. This is part of a plan to connect Glasgow, Hodgenville, Lincoln Farm, Mammoth Cave and Louisville. J. M. Richardson, Glasgow, president. [E. R. J., Nov. 26, '10.]

***Shelbyville, Ky.**—It is reported that a syndicate of eastern capitalists contemplate the construction of a line between Shelbyville and Frankfort.

Alexandria (La.) Electric Railways.—This company will place contracts during the next three months to build 1 mile of new track in Alexandria.

Winnipeg (Man.) Electric Railway.—Plans are being made by this company to extend its railway to Sanford, a distance of 23 miles.

Frederick (Md.) Railroad.—Contracts will be placed during the next two weeks by this company to build a 3-mile extension, including a loop in the southern section of Frederick.

Boston (Mass.) Elevated Railway.—This company has placed orders for 600 tons of Bessemer rails with the Pennsylvania Steel Company. It has awarded a contract to the Bethlehem Steel Company for 1200 tons of open-hearth rails.

Shelburne Falls & Colerain Street Railway, Shelburne Falls, Mass.—This company will soon award contract for extending its line from Colerain, Mass., to Wilmington, Vt. Frank L. Reed, Shelburne Falls, purchasing agent.

***Pentwater, Mich.**—Plans are being made to build a 20-mile electric railway between Pentwater and Walkerville via Crystal Valley. The requirements of the capitalists who are to build and equip this railway by April 1, 1912, are for a bonus fund of \$50,000 along the line.

Sauk Rapids, Mich.—The Commercial Club, of Sauk Rapids, is considering plans to build an electric railway from Sauk Rapids to a paper mill.

Mankato (Minn.) Electric Traction Company.—H. E. Hance, general manager of this company, announces that J. Devereaux O'Reilly, of New Orleans, has just completed surveys for an extension of its line which this company proposes to build from Mankato to St. Peter.

Mnneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—Work will soon be begun by this company on a 30-mile extension from Northfield to Owatonna.

Granite City Railway, St. Cloud, Minn.—This company expects to build soon a mile of new track in St. Cloud. All material is purchased and in hand.

***Ellisville, Miss.**—Guy M. Walker, A. M. Hughes and R. A. Pratt, New York, and Z. Stevens, Hattiesburg, are considering plans to build a 28-mile electric railway to connect Hattiesburg and Laurel via Ellisville, Moselle and Eastabuchie.

Gulfport & Mississippi Coast Traction Company, Gulfport, Miss.—This company, in co-operation with S. A. Tomlinson, of Gulfport, will soon build an extension into North Gulfport.

Vicksburg (Miss.) Traction Company.—This company is said to be considering plans to extend its line to Walters and to the National Cemetery, several miles from the city limits of Vicksburg.

Moncton Tramways, Electricity & Gas Company, Ltd., Moncton, N. B.—This company advises that work will be resumed this summer on its 5½-mile electric railway in Moncton. The company's power plant and repair shops will be located in Moncton and power will be furnished for lighting purposes. Capital stock authorized, \$1,500,000. Bonds authorized, \$500,000. Officers: J. A. Henderson, Main Street, Moncton, president; F. W. Sumner, vice-president; J. P. Chalmers, Moncton, secretary and treasurer; O. P. Boggs, general manager, and William Ritchie, electrical engineer. [E. R. J., April 8, '11.]

Little Falls & Johnstown Railroad, Little Falls, N. Y.—This company advises that work will be begun within three months on its 28-mile double-track line between Little Falls and Johnstown via St. Johnsville. This is the last link in the trans-State system of electric railways. Capital stock authorized, \$300,000; issued, \$30,000. Officers: J. L. Hees, 103 Park Avenue, New York, president; J. J. Gilbert, Little Falls, vice-president; A. J. Baker, Johnstown, secretary and treasurer; Anson Geimer, Johnstown, purchasing agent, and Frederick Hone, New York, chief engineer. [E. R. J., April 15, '11.]

New York, New Haven & Hartford Railroad, New York, N. Y.—It is reported that this company will electrify an 18-mile branch between Springfield and Tariffville in the near future.

Northern Ohio Traction & Light Company, Akron, Ohio.—It is said that a line will be built between Ashland and Cuyahoga Falls, connecting the lines of this company and the Cleveland, Southwestern & Columbus Railway, Cleveland. A contract has been awarded to Frank Wise, Macedonia, Ohio, to build 10 miles of track from Chittentons toward Cleveland to provide a double track. The entire line between Akron and Cleveland is to be double tracked as soon as possible.

Alliance-Akron Railroad, Alliance, Ohio.—The general contract to build and equip this railway has been awarded to Marasco & Serriani, Grove City. The line will be 20 miles long and will connect Alliance and Akron via Tallmadge, Brimfield and Rootstown. Charles Keith, Alliance, president. [E. R. J., Dec. 31, '10.]

Cleveland-Alliance & Mahoning Valley Railway, Cleveland, Ohio.—A mortgage for \$2,000,000, covering this property, has been filed for record in the Summit County Court at Akron, Ohio, by this company. It is drawn in favor of the United Banking & Savings Company, of Cleveland, Ohio. [E. R. J., April 8, '11.]

Bartlesville (Okla.) Interurban Railway.—This company expects to purchase 15 miles No. 6 wire with other line material for three-phase extension from Bartlesville to Dewey. It is also paving Fourth Street for eight blocks with brick cement base. H. Askin, general manager.

Oklahoma, Kansas & Missouri Interurban Railway, Miami, Okla.—M. C. Harper, general manager of this company, announces that work will be begun soon on the extension of the line from Hattenville, Okla., to Galena, Kan., to connect at Galena with the Southwest Missouri Railroad; also connecting with the Joplin & Pittsburg Interurban Railway at Columbus, Kan. The company is now ready to consider bids for the grading between Hattenville and Lincolnville, a distance of 6 miles.

Oklahoma Interurban Traction Company, Oklahoma City, Okla.—L. E. Patterson, president of the Oklahoma Interurban Traction Company, wrote under date of April 15, 1911: "The Oklahoma City Traction Company has recently purchased the operating lines, franchises and all other property of the Oklahoma Interurban Traction Company and has issued \$1,000,000 of first mortgage bonds, of which the St. Louis Union Trust Company, St. Louis, Mo., is trustee."

***Tishomingo, Okla.**—Surveys are being made between Tishomingo and the Devil's Den for an electric railway. It is expected to extend it to Denison, Tex., to connect there with the electric railway to Dallas. Power for this line will be generated at Tishomingo. It will be financed by local business men.

***Pacific Western Company, Grant's Pass, Ore.**—This company is reported to have been organized to build a 30-mile electric railway from Grant's Pass to the Applegate and then to William's Valley, with extensions to Josephine Caves. Among those interested are: A. D. Bowen, H. L. Chapin, J. W. Hofferlin and J. G. Riggs.

***Middletown, Pa.**—Fred Alleman, Summit, N. J., is planning to build an electric railway between Middletown and Elizabethtown, Pa. Franchises will soon be asked for in the towns along the route.

Johnson City (Tenn.) Traction Company.—This company has placed contracts to build a 1½-mile extension from Johnson City to the State Normal School.

***Southern Traction Company, Dallas, Tex.**—This company is reported organized to build an interurban electric railway from Dallas via Waxahachie, Hillsboro and Italy, to Waco, with a branch to Corsicana via Ennis, altogether about 135 miles. The contract for the engineering has been let to the Fred A. Jones Company and surveys will begin immediately. Officers: J. F. Strickland, Dallas, president; Osce Goodwin, Dallas, vice-president; T. A. Ferris, Waxahachie, treasurer; James P. Griffin, Dallas, secretary; M. B. Templeton, Dallas, general counsel.

Nooksack Valley Traction Company, Bellingham, Wash.—It is reported that this company is now controlled by Sir Edward Tennant, M. R. Pryor and F. R. S. Balfour, leading shareholders in Balfour, Guthrie & Company, London. This railway will connect Bellingham, Sumas, Ferndale, Lynden and Blaine. [E. R. J., March 18, '11.]

Yakima Valley Transportation Company, North Yakima, Wash.—This company is considering plans for building a 9-mile extension from North Yakima through the Selah Valley to Wenas. Rights-of-way have been secured.

Springdale & Long Lake Railroad, Springdale, Wash.—The contract for 30,000 ties has been awarded by this company to the Phoenix Mill Company. The final surveys have been completed. The line is being built by the Washington Water Power Company, which will also erect a new power plant. D. L. Huntington, Spokane, president. [E. R. J., March 4, '11.]

Milwaukee Northern Electric Railway, Cedarburg, Wis.—This company will build soon a second track between Milwaukee and Thiensville. It is reported that the company will build an extension in the fall from Sheboygan to West Bend.

Lake Geneva & Lake Delavan Electric Company, Delavan, Wis.—This company has filed for record in Elkhorn a mortgage in favor of the Central Trust Company of Chicago, as trustee, to secure an issue of \$200,000 of bonds. The company has projected an electric railway from Walworth to Delavan. Arthur T. Brown, Delavan, president. [E. R. J., March 4, '11.]

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—This company expects to begin construction at once on the extension of its Eleventh Avenue line in Mil-

waukee for the crosstown route over the Seventh Street viaduct.

SHOPS AND BUILDINGS

Francisco, Vallejo & Napa Valley Railroad, Napa, Cal.—This company will purchase during the next ten weeks one 300-ton lathe wheel press.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—This company, it is said, will award a contract at once for building a freight depot and passenger station. The structure will be 84 ft. x 42 ft., and will be located near the company's power plant in Concord.

Indiana Union Traction Company, Anderson, Ind.—This company has moved its local terminal station from the Masonic Temple to the west half of the basement of the Union Building, on Meridan Street, in Anderson.

Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind.—This company is considering plans for building a new freight depot and passenger station in Ft. Wayne. Arthur H. Mohr, secretary.

Boston (Mass.) Elevated Railroad.—The carhouse of this company, at the corner of Beach Street and Washington Street, Roslindale, was partly destroyed by fire on April 14. The building was formerly owned by the Old Colony Street Railway, and was used by the elevated for the storage of cars and snow plows. Some of the cars are said to be damaged. The loss is estimated to be about \$5,000.

Fairmont & Clarksburg Traction Company, Fairmont, W. Va.—This company has moved its waiting room and office rooms into new quarters in the new Watson Building, on Jefferson Street, in Fairmont.

POWER HOUSES AND SUBSTATIONS

Phoenix (Ariz.) Railway.—This company has completed and opened for service its new substation at Phoenix. It contains a 100-kw Allis-Chalmers motor-generator set.

Jacksonville (Fla.) Electric Company.—Work has been begun by the Stone & Webster Engineering Corporation, Boston, on a new power plant for this company on Riverside Avenue in Jacksonville. The structure will be 133 ft. x 98 ft. and 58 ft. in height and will contain a basement and one story. The construction will be of brick, concrete and corrugated galvanized iron, while the entire framework will be of steel. The power house will be equipped with two 57-in. barometric condensers, three 600-hp boilers and two 1200-kw generators, besides various feed and vacuum pumps. A 200-ft. concrete stack will be built.

Chicago, Ottawa & Peoria Railway, La Salle, Ill.—Contracts will be placed during the next three weeks by this company for building three new substations, one at Morris, one at Minooka and one at Joliet. The approximate cost of each structure will be about \$5,000. W. A. Martin, Quincy, purchasing agent.

Cedar Rapids & Iowa City Railway & Light Company, Cedar Rapids, Ia.—This company expects to purchase a 3000-kw or 2000-kw turbine and an 800-kw generator to be connected direct to a compound engine which is to be run condensing. The company also expects to purchase a 500-kw, 60-cycle, two-phase rotary converter.

Bartlesville (Okla.) Interurban Railway.—A contract will be placed during the next three weeks by this company to build a new boiler room at its power plant in Bartlesville. The company will purchase a 500-kw turbine set, one 400-hp water tube boiler and 50-kw transformers. H. Askin, Bartlesville, general manager.

Mt. Hood Railway & Power Company, Portland, Ore.—This company has purchased a site on Fifth Street Road, near the garrison in Vancouver, on which it will build a substation. The company will expend about \$25,000 on this substation and distribution system in Vancouver.

Grays Harbor Railway, Light & Power Company, Aberdeen, Wash.—This company has purchased from the General Electric Company, a 1000-kw Curtis turbo-generator set as auxiliary equipment.

Union Utilities Company, Morgantown, W. Va.—This company expects to purchase soon three gas compressors and three motors, 2200-volt, 60-cycle, three-phase, for its power plant in Morgantown.

Manufactures & Supplies

ROLLING STOCK

San Juan Light & Transit Company, San Juan, Porto Rico, will purchase, through the Montreal Engineering Company, Ltd., 100 20-ton meter-gage freight cars.

Rockland, South Thomaston & St. George Railway, Rockland, Maine, may purchase a second-hand snow plow and a second-hand combination passenger and freight car.

Iowa City (Ia.) Electric Railway has ordered four single-truck cars mounted on McGuire-Cummings A-1 suspension trucks from the McGuire-Cummings Manufacturing Company.

Owens River Valley Electric Railway, Bishop, Cal., which is building a 4½-mile line between Bishop and Laws, Cal., is considering the purchase of several cars. H. N. Beard, Bishop, general manager.

Cincinnati (Ohio) Traction Company, which was noted in the *ELECTRIC RAILWAY JOURNAL* of March 25, 1911, to be in the market for fifty cars, has placed the order for these cars with the Cincinnati Car Company.

Interborough Rapid Transit Company, New York, N. Y., lost four elevated motor cars and three trailers and suffered damage to ten other elevated cars in a fire on April 13 which destroyed the grand stand at the Polo Grounds. The loss is about \$45,000.

Southern Pacific Company, San Francisco, Cal., it is reported, will increase its order for 125 all-steel cars, placed with the American Car & Foundry Company, to 200 or more. About twenty-five cars of the original order have been delivered at Oakland, Cal., and other shipments are being made from the St. Charles (Mo.) plant daily.

Birmingham Railway, Light & Power Company, Birmingham, Ala., has ordered ten more cars of the prepayment type from the McGuire-Cummings Manufacturing Company. This order supplements the one for nine cars placed with the McGuire-Cummings Manufacturing Company, as mentioned in the *ELECTRIC RAILWAY JOURNAL* of Sept. 3, 1910.

Otsego & Herkimer Railroad, Hartwick, N. Y., which has ordered one baggage car and also a combination passenger and baggage car from the Cincinnati Car Company, has specified the following details for the baggage car:

Length of body.....	50 ft.	Couplers	M.C.B.
Width over sills...8 ft. 4½ in.		Fenders	low pilot
Height from top of rail to sills	3 ft. 4 in.	Gongs	14 in.
Sill to trolley base...9 ft. 4 in.		Headlights	Crouse-Hinds
Body	wood	Motors	GE
Underframe	composite	Roofs	monitor
Bumpers	steel plate	Sanders	air
		Trucks	Taylor M.C.B.

For the passenger and baggage car the following specifications have been prepared:

Length of body....	53 ft. 3 in.	Fenders	loco. pilot
Over vestibule....	.64 ft. 9 in.	Gongs	14 in.
Width over sills...8 ft. 4½ in.		Hand brakes	Peacock
Height from top of rail to sills	3 ft. 4 in.	Heating system..	Peter Smith
Sill to trolley base...9 ft. 6 in.		Headlights	Crouse-Hinds
Body	wood	Motors	4-GE
Interior trim.....	mahogany	Roofs	monitor
Underframe	composite	Sanders	air
Bumpers	steel plate	Sash fixtures.....	Edwards
Car trimmings	bronze	Seats...Heywood Bros. & W.	
Curtain fixtures....	Forsyth	Seating material,	
Curtain material....	pantasote	plush and leather	
Destination signs	dash	Trolley retrievers.....	Earll
		Trucks	Taylor M.C.B.

TRADE NOTES

Hyatt Roller Bearing Company, Newark, N. J., has appointed Alexander Crawford purchasing agent of the company.

American Carbon & Battery Company, East St. Louis, Ill., has moved its executive offices to suite 700-2 La Salle Building, 509 Olive Street, St. Louis.

Massachusetts Chemical Company and Walpole Rubber Company, Walpole, Mass., will move their New York offices on May 1 to 80-82 Reade Street.

Charles T. Phillips, consulting electrical engineer, formerly in the Crocker Building, San Francisco, has opened offices in the Pacific Building, San Francisco.

McClintic-Marshall Construction Company, Pittsburgh, Pa., has opened a branch office in the Trussed Concrete Building, Detroit, Mich. R. B. Titsworth is in charge of the office.

Rodman Gilder has resigned as secretary of the Crocker-Wheeler Company, Ampere, N. J., to become associated with the brokerage house of Dick Brothers & Company, 30 Broad Street, New York.

Call Swith & Frog Company, Denver, Col., has been organized to manufacture track appliances. The plant will be located on West Eighth Avenue, Denver. R. A. Call is president of the company.

Perry Ventilator Corporation, New Bedford, Mass., has received a contract to supply the ventilators for the twenty-two cars for the Wilmington & Philadelphia Traction Company, Wilmington, Del., now being built by The J. G. Brill Company.

Carnegie Steel Company, Pittsburgh, Pa., has leased the fifth and sixth floors of the Frick Annex, and is connecting them with the Carnegie Building by two bridges across Relief Alley. This new space will give the company about fifty additional offices.

Cambria Steel Company, Johnstown, Pa., has appointed J. E. McLain sales agent of the Pittsburgh territory to succeed his father, William McLain, who has been connected with the company for twenty years. William McLain will remain with the Pittsburgh office in an advisory capacity.

McKean Motor Car Company, Omaha, Neb., which was noted in the *ELECTRIC RAILWAY JOURNAL* of March 4, 1911, as having received an order from the Oregon Railroad & Navigation Company for one 70-ft. motor car, states that it has received a duplicate order from this company for another car of the same type.

R. M. Campbell, previously connected with the Ohio Brass Company and the Peter Smith Heater Company, has become associated with W. L. Conwell in the recently organized Transportation Utilities Company. Mr. Campbell, who is well known throughout the East, will be located at the main office of the company, 30 Church Street, New York.

Western Electric Company, New York, N. Y., has issued a report which shows March sales to be 10 per cent larger than during the same month in 1910. For the first quarter of its fiscal year to April 1, 1911, the company has done 11 per cent more business than in the same period a year ago. For the full twelve months this would mean total sales of \$70,000,000, or an increase of about 15 per cent.

Electric Storage Battery Company, Philadelphia, Pa., has contracted with John G. Brown, Witherspoon Building, to design and construct a new reinforced concrete building. This addition to its present plant will be approximately 300 ft. x 115 ft., six stories high, with one-story triangular extension about 80 ft. x 120 ft. The demand for storage batteries of this company's manufacture has increased to such an extent that it has been necessary to provide additional manufacturing facilities. The construction of these buildings is to begin at once and they are to be completed during the fall.

Wheeler Condenser & Engineering Company, Carteret, N. J., has recently been awarded the contract to build five large surface condensing equipments. Three of these equipments will be for the Waterside No. 1 plant of the New York Edison Company and will consist of circulating hot-well and vacuum pumps, together with specially designed base condensers, to operate in connection with three 20,000-kw turbo-alternators. The other two condensing equipments will be for 10,000-kw turbines, with pumps and other auxiliaries, to be supplied for the new power station of the Minneapolis General Electric Company.

Electric Service Supplies Company, Philadelphia, Pa., will move on or about April 25, 1911, its Philadelphia office and warehouse from the present location at 1020-4 Filbert Street to Seventeenth Street and Cambria Street, North Philadelphia. The company's factory, formerly

located at Keokuk, Iowa, has been moved and will be part of the new factory. The company has recently adopted the catch phrase "The Complete Arrester" for the Garton-Daniels lightning arrester, as this device offers an easy path to ground for static charges or lightning, prevents surges and similar disturbances, and further provides positive means for interrupting the flow of line current following a lightning discharge to ground, all of which are deemed essential qualities of a satisfactory lightning arrester.

ADVERTISING LITERATURE

Hayes Track Appliance Company, Richmond, Ind., has issued a circular in which models of its two-piece motor-operated derrails are described and illustrated.

Lewis Thompson & Company, Philadelphia, Pa., have issued a reprint from the *American Lumberman* describing Laguna mahogany. The publication is profusely illustrated.

Wonham, Sanger & Bates, New York, N. Y., have printed a catalog describing the "C. H." special ampere-hour car meter and also containing the opinions of several users of the meters as to their accuracy and the saving in current consumption.

Indianapolis Brass Company, Indianapolis, Ind., has issued Catalog No. 8, which lists and illustrates several hundred different styles and sizes of trolley ears, splices, frogs, crossings and other devices which it manufactures. The catalog also contains several pages of tables and other valuable data.

Crocker-Wheeler Company, Ampere, N. J., has issued Bulletin No. 130, on "Small Direct-Current Generating Sets." These generating sets consist of Crocker-Wheeler generators, driven by Giles type "E" engines, which are manufactured by the United States Rapid Fire Gun & Power Company.

Allis-Chalmers Company, Milwaukee, Wis., has issued Bulletin No. 1079, on "Steam Turbine Units," which contains a description of the machines and several illustrations which show both details of construction and complete installations. The company has also issued Bulletin No. 1624, entitled "Centrifugal Pumps—Standard Single Stage."

General Electric Company, Schenectady, N. Y., has issued Bulletin No. 4799, which illustrates and describes in detail several types of revolving field alternators manufactured by the company. Both horizontal and vertical shaft alternators are illustrated. Another bulletin, No. 4820, issued by the company, supersedes its previous bulletin on curvedrawing ammeters and voltmeters.

Philip Carey Company, Cincinnati, Ohio, has issued descriptive Catalog No. 411. It contains descriptions and illustrations of the following coverings: Eighty-five per cent carbonate of magnesia and 85 per cent magnesia, standard asbestos molded, air cell and felt pipe coverings; for ammonia, brine, ice and cold water pipes; underground and exposed steam pipe insulation; train pipe coverings, steam and hydraulic packings; fireproof paints; linofelt and lith deadening and sheathing for buildings; flexible cement roofing; asbestos materials and roofing paints and cements.

The Ontario Railway & Municipal Board of Ontario, Canada, has granted the application of William Kerley, St. Thomas, Ont., to bring action against the London & Lake Erie Railway & Transportation Company, London, Ont., to prevent it from operating cars on Sunday. The company was incorporated by the Dominion government, but under Section 9 of the Railway Act of Canada it comes under the jurisdiction of the province as far as operating cars on Sunday is concerned. Nothing in the act, however, applies to any railway which forms part of a continuous route or system between two provinces or between a province and a foreign country, or between any of the ports on the Great Lakes and such continuous route or system so as to interfere with or affect through traffic, nor does it apply to the Governor in Council when he declares the railway to be exempt from the section. It was not contended that the London & Lake Erie Railway & Transportation Company had been declared exempt from the provisions of the act. The question to be decided is whether or not the railway forms part of a continuous route or system between the Province of Ontario and the United States.