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Economies in Substations

The isolated locations of many of the substations of interurban railways and the comparative simplicity of their operation tend to their being overlooked as possible sources of waste and inefficiency. A comparison of the power station output as measured at the high-tension bus and the substation output as measured at the direct-current feeder bus will show at a glance the combined efficiency of transmission and conversion. The efficiency of the ordinary interurban high-tension transmission line is about 90 per cent, so that the difference between this efficiency and the combined efficiency of transmission and conversion represents the substation losses, which include the losses in the transformers and rotaries. The largest single source of loss is the idle operation of rotaries. Like all other electrical machines, a rotary converter has certain constant losses whether it is running light or under load. A single overloaded rotary will have smaller losses than two underloaded machines, and yet the latter condition prevails in substations more often than the former. Frequently it would be possible to shut down an intermediate substation at times of light traffic and more than make up for the line losses due to the longer transmission of the trolley current from the adjoining substations. As illustrating what can be accomplished along these lines the West Jersey & Seashore Railroad increased the combined efficiency of transmission and conversion from 72.2 per cent in 1907 to 81.6 per cent in 1910 by careful supervision of substation operation. Equally good results probably could be obtained on many interurban roads. The saving is well worth attempting.

Outside Criticism

The desire which Burns expressed for a gift to see ourselves as others see us is repeated in the paper read by J. C. Schade at the meeting of the Central Electric Railway Association at Cedar Point, Ohio, this week. We agree with the author of this paper that if railway officials when traveling over other properties would make mental notes of the deficiencies which they see and afterward give the information to the officials responsible for the operation of the property it would be helpful. While the official is looking for defects on his neighbor's property he may also discover the beams in his own eye by observing good practice which he should adopt. Successful railway operators recognize this fact and plan trips for the chiefs of their departments. As an illustration, the superintendent of transportation of a large electric railway operating a combined city and interurban system having about 600 cars recently took his assistant for an inspection tour of the roads in several nearby states. They rode on the cars of many interurban companies and acquainted themselves

with the properties as best they could. Thus they obtained from the passenger's standpoint an idea of the operating conditions. On their return they frankly stated that they had seen many interesting operating features which their company might well adopt, yet their own road was in the lead with regard to some other things. When questioned as to the features which the inspection tour most firmly impressed upon their minds the travelers said that these were the sharp, unprotected curves and the lack of private right-of-way. Such inspection trips are most valuable whether they are made incognito or not. They give a much better opportunity for studying the actual operating conditions than does the platform of a special car.

The Strong-Arm Brigade

Foreign observers of our social customs have frequently remarked that there is a strong tendency when the ordinary crowd in America takes an outing for its fun to degenerate into rowdyism. They say that it would be practically impossible to duplicate in this country the festivities, for instance, of a Continental carnival without great chance that the more boisterous elements in the crowd would indulge in a roughness absent from such celebrations abroad. Whether this be true or not, it is undoubtedly a fact that there is a considerable number of men and boys of every city who seem to find enjoyment in maltreating inoffensive citizens when they can indulge in such practices without fear of the law. Of late years a favorite place for such hoodlumism in New York has been on the outgoing and returning electric cars or subway trains to pleasure resorts. No part of an outing on a pleasant Sunday afternoon has seemed to provide more pleasure to the average East Side tough than that during his return trip when he has played ball in the car or otherwise has annoyed or terrorized the other passengers to his heart's content. Last year the municipal authorities made a praiseworthy and effective effort to stop this practice. On the evenings of every pleasant Saturday and Sunday during the latter part of the summer the police gathered to the station house a number of those jubilant spirits who do not seem to be happy except when they are interfering with others. This year even more satisfactory progress has been made through the efforts of what is popularly known as the "strong-arm brigade." This consists of a detachment of plain-clothes men from the police force selected for their ability to control this kind of disorder. Assignments from this brigade are made to each railway line on which previous experience has shown that disturbance may be expected. Operating on the homeopathic principle of *similia similibus curantur*, these special policemen bat the batters, knock the knockers and punch the punchers until the erstwhile toughs are ready to accompany them to court. The municipal court judges are co-operating with the police in the effort to reduce the rowdyism by imposing jail sentences in most cases rather than fines. A fine is usually paid by a man's friends or family when he himself has not the money, but the inconvenience of a jail sentence of five or six days is not so easily transferred to others. Other cities which are suffering from this kind of disorder might find the same remedy efficacious.

LUNCHROOMS AND BARBER SHOPS IN CARHOUSES

One of the subjects discussed at a recent meeting of the committee on buildings and structures of the American Electric Railway Engineering Association was that of providing lunchrooms and barber shops in operating carhouses. The topic was considered by this committee in connection with carhouse design because the committee expects to submit plans of one or more typical carhouses, in which part of the space will be assigned to various employees' welfare features. Nevertheless, the interchange of experiences which took place at the meeting was of value in defining quite clearly the conditions under which such features as lunchrooms and barber shops might be made successful.

So far as the carhouse lunchrooms are concerned it seems advisable to establish them only in those carhouses which are in districts where there are no suitable eating places and where most of the men do not live within easy walking distance. The simplest method for a railway to carry out a project of this character is to furnish the culinary and table equipments and the light and heat, but to lease the operation of the lunchroom to a restaurant keeper who is kept under proper supervision. There is no valid reason why food in such a restaurant should be sold at cost. The enterprise ought to go out of business if it cannot exist on its own merits as a convenience for the men. As a rule, cost-price restaurants are practicable only on very prosperous roads. Even then a considerable proportion of the employees will probably consider the restaurant as being conducted principally as a scheme to keep them from entering saloons. If the restaurant privilege is leased for profit it is not uncommon for the company to apply the rentals or profits in some way for the direct benefit of those who patronize the lunchroom. This action would avoid any feeling that the management was trying to exploit its employees. The practice of the Metropolitan Street Railway Company in this respect is to pay the profits of the lunchrooms into a fund from which employees can borrow up to twice the sum of their weekly wages without interest. This plan was adopted to counteract the exactions of the loan sharks, into whose clutches some of the employees of the company had fallen. It was found that in certain cases these lenders were exacting rates of interest amounting to considerably more than 300 per cent per year for temporary loans.

The field for barber shops in carhouses is necessarily much more limited than that for restaurants. The costly equipment of a good barber shop makes its installation as a business venture justifiable in none but the very largest carhouses. Only a fraction of the lunchroom patrons will visit the barber, because a shave can be postponed far more readily than a meal. Some railways go even farther and maintain bootblacks and clothes-pressing facilities in combination with the barber shop, as is done by the Georgia Railway & Electric Company. A similar low-price valet service is also offered to the employees in the main offices of the Public Service Railway, Newark, N. J. The neat appearance of the employees secured in this way adds to their self-respect and must also prove a good asset to the electric railway that employs them, even if its value cannot be directly calculated in dollars and cents.

HEIGHT OF CAR STEPS

Perhaps no single detail of electric railway car construction affects the comfort, convenience and safety of passengers to such an extent as the dimensions of the platform steps. These dimensions in general are controlled by the dimensions of other parts of the car in no way related to the steps or platforms. In double-truck cars it is necessary to raise the floor high enough to clear the wheels and the wheels must be large enough in diameter to provide clearance for the motors. The size and shape of the principal members of the body underframing and the type of trucks used are other factors determining the height of the car floor. To provide a proper foothold, the step has to be a certain width, and the safety and comfort of passengers will not allow the platform to be notched greatly or to be materially reduced in width. At the same time the steps must not project beyond the side of the car. These limiting conditions permit the use of only one side step in most city cars, so that it is necessary to divide the total rise from pavement to car floor into three parts. Some cars have a high first step and shorter rises to the platform floor and to the car floor. In others the total rise is divided into three steps of more nearly equal heights. The exact dimensions of the steps are arrived at by a process of arbitrary division rather than by selecting a uniform and convenient height and multiplying it by three to get the height of the car floor.

In 1908 the committee on standards of the Engineering Association recommended as standard certain heights of car steps based on a height of car floor of 41 in. These were adopted by the association, but they have not been closely followed in cars built since that time. The investigation of the practice of member companies which was made by this committee before submitting its report disclosed very wide variations in the dimensions used. About the same time the Ontario Railway & Municipal Board began an investigation of a similar nature which a year later resulted in the issue of an order limiting the height of car floors in Toronto and also fixing the maximum and minimum heights of the first step for different types of cars. The Public Service Commission of the First District of New York has recently begun a series of hearings on a proposed order fixing the maximum heights of car steps for all the surface lines in New York City. Several complaints have been made to the commission regarding steps, and its engineers have found that the height of the first step on cars operated in the city varies from 12 in. to nearly 20 in. These were about the limits found by the committee on standards of the Engineering Association when it investigated the practice of companies all over the country three years ago.

The Engineering Association standard heights of steps are respectively 17 in., 14 in. and 10 in., which gives a total height of floor from top of rail of 41 in. The Ontario Railway & Municipal Board fixes the maximum height of car floor at 40 in. and for closed double-truck cars requires that the first step shall be between 14 in. and 16 in. high. The Public Service Commission proposes maximum heights for the three steps of 15¼ in., 13¼ in. and 11½ in. respectively, making a total height of car floor of 40 in.

The greatest inconvenience and even danger to passengers is caused by a first step of excessive height. With the present fashions in women's skirts, it is an acrobatic feat, requiring both strength and agility, for a woman to ascend a step 17 in. high. This is very nearly the height of the seat of an ordinary chair. The height is measured from the top of the rail, and where the tracks are laid in unpaved streets or where the pavement has a sharp crown the surface of the street on which the intending passenger is standing may be 20 in. or more below the tread of the first step. A height of 15 in. is about the maximum for comfort, and unquestionably a low step which is easily ascended and descended accelerates boarding and alighting and hence has a positive value from an operating standpoint as well as a negative value from the standpoint of accident prevention.

When it is not possible to reduce the height of the car floor below 40 in. by using maximum traction trucks or wheels of small diameter the only other alternative to obtain a low first step is to drop the whole platform floor and thereby increase the height of the third step into the car. The step from the platform floor to the car floor is ascended under the most favorable conditions, yet in practically every type of car it is the lowest of the three. Ordinarily its height is determined by the depth of the body end sill, which varies from 5 in. to 10 in. By inserting filling pieces between the bottom of the end sill and the top of the platform sills the platform floor could easily be lowered from 1 in. to 3 in. and the height of the first step reduced correspondingly. There should be no serious objection to a sill step 11 in. or even 12 in. high, especially on prepayment cars where every passenger must stop for an instant on the platform and pay his fare before ascending into the car. The narrower entrances and exits on prepayment cars provide convenient hand holds when ascending or descending the step from the platform to the car floor, so that the danger of stumbling or falling would be little or no greater with a rise of 10 in. or 12 in. than with a rise of 6 in. to 8 in. One possible objection to lowering the platform slightly would be the reduction of clearance between the platform sills and the apron of the wheel guard. This is of minor importance, however, as compared with the advantages of reducing the height of the first step. Another difficulty might be encountered in attaching the hand-brake chain to the equalizing lever pull rod which must be made to pass over the motors on the truck.

While it is very desirable that the heights of car steps should be standardized as far as possible and kept within certain limits conducive to safety and convenience of passengers, the cost of rebuilding old cars solely to make them conform to such standards usually would be so great as to be unwarranted. Standardization in matters of this kind should be a slow process, beginning with all new cars built and carried out gradually on old equipment as it is overhauled or rebuilt as the result of ordinary service deterioration. Thus, in Toronto, the order of the Ontario Railway & Municipal Board relating to heights of car steps was made to apply only to new cars to be built in the future. This works no hardship on the railway companies and in time will bring about the desired result.

New Power Station of Worcester Consolidated Street Railway

This Article Describes the Improvements Which Have Recently Been Made in the Worcester Power Generating and Distributing System.

One of the latest power plant installations in the New England electric traction field is the new Millbury station of the Worcester Consolidated Street Railway Company. For many years the Worcester & Blackstone Valley Street



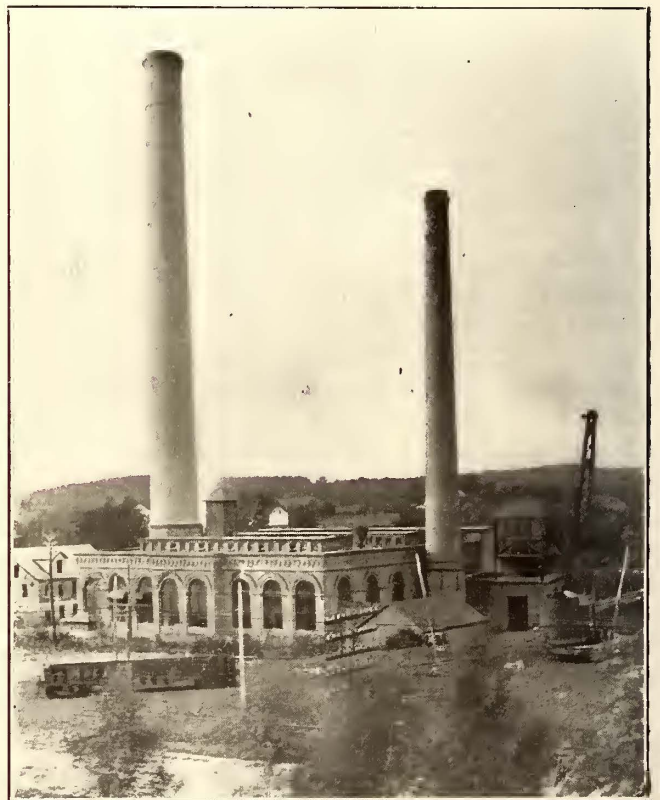
Worcester Power—Coal-Handling Machinery

Railway Company has maintained a reciprocating steam engine plant on Providence Street, Millbury, and the local lines of the Worcester Consolidated Company have been operated by a steam-driven station on Fremont Street, Worcester, Mass., about two miles south of the business center. Worcester is one of the most rapidly growing cities in New England, its population being about 150,000 within the municipal limits. It is surrounded by many suburban or semi-rural communities whose commercial interests are in Worcester.

The Fremont Street station at Worcester has a capacity of about 6000 kw, practically all the equipment being of the direct-current type. This plant shows the evolution from the belted units of twenty-five years ago to direct-connected engine and generator sets. Since the electrification of the street railway system at Worcester it has carried the brunt of the service with reasonable economy. The limitations of the Fremont Street water supply, the low cost of land at Millbury, and the convenient location of the Blackstone Valley Company's station caused the officers of the system to decide in favor of enlarging the generating plant at Millbury, transmitting current to Worcester by a three-phase line and distributing to the local city service from a substation located in the heart of the business district and at the center of load of the system as a whole. Investigations showed that by building a turbine plant at Millbury and operating the Fremont Street station only at peak loads or in emergencies, substantial savings could be effected and the character of service considerably improved. Current was first delivered on Feb. 21, 1911, to the Worcester system from Millbury. The substation is located on Madison Street, Worcester, and is connected with the Fremont Street station by tie lines.

CHANGES AT MILLBURY STATION

The Millbury station contains two 300-kw generators direct-driven by horizontal cross compound engines and a 5500-kva turbo-alternator, with auxiliaries and boiler equipment. The plant is a brick and steel structure about 126 ft. long x 119 ft. wide, within about 6 miles of the center of distribution at Worcester. Extensive alterations of the original power plant building were made in connection with the construction of the turbine plant, the latter being built in the main as an extension of the original installation. To take care of the expansion of the station an addition was made to the boiler house, giving a length of the steam generating section of about 100 ft. and a width of 14½ ft., the height being 40 ft., with monitor roof. Concrete foundations were used throughout. Other additions consisted of a brick and concrete pump room 54 ft. long x 18 ft. wide, and a coal conveyor house 33 ft. long x 20 ft. wide. The extension of the plant included the building of a coal trestle 350 ft. long, including a steel girder bridge across the canal from which the plant receives its boiler feed and condensing water. At its upper end, about 500 ft. north of the station, the canal receives water from the Blackstone River, and the supply of condensing water is delivered to the station by gravity, no circulating pumps being required. Additional concrete work required in the enlargement of



Worcester Power—Present Appearance of Enlarged Power Plant

the station included foundations for the turbo-alternator, foundations for a new stack, a discharge tunnel for the turbine room, smoke flue leading from the boilers to the stack, boiler foundations, hot well and reinforced concrete

floors of various areas and thicknesses. About 2500 cu. yd. of concrete were required in the work. In connection with the expansion of the station it was necessary to raze several old walls and in some cases dynamite the foundations of the old machinery. All the excavation 3 ft. below the natural grade consisted of large boulders in coarse gravel. The seepage from springs and silt from the river necessitated the continuous use of three steam pumps during construction.

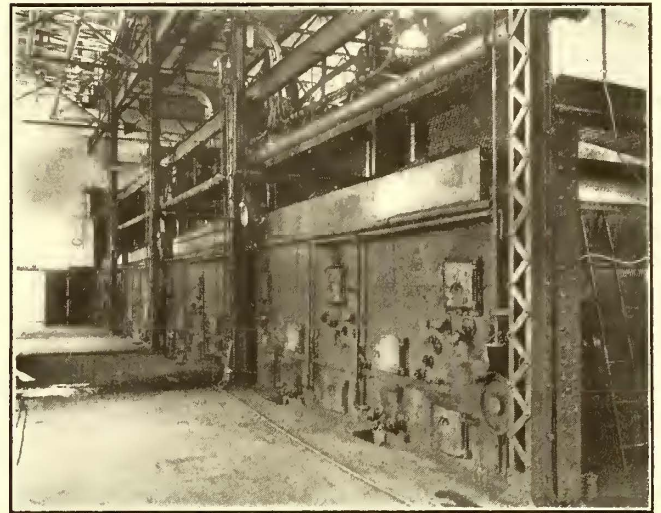
COAL HANDLING

Coal is handled mechanically at the plant from the entrance of the fuel to the property to its delivery to the furnaces. All coal is hauled to the plant from the New York, New Haven & Hartford Railroad over the street railway company's siding by an electric locomotive as far as the coal trestle, where a McMyler locomotive-type steam crane takes the cars and distributes the coal to the storage pile as illustrated. The crane has a capacity of 7000 lb. at 45 ft. radius and 14,000 lb. at 20 ft. The boom length is 55 ft., the boom being built of structural steel members tied together by lattice bracing and webs at each end. The horizontal speed of the crane is 350 ft. per minute and the hoisting speed 250 ft. per minute. The crane is fitted with a 2-ton grab bucket which handles either coal or ashes. Coal received by the plant is either dumped from the cars into a storage yard outside the station or delivered by the grab bucket into a 125-ton per hour crusher. From the lower hopper of the crusher, which is located outside the boiler room, the coal descends into a larry operated on tracks over the tops of the boiler furnaces, whence it is fed upon the grates.

STEAM EQUIPMENT

The steam-generating plant at present consists of four 820-hp Edge Moor water-tube boilers, each boiler being of the four-pass type and operated at a steam pressure of 200 lb. The boilers are equipped with Murphy furnaces. Provision has been made back of the boilers for the in-

13 ft. 6 in. x 7 ft. It is reinforced at the sides and top by ½-in. steel rods, staggered and in general spaced 6 in. apart on centers. A cleaning entrance 22 in. wide x 4 ft. 2 in. high is provided at the end of the flue. The new stack is located at the north end of the boiler room and is of the Kellogg patent sectional type, fitted with a concrete flue and firebrick lining 12 ft. in diameter. It is 225 ft. high. The

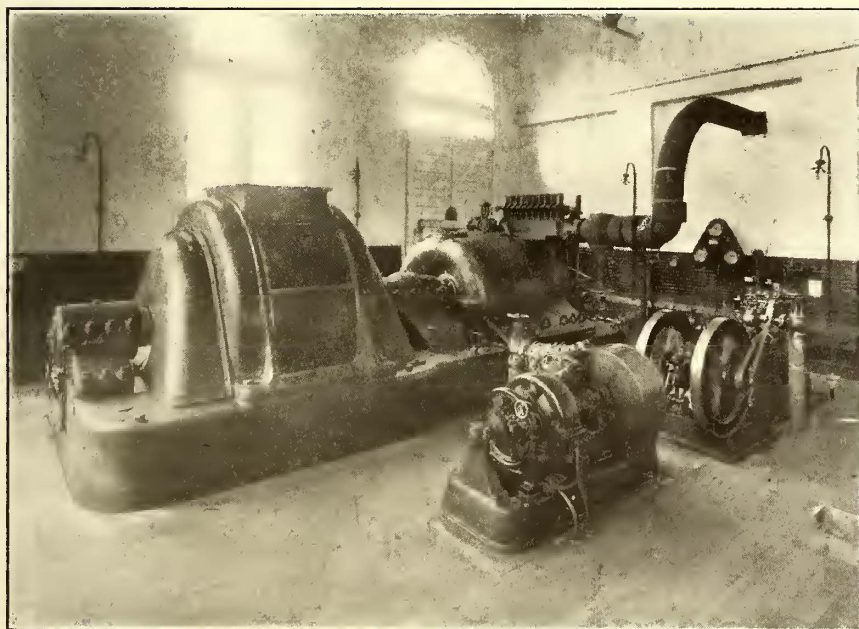


Worcester Power—Boiler Room

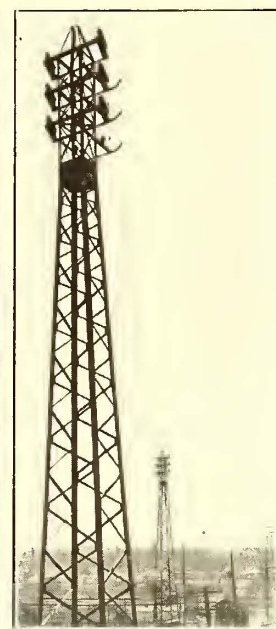
stack rests upon an octagonal five-course concrete foundation 10 ft. deep x 37½ ft. wide.

The boiler feed lines are provided in duplicate. Feed water is handled by two 16-in. x 10-in. x 12-in. center-packed plunger pumps built for a working pressure of 200 lb. The feed-water heater is a 3600-hp closed outfit, having 1160 sq. ft. of heating surface. It was supplied by the C. H. Wheeler Manufacturing Company, Philadelphia,

which also furnished the feed pumps. Extra-heavy steam mains are installed in the plant, and all joints are of the Van Stone type. Steel valves are used throughout. The Holly drip system is in service. The boilers are provided with 2½-in. blow-offs leading to a 3½-in. trunk which discharges into a creek near the station.



Worcester Power—5500-kva Horizontal Turbo-generator Unit in Main Station



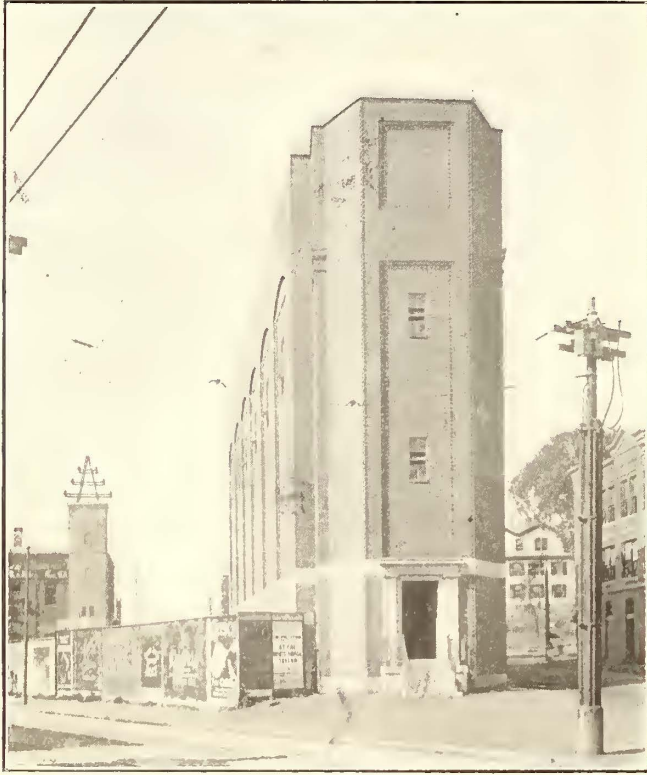
Worcester Power—High-Tension Transmission

stallation of economizers when needed. Foster superheaters which raise the steam temperature about 200 deg. are installed in each boiler. The products of combustion are discharged into the stack through a concrete flue lined with firebrick. This flue has a typical cross-section of about 8 ft. 7 in. x 8 ft. 2 in. inside, the firebrick lining being 2½ in. thick at the sides and 4 in. thick at the top of the flue. The flue enters the stack with a cross-section of

cleared of ashes by rotating grates, the discharge being handled beneath by ash-car equipment running through a concrete tunnel and delivering into a pit outside the building whence the ashes are elevated by the grab bucket of the locomotive crane and delivered into cars on the coal-handling trestle alongside of the boiler room for removal. The plant has a total coal storage capacity of 20,000 tons in the open air.

ELECTRICAL GENERATING EQUIPMENT

The new generating equipment consists of a 5500-kva, 13,200-volt, three-phase, G. E. 25-cycle alternator driven by a seven-stage Curtis horizontal turbine at a normal



Worcester Power—Triangular Substation

speed of 1500 r.p.m. The machine delivers 243 amp per phase at 90 per cent power factor and is of the two-pole type. At the time of its installation this unit was the largest horizontal outfit installed by its makers. It is equipped with hydraulically operated valves controlled by a pilot valve connection with the governor. An emergency stop is carried on the main shaft with a provision for tripping the throttle valve and shutting down the machine if the speed rises 10 per cent above normal. The turbine unit occupies a space about 28½ ft. long x 13 ft. wide x 10½ ft. high over the base. It is excited by a 75-kw turbo-generator delivering current at 125 volts and operating at 3300 r.p.m. The larger turbine exhausts into a Worthington surface condenser having a cooling surface of 10,000 sq. ft., the condenser being located immediately beneath the turbine and connected with it by a copper expansion joint. The turbine is self-contained and no external oil pumps are required. Oil is maintained in circulation from a tank cast in the turbine base. It is supplied to the bearings at a pressure of about 15 lb. per sq. in. The circulating water discharge is carried away from the condenser and returned into the river below the plant. The generator ventilation is supplied with air through a reinforced concrete duct which connects the casing with the outer atmosphere, the duct section being 3 ft. 6 in. x 7 ft. The turbine has a 10-in. x 22-in. x 18-in. rotative dry vacuum pump of Worthington make, installed in the turbine room at the side of the unit. The hot-well pump is a 4-in. Worthington two-stage centrifugal, turbine-driven outfit. If desired, the turbine can be operated non-condensing, the exhaust being discharged above the roof level through a 30-in. spiral riveted galvanized-iron pipe. The turbine room is served by a 10-ton hand-operated crane.

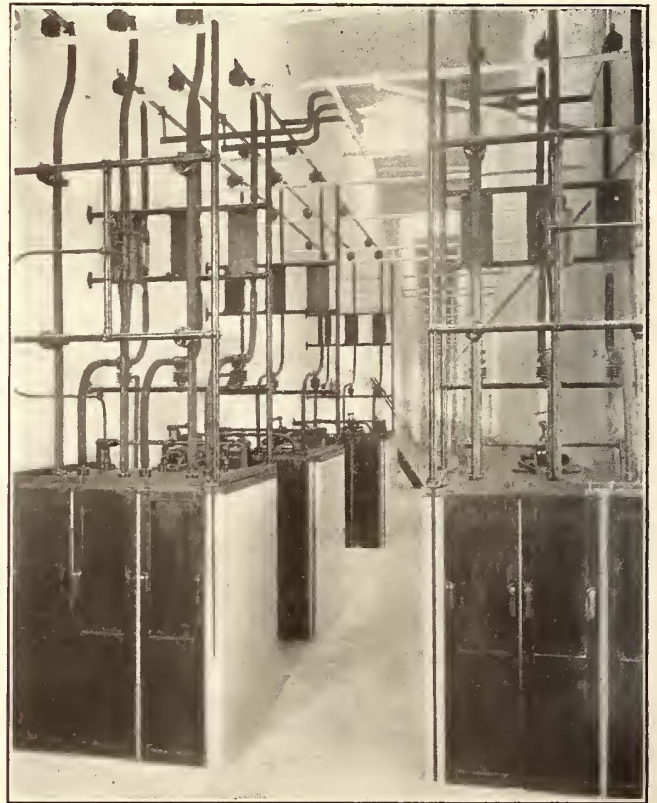
The d.c. generating units are operated only upon the local service of the Worcester & Blackstone Valley Street Railway Company. Feed water for the present boiler plant is supplied either from the town mains or from a well

located outside the station and equipped with a 4-in. centrifugal pump driven by a belted motor. The coal and ash handling equipment was supplied by R. M. Beaumont, Philadelphia. The 5500-kva set is used exclusively on the Worcester Consolidated Company's load, which ordinarily enables the plant to be run close to the rating of the machine. The excess demands are cared for by the less efficient machinery at Fremont Street station in Worcester.

Current from the turbo-alternator at Millbury is passed through temporary switching and lightning arrester equipment and delivered to a double three-phase line of No. 0 copper for transmission to Worcester. The line is carried on steel towers of A-frame section, the average span being about 350 ft. and the maximum 400 ft. The line is carried at heights of from 45 ft. to 68 ft. over the right of way of the New York, New Haven & Hartford Railroad between Millbury and Worcester. On tangents the line is carried on the A-frames, but steel towers are used at corners. There are fifty-nine A-frames, twenty-nine towers and five latticed poles on the line. The standard frame is 42 ft. high above the ground, and the tower heights vary from 46 ft. to 52 ft. Ohio Brass triple-petticoated porcelain insulators are installed on the line, which is insulated to operate safely at 33,000 volts in case the load requirements increase or become more widely distributed in the future. The towers and frames were built by the Archbold-Brady Company, Syracuse, N. Y.

SUBSTATION

The Worcester substation is equipped with two 1500-kw rotary converters delivering direct current to the city system at 600 volts. Space is provided for three additional rotaries of the above capacity. The substation is a triangular building located at the intersection of Madison, Beacon and Southbridge Streets, on a lot of rather limited area. It is a brick and steel structure 144 ft. long x 35 ft. wide x 60 ft. high, there being two floors and a basement in



Worcester Power—High Tension Cells in Substation

its design. The first floor is 27 ft. high, and the second is 26 ft. in height. Each floor is served by a Maris electric crane. Near the substation, which is located within a block of the railroad company's freight yards, the line de-

flects from the railroad right of way, and is carried into a fireproof lightning arrester house located across the street from the substation. Both the substation and the arrester house are equipped throughout with General Electric apparatus.

After passing disconnecting switches and choke coils, the incoming lines are carried to the bottom of the tower and across the street to the substation in underground conduits. The top of the substation is devoted to a remote-control, oil switch installation which is handled from the operating room on the street floor. Two banks of three 550-kw transformers each are installed on the second floor to reduce the potential to 430 volts for delivery to the rotaries. The transformers are of the air-cooled type, each bank being cooled by a fan driven by a 7½-hp induction motor. Each fan has a capacity of 20,000 cu. ft. of air per minute at 460 r.p.m.

The rotaries are located on the street floor. Each has a starting panel containing a main switch, reactance switch, and a remote control button which controls the oil switch equipment on the alternating current side of the machine. The main switchboard contains twenty-seven panels and twelve panels are assigned for the tie line service between the substation and Fremont Street. The basement is utilized for negative busbars, return feeders and equalizer busbars. A small steam boiler provides heat for the substation.

GENERAL

Since the inauguration of the service from the Millbury plant a large amount of rearranging of the local feeder system has been effected, and the voltage conditions on the system are much improved. The completion of the turbine installation at Millbury places the entire Worcester Consolidated system on a modern basis of power supply, and the plant provides room for additional units to meet the anticipated expansion of the urban system at Worcester for an indefinite period. Henry C. Page is general manager of the Worcester system, including the Blackstone Valley lines, and George W. Dunlap is superintendent of power stations. The design and construction of the Millbury station was carried out under L. S. Storrs, president. The substation building in Worcester was designed by Frost, Briggs & Chamberlain and built by the J. W. Bishop Company of Worcester.

CREOSOTED TIES IN BROOKLYN

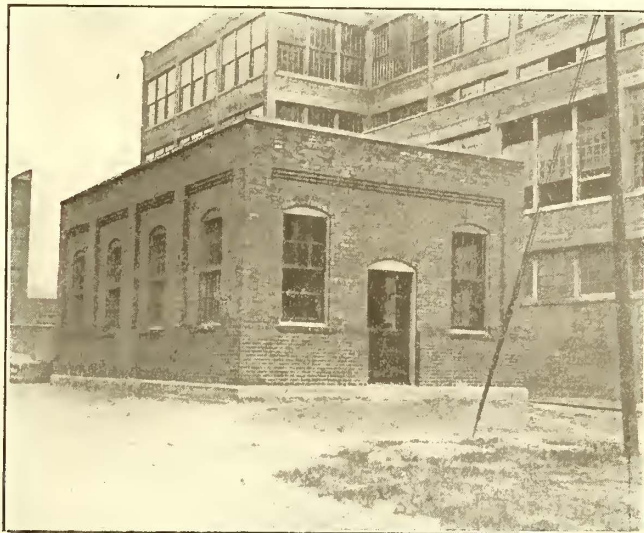
The Brooklyn Rapid Transit System is now making extensive use of creosoted ties in its track reconstruction. These ties are of square-hewn, long-leaf yellow pine 6 in. x 8 in. x 8 ft. in size and are impregnated with 10 lb. of creosote per cubic foot. The first important application of creosoted ties was made last year in rebuilding about 1 mile of double track on Fulton Street and on Fifth Avenue. The company is now installing these ties on 9000 ft. of route on Flatbush Avenue. At the end of the season it will have completed other double-track sections as follows: 6000 ft. on Manhattan Avenue, 2500 ft. on Fifth Avenue, 2500 ft. on St. John's Place and 1000 ft. on Broadway. On all of these sections in paved streets the ties will be laid 24 in. centers on soil foundation, which is largely sand, to carry 60-ft. lengths of 7-in. Lorain grooved girder rail No. 433 weighing 105 lb. per yard. The joints will be of the riveted type, installed staggered, and fitted with No. 0000 single cable bonds.

The tramway system of San Luis Potosi, Mexico, has been sold by its Mexican owners to an English company, consisting of Messrs. Hooghwinkel, Anthony Brown and partners, of London. The system includes 14 miles of track in the city and suburbs, with equipment of mules, cars and shops. The new owners will electrify the line.

DETROIT TESTING LABORATORY

BY CHARLES M. ROGERS, COMBUSTION ENGINEER DETROIT UNITED RAILWAY

The Detroit United Railway has recently built and equipped a testing laboratory at 371 Atwater Street, near its largest power stations, "A" and "B." The building is of brick and concrete, 40 x 22 ft. It was especially designed



Detroit Laboratory—View of Exterior

and constructed for the combustion and chemical work of the power department, for which purpose connections are made from station "A" for hot, cold and distilled water, steam, gas and electricity. The chemicals and apparatus used are the best obtainable. Electric hot plates and drying ovens are used. The new McKer gas burners were chosen in preference to the old style Bunsen burners because of their time-saving features. The instruments for making efficiency tests on boilers, furnaces, economizers and condensers include the necessary mercurial and electric py-



Detroit Laboratory—Calorimeter Room

rometers, anemometers, barometers, mercury columns, hand flue-gas analyzers, calorimeters, draft gages, etc.

Two motor-driven coal grinders are employed for grinding samples of coal. The first one delivers the coal about the size of ground coffee and the second at 100 mesh, in which state it is of the required size for approximate analysis. This eliminates the hand method of pulverizing and thus shortens the time which would otherwise be required for preparing the sample.

The interior of the laboratory is finished in mock mahogany excepting the birch table tops, which are treated with a solution furnishing a deep ebony black to render them highly resistant to the action of acids and alkalis. Ample cupboard, drawer and cabinet room is provided.

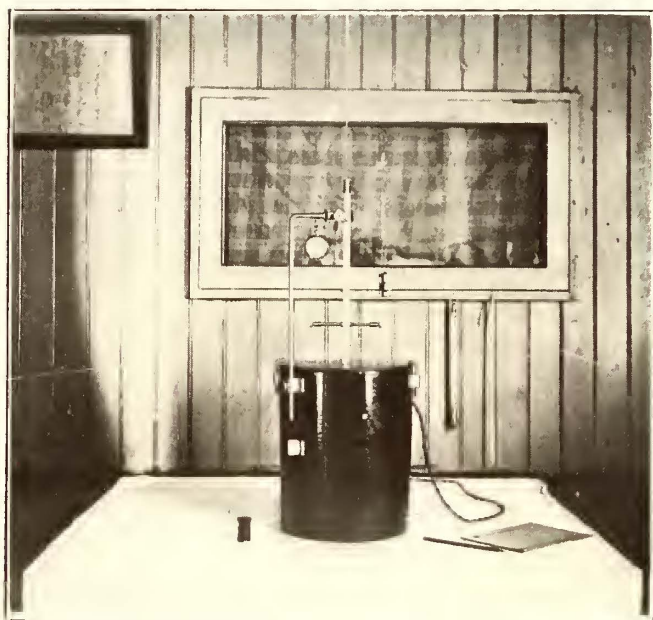
Heat determinations by the Atwater oxygen-bomb calorimeter of the Berthelot type are made in a separate room which is kept at nearly constant temperature and which is free from drafts or direct sunlight.

A large hood built of sheet metal and glass is used for operations, which must be free from air currents and virulent gases. Flue gas and draft lines are run from the boiler room so that draft may be had and gas analyses be made at any time. Thermo-electric couples are inserted in the different gas passages and furnaces and connected to a selective switch and pyrometer in the laboratory by means of which the temperatures are read without going to the boiler room. This makes it possible for the combustion engineer to know at any time what the firemen and furnaces are doing.

The most important work at present is the analysis of coal and the preparation of data which will enable the company to write specifications for the purchase of coal on the empirical and calorific bases. This subject deserves

terminated by trials under working conditions. One or more batteries of boilers will necessarily have to be used for this purpose on account of weighing water and coal and taking readings. Coal in the furnace burns differently from coal in the calorimeter. As a matter of fact, an inferior coal may produce better results with the particular equipment at hand than one shown by analysis to be of superior quality. Its real value is reckoned by its total cost to produce 1 kilowatt, or, better still, the total cost to evaporate a unit quantity of water, taking into consideration the cost per ton, freight rate, ash handling, unloading, stoking and other expenses which vary with different coals. There is no furnace on the market that will burn coals differing widely in volatile matter with equal efficiency and without smoke. Since the greatest avoidable loss is due to the escape of combustible hydrocarbons and since a Detroit city ordinance prohibits the emission of dark smoke from the stacks, a coal which contains that percentage of volatile matter which the furnace equipment will burn as efficiently and smokelessly as possible will receive the proper consideration, as well as the b.t.u., ash and sulphur contents, when deciding on final specifications for purchase.

Oils for the mechanical and power departments are bought on specifications. They are regularly analyzed and



Detroit Laboratory—Calorimeter in Operation



Detroit Laboratory—Part of Interior

more labor and consideration than are usually given to it. If large coal consumers could realize how many thousands of dollars they are paying every year merely for weight instead of heat they could soon pocket larger dividends by spending a little more money for analyses which would make it possible to purchase fuel on a calorific basis.

In this laboratory proximate analysis is now made of an average sample of each day's consignment of coal received at power stations "A" and "B" only. This consignment is usually ten cars. To take a sample for analysis from the six suburban plants would mean more work than is necessary at present, and, besides, the same kind of coal is used throughout. The value of this coal as a steam producer is known, and after analyzing it every day for a month it is evident that suitable specifications can be written for this particular grade. In the meantime careful consideration is given to the load conditions, draft available, furnace equipments, smoke nuisance, etc., so that when the superintendent of power and the purchasing agent succeed in getting cars of different classes of coal tests will be run to determine the most desirable coal.

The basis of purchase will not be the laboratory analysis but rather the steam-producing quality of the coal as de-

tested in the laboratory. The best standard testing instruments were purchased for this purpose and a close check is kept on their chemical and physical properties.

Average daily samples of ashes from each of the company's eight power houses are sent to the laboratory twice per month for analysis. The analyses of feed waters, boiler scale, etc., are also given the required attention to insure the proper introduction of the correct kind and amount of feed-water treatment. Special analyses are made of iron, steel, grate-bars, alloys and building materials.

The company has several CO₂ recorders which are cared for by the laboratory. Daily records of CO₂, draft and flue-gas temperatures are kept and curves are plotted to show the efficiency of each fireman. Instruction books on combustion and CO₂ have been placed at the disposal of the firemen and engineers, together with the necessary oral information, to insure their adequate acquaintance with what theoretically happens during the process of air admission and the combustion of the coal.

The laboratory was obtained through the efforts of E. J. Burdick, superintendent of power. The combustion engineer has one assistant.

Papers at the C. E. R. A. Convention

Abstracts Are Presented of the Seven Papers Read at the Cedar Point Meeting.

The regular meeting of the Central Electric Railway Association was held at "The Breakers," Cedar Point, Ohio, on Aug. 23-24. The account of the meeting will be found on page 357 of this issue.

The seven papers presented were as follows:

"Overhead Standardization," by A. Schlessinger, superintendent of overhead construction Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

"Headlights," by C. Dorticos, representative General Electric Company, Chicago, Ill.

"Trailer Car Operation Versus Multiple-Unit Trains," by Clarence Renshaw, engineering department Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

"Little Things That Count," by J. C. Schade, assistant secretary-treasurer Winona Interurban Railway, Warsaw, Ind.

"Traffic," by J. F. Keys, general passenger agent Detroit United Railway.

"Troubles of a Baggage Agent," by O. E. Anthony, baggage agent Traction Terminal Station, Indianapolis, Ind.

"Insurance," by Henry N. Staats, insurance expert Central Electric Railway Association and American Electric Railway Association.

Abstracts of these papers follow:

OVERHEAD STANDARDIZATION

BY A. SCHLESSINGER, SUPERINTENDENT OVERHEAD CONSTRUCTION TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY

We have been experimenting long enough with different types of overhead construction appliances and it is now time to compile and adopt standard specifications. In this I believe railway men will have the hearty co-operation of manufacturers of and dealers in overhead material. At present to meet the demand they must carry in stock large quantities of different types of fittings. This is not desirable from a commercial point of view. Moreover, the larger the quantity manufactured the lower the cost. Hence a greater demand for a few fittings, rather than a limited demand for many of different designs, will naturally result in a reduction in cost of production.

To the practical interurban operator the defects in the overhead construction on some of the early roads are apparent. As a rule poles were not long enough and the location of the line was changed from one side of the track to the other at nearly all curves. In some cases this was done so as not to obstruct the view around the curve, but more frequently to avoid setting additional poles or braces. This plan, of course, decreased first cost, but after a line had been in operation for some little time it was often found necessary to make changes and set additional poles for span construction, thus increasing rather than decreasing the first cost.

In some cases the poles have been set too close to the track and do not give sufficient clearance to the larger type of cars now used, and cross-arms have not been properly located to take care of the additional wires which are usually required after a line has been in operation for a few years. The steel strand wire used for spans and guying has also been too light, with the result that the spans became slack and poles out of line.

Two trolley wires were generally used. It is hard to find anyone that knows just exactly why, but there are a number of traction men who know that the cost of the second wire, cars and hangers, if put into additional feeder capac-

ity, would give greater efficiency and reduce the cost of maintenance.

The following are briefly a few forms of material and methods of construction which are pretty well established and have been generally adopted in more recent construction, and that I believe are worthy of consideration in future overhead work.

TYPE OF CONSTRUCTION

Bracket construction should be used on single-track lines and center-pole construction on double-track lines, as it costs less to install and maintain than double-pole span construction, makes a better looking line and is practically as substantial. Span construction should be used only on city streets, turnouts and on all curves of short radius.

POLES

These should be either cedar or chestnut, not less than 8 in. in diameter at the top and 14 in. in diameter at the butt. Where transmission wires are carried on the poles which support the trolley wires they should not be less than 40 ft. in length. Thirty-foot poles of the same top and butt dimensions may be used in connection with the higher poles for span construction when the elevation of the trolley wire does not exceed 20 ft.

POLE SPACING AND SETTING

A spacing of 100 ft. on tangents and not less than 50 ft. on curves is generally adopted and appears to meet all requirements.

The poles should be set 6 ft. in the ground, 7 ft. 6 in. from the center of the track to the face of the pole. They should have a 6-in. rake away from the track at a height of 24 ft. above the rail for bracket line and of 12 in. to 24 in. for span construction, depending on local conditions.

BRACKETS

The flexible-type suspension brackets 9 ft. in length should be used on tangents and from 10 ft. to 11 ft. in length on curves of long radius.

The assembled bracket should be composed of what is known commercially as 1½-in. "C" tubing; a pole-end socket with a solid back or with a hole cast in the back smaller in diameter than the tubing; a ½-in. supporting rod 18 in. longer than the tubing and with thread 6 in. long on the pole end only; an intermediate span support to be located 3 ft. 6 in. from the outer end of the bracket; an end casting to be provided with a hole instead of an eye-bolt; ½-in. x 14-in. galvanized welded eye-bolt through the pole, and a ⅜-in seven-strand cable.

TROLLEY WIRE

No. 0000 grooved wire has many advantages. The only disadvantage is the lack of a suitable splice, one that will withstand the strain and still be small enough to prevent a hammering effect due to the trolley wheel passing over the splice at high speed. In lieu of a proper splice a No. 000 grooved wire will fulfil the requirements.

HEIGHT

Trolley wire should be 20 ft. above all rail except at steam railroad crossings, where 22 ft. elevation is required by State law, or when steam-railroad equipment is handled on the interurban line. A 20-ft. trolley over highways is at a safe distance and is easier to maintain than if it were higher, because light repairs can be made with a small stepladder on top of freight cars; furthermore, this is generally the height of trolley wire in cities and is about the best height for the proper working of the trolley base and pole generally used.

EARS

Twelve-inch ears with a ⅝-in. stud clinched in groove of wire can be used throughout. However, a six-screw clamp

ear with length over all of 14 in. gives excellent results on curves. The ears should not be soldered to the wire, except possibly on curves, and then only enough solder should be used to prevent sliding.

HANGERS

Either the round top or the West End type of hangers, sherardized and with a $\frac{5}{8}$ -in. stud, are suitable for straight line. On curves extra heavy pull-overs, galvanized or sherardized, with a $\frac{5}{8}$ -in. stud and either composition or wood strain insulators, depending on local conditions, should be used.

FEED SPANS

Ordinary feed-in taps should be avoided, as the cost is nearly as much as feed spans and they are much more difficult and expensive to maintain. A No. 00 seven-strand bare-copper cable on mast arms with insulated struts and feed-in hangers makes a substantial and efficient connection between feeder and trolley. These spans should be installed every 1000 ft.

LIGHTNING ARRESTERS

Arresters should be installed every 1000 ft. and should be located on the same poles as the feed spans. A good ground connection can be obtained by means of a $\frac{3}{4}$ -in. x 8-ft. galvanized-iron pipe driven in the ground and an additional connection to rail.

GUYING

Guy wire should not be smaller than $\frac{3}{8}$ -in. seven-strand galvanized-steel cable and should have either a composition or a wood strain insulator between the pole and the ground. For ordinary strains use $\frac{5}{8}$ -in. x 6-ft. galvanized anchor rods, with $\frac{1}{4}$ -in. x $3\frac{1}{2}$ -in. square galvanized washers and half a tie buried from $4\frac{1}{2}$ ft. to $5\frac{1}{2}$ ft. below surface of the ground, depending upon strain.

On reasonably heavy strains use galvanized pole shims and guy hooks, also Crosby clips or guy clamps.

STRAIN GUYING

Strain guying on trolley appears to be more of a custom than an advantage. The writer has in mind a line of approximately 68 miles in length on which it was decided to install strain guys 1000 ft. apart. After some 20 miles of this work was completed it was found that trolley breaks were more frequent and in fact there was 50 per cent more trouble on this section than on more than double the amount of line on which there were no strain guys.

CROSS-ARMS

It is very important that arms be located on poles so as to give maximum clearance for wires, especially for telephone and signal purposes. Care should be exercised to obtain good timber free of knots, sap and wind shakes. They should be delivered unpainted and dipped in wood-preserving compound before using.

Arms supporting high-voltage porcelain insulators should be $4\frac{3}{4}$ in. wide by $5\frac{3}{4}$ in. high, the length depending on the number of wires carried and the spacing necessary.

Arms supporting feeder, telephone and signal wires may be $3\frac{1}{4}$ in. wide and $4\frac{1}{2}$ in. high, the length also depending on the number of wires to be carried. All arms should be bolted to poles, using $\frac{3}{4}$ -in. machine bolts for extra heavy arms and $\frac{5}{8}$ -in. machine bolts for the light arm. All bolts and other hardware should be either galvanized or sherardized.

BRACES

On extra heavy high-tension arms $3/16$ -in. x $1\frac{1}{2}$ -in. one-piece galvanized angle-iron braces are preferable. These should be fastened to the bottom of the arm and to the poles by means of $\frac{1}{2}$ -in. x 4-in. galvanized lag screws. On the lighter arms either the small one-piece angle-iron brace fastened to the arm with two $\frac{3}{8}$ -in. x 3-in. lags and to pole with $\frac{1}{2}$ -in. x 4-in. lag, or the flat braces in pairs, bolted to arm and lagged to pole, will suffice.

TELEPHONE AND SIGNAL CIRCUITS

No. 10 bare iron or copper wire on poles on right-of-way in the country where wires properly clear foreign wires

and trees, and weatherproof insulated wire on poles or spans in towns, are suitable for telephone circuits. These circuits should be transposed at least every 1000 ft. A rolling transportation with both wires tied to a single large-type transposition insulator gives best results. Loose connections and splices make noisy and weak talking lines. It is therefore important to make good joints and use copper twist connectors only.

For signal circuits No. 10 weatherproof copper or copper-clad wire is preferable.

TELEPHONE INSULATORS

Insulation is an important factor in the operation of telephone lines, especially when carried on same poles with transmission wires. Unless good insulators, porcelain preferred, made for a working voltage of not less than 6000 volts, are used, the lines may pick up a considerable amount of leakage current from the high-tension circuits and make the telephone line noisy and difficult to hear or talk over.

TELEPHONE EQUIPMENT

There is a difference of opinion regarding the relative advantages of telephones located in booths at sidings and portable telephones on cars with jack boxes on poles at sidings and approximately every mile between sidings. Of course, both plans have their advantages, but when the telephones are located in booths out on the line it is necessary to have one at each siding, including the ones that are not used for scheduled meeting points. Sometimes trains do not use these sidings for several months and the trainmen do not have occasion to use the telephone. Consequently the condition of the instrument is not known until it is needed and then it is quite likely to be out of order, whereas the car telephone is frequently used and its condition is always known. Furthermore, if it should get out of order it can be replaced with another portable set at one of the terminals or at the dispatcher's office without delay to the train.

Where jack boxes are used at each siding there should be two so located that trainmen may communicate with the dispatcher from the car without fouling switch points. Where there is a commercial telephone line in addition to the regular dispatcher's line an additional jack box should be connected thereto at all sidings for use in case of trouble on the dispatcher's line.

Test switches should be installed in all substations and junction points, and occasionally at other stations where employees are on duty. These will enable the dispatcher or linemen to locate quickly the section of the line in trouble.

The dispatcher's telephone switchboard is usually made up with small knife-blade switches, which wear and work loose quickly and cause poor connection and noisy and poor talking lines. The cord and plug-type board is more convenient and offers more combinations and greater flexibility in the operation for the dispatcher, but unless this type is specially designed and built to withstand burn-outs or breakdown in insulation considerable trouble may be experienced in case telephone wires become crossed with higher voltage wires.

It is therefore necessary to get away from the standard telephone apparatus and to use equipment of more rugged design with increased insulation. This is easily done, but the manufacturers call it special and the price we must pay for it is entirely out of proportion to the price of standard equipment. This seemingly excessive price has a tendency to limit the demand for the equipment most suitable for electric railway service. The demand for the standard apparatus is practically unlimited and it can be built for a lower first cost. But its use results in increased maintenance expense, and this, I believe, strengthens the theory that only through standardization can electric railways secure the material most suitable for their service at a reasonable price.

HEADLIGHTS FOR INTERURBAN SERVICE

BY C. DORTICOS, GENERAL ELECTRIC COMPANY

In the early trolley systems the incandescent headlight was standard and adequate, but with the advent of larger cars and higher schedule speeds a more powerful headlight became necessary. To meet this condition several types of inclosed carbon lamps were placed on the market and soon came into general use. This type of lamp (see Fig. 1) consisted of a cylindrical casing including a solenoid mechanism which controlled a clutch by which the upper or positive carbon was separated from the lower, which

economy of operation and simple and rigid mechanical construction. The basic principle of this lamp, six different types of which have been developed for railway service, is as follows:

The mechanism (see Fig. 3) is of the non-regulating type and is designed to strike an arc of fixed length. Slow electrode consumption provides opportunity for sufficient natural interruptions of the circuit, incidental to regular operation, to maintain the arc within safe voltage limits. This insures a simple and stanch construction, suitable for all classes of service. The moving elements of the mechanism are mounted on a sliding galvanized iron frame which is secured to the casing by means of a wing-nut and stud. Contact is made at the back of the casing to terminals on the back of the frame. Thus the lamps may be easily removed for repair or inspection. One of the characteristics of the luminous arc is its reduced luminosity when re-

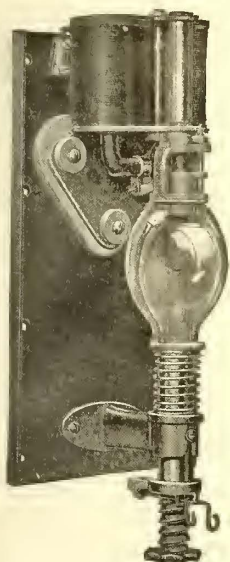


Fig. 1—Mechanism of Form "B" Headlight

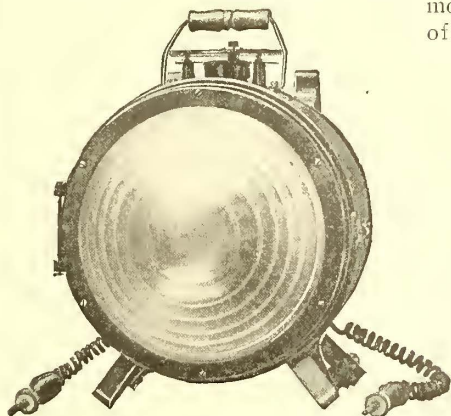


Fig. 2—Headlight with Semaphore Lens and Spherical Reflectors

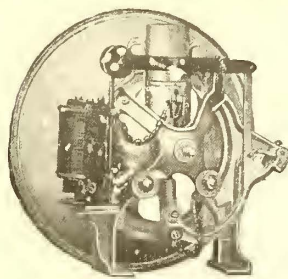


Fig. 3—Mechanism of Luminous Arc Headlight

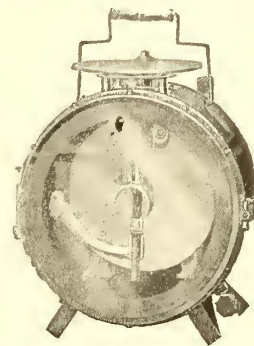


Fig. 4—Lamp Equipped with Special Reflecting Mirror and Chimney Shield

was attached directly to the frame. The carbons are connected in series with the resistance, and for dimming "in town" service a wire mesh screen was hooked over the door, or, as in a large number of cases where the screen became lost, a piece of newspaper would answer. An improvement later introduced was the installation of incandescent lamps in the same frame to be used for dimming purposes.

The ever increasing mileage and still further increase in speed soon necessitated an increased track illumination. To

versed. Advantage is taken of this feature for dimming purposes inside of city limits. By simply throwing a switch the motorman is enabled to secure intense or radically diminished illumination at will.

A solid convex heat-resisting glass window is provided for the doors of all lamps, reliance being placed solely upon reflectors for light distribution, but when extreme concentration of the beam is required the railway semaphore signal lens is introduced. The latter is, in fact, a molded plano-convex lens with a series of circular sections so arranged as to avoid excessive weight and to secure the best optical results. It is exceptionally strong and has the advantage, due to its long focus, of remote location with respect to the arc. Consequently it is affected but slightly by heat radiation from the arc.

The positive electrode, or anode, is a stationary copper forging, covered by a non-oxidizing metal sheathing. The life of this electrode is from 2000 hours to 3000 hours. The negative electrode, or cathode, consists of a thin welded steel tube containing an efficient mixture of iron oxide and other suitable ingredients and attains a life of fifty to seventy-five hours.

Following is a brief description of the different forms of headlights made by the General Electric Company for railway service.

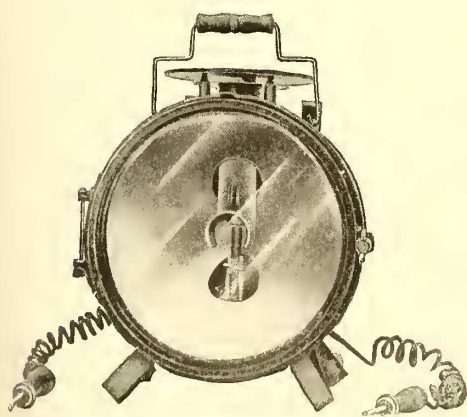


Fig. 5—Lamp with Parabolic Reflector and Shield for Cutting Out Undesirable Rays of Light

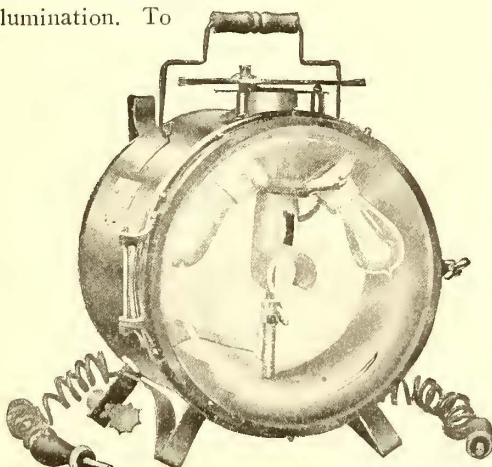


Fig. 6—Lamp Similar to Fig. 4, but with Two Incandescent Lamps for Subdued Lighting

meet these conditions the General Electric Company developed the luminous arc headlight, adapting as its light source the principle embodied in the luminous arc lamps for street lighting, more than 60,000 of which are in use in the principal cities of this country. This headlight has high efficiency, long burning electrodes with consequent

Fig. 2 illustrates a luminous arc headlight with semaphore lens and spherical reflector. This headlight is known as the form D-6 and is the most popular type. It is also furnished as the form D-7 with incandescent lamps as the dimming feature. This form gives the extreme concentrated beam above referred to. It is the latest development in the field of interurban car lighting and is admirably suited for the purpose. The motorman is enabled to pick out objects within the small intensely concentrated zone of light at a distance of approximately 2000 ft., and as it is estimated that an interurban car running at 60 m.p.h. can be brought to a stop within 1750 ft., the use of this lamp is attended with an ample factor of safety.

Fig. 5 shows the form D-1 headlight with parabolic reflector and chimney shield for cutting out undesirable rays. This lamp, known as the D-3, is also furnished with an incandescent lamp as a dimming feature. It is recommended where wide distribution of light is desired and is especially useful on roads having a large number of curves.

In Figs. 4 and 6 there are shown forms D-2 and D-8 equipped with Mangin mirror and a chimney shield similar to that previously described in connection with the form D-1 lamp. When a company desires a beam of moderate width to carry a long distance and to illuminate brightly the roadbed directly up to the front of the car this lamp has much to recommend it. The form D-2 headlight may be reversed for dimming, while form D-8 is fitted with two 110-volt, 16-cp incandescent lamps for the purpose. I believe that the different forms which have been described will meet all the different conditions of service.

TRAILER OPERATION VERSUS MULTIPLE-UNIT TRAINS

BY CLARENCE RENSHAW, WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

The wide variations in the traffic which a railway must handle at different hours and on different days present a most difficult problem for its management. The traffic apparently demands that the cars be operated on a variable headway, but safety and economy incline toward uniformity. If the cars could only be gradually expanded and contracted, like that piece of hand baggage, the "telescope," formerly so popular among rural travelers, both requirements could be satisfied and such cars ought to be in great demand by interurban roads. Unfortunately, the manufacturers of electric railway equipment have not yet been able to produce cars of exactly this type. They have been able to produce cars in which, starting with a given size, the capacity can be doubled, then increased 50 per cent, then 33 $\frac{1}{3}$ per cent, and so on. These have been used for years on a number of roads under the name of "multiple-unit trains," and it is only lack of acquaintance with their advantages which prevents their rapid increase.

A full realization of the advantages of multiple-unit operation can be obtained only on roads having ample substation capacity and a liberal feeder system. These are usually found either where a third-rail is used as a source of power supply or else where the single-phase system is employed. Almost every road should be able to operate trains of two or even three cars, however, if the size of the cars is properly fixed.

VARIATIONS IN TRAFFIC CARED FOR ON MULTIPLE-UNIT LINES

The extent of the variations in traffic which must be cared for at times is indicated by Fig. 1. This shows the number of passengers carried on each trip of a certain interurban line for Saturday, June 3, and Tuesday, June 6, 1911. It shows also how the crowds were cared for by the use of two and three-car trains. The traffic for these two days is typical of that for any clear Saturday during the summer and any ordinary weekday.

The road from which these figures were obtained is

single-track and is approximately 25 miles long. The cars are operated at half-hour headway during most of the day, and as a rule make twelve or fifteen flag stops per trip. The run is made in forty-five minutes. A most interesting feature of this operation is the fact that no addition is made to the train crew when two-car trains are operated. The cars have end doors for passing from one to the other and a motorman and a conductor are able to handle easily the heavy traffic shown. When three cars are used an extra man is added to the crew to assist the conductor. The operation on this road certainly approaches the telescoping car and serves as an excellent testimonial to the multiple-unit system.

A certain line in the coal regions of West Virginia offers a typical example of a somewhat different class. This road is also approximately 25 miles long and single-track. As originally put in operation it employed single cars only, seating fifty-six people and equipped with four GE-73 (75-hp) motors. The cars were provided with type M control, but had straight air brakes and no drawbars, so they could not be coupled together.

After the line had been in operation several years and the traffic had grown beyond all expectations, drawbars were added to the cars and the brakes were changed to automatic so that two-car trains could be run. At the same time some additional cars were purchased. These were made somewhat smaller and lighter than the original cars and were equipped with four Westinghouse No. 306 (50-hp) motors and type HL control. When train operation was started it was found that while it was entirely possible to operate two of the large cars together, it proved to be rather undesirable on account of the load on the substations. With train operation, the small cars, however, proved a decided success from the very beginning and have become so popular that several more duplicate equipments have since been purchased. Half of the small cars are provided with baggage compartments and seat thirty-six people. The other half are for passengers only and seat forty-six. A two-car train of the small cars thus provides a baggage compartment and eighty-two seats, as compared with fifty-six seats and no baggage compartment on the single large cars. The train makes the same schedule as the single large cars with equal facility. But on account of the somewhat lower speed gearing of the motors and the reduced resistance of a two-car train it takes very little more power. By operating a single small car, a single large car, or a train of two cars, the seating capacity can be nicely graded to suit the traffic.

Many roads no doubt hesitate to employ multiple-unit trains on account of a supposed inadequacy of substation and feeder capacity. The requirements in these items can be kept within very reasonable limits by proper training of the motormen. Some years ago I made a number of tests on one of the early interurban lines in Indiana. The cars were equipped with two 150-hp motors, or a total of 300 hp each, and were geared for a maximum speed of about 50 m.p.h. Great care had been taken in training the motormen on this line and as a result I was surprised to find that the maximum current per car rarely exceeded 350 amp. On other roads, where less care had been taken in instructing the men, I have noted currents of over 600 amp on cars with only the same horse-power of equipment. It is quite evident from these figures that two-car trains in the hands of the first set of men could have been operated with peaks little or no higher than those caused by single cars in the hands of the second set.

Where multiple-unit trains are employed it is usually not necessary to have either cars or equipment as large as if they were operated singly at all times.

In the effort to avoid the operation of other than single cars the size and equipment of interurban rolling stock has been increased to huge proportions. In many cases these big cars run most of the day with a lonesome dozen

or two passengers for the sake of being able to handle the fifty or sixty who must be provided for on a few special trips. To make proper use of multiple-unit trains a size of car more nearly suited to the average load should be employed and the capacity expanded by coupling up when necessary. With equipments properly proportioned on this basis there are probably few roads where two-car trains could not be run.

USE OF EXTRA CARS AS SECTIONS

Before the days of multiple-unit trains additional capacity was frequently secured by the use of extra sections running on the same time and orders as the regular cars. This arrangement multiplies the difficulties of safe train dispatching very largely and in addition requires complete extra train crews. Extra sections are, of course, sometimes necessary where cars have not been equipped with train control. As a rule, the dangers of this arrangement are recognized and its popularity for high-speed lines is declining.

COMPARISON WITH TRAILER OPERATION

The principal competitor of the multiple-unit train, or perhaps predecessor would be a more proper term, is

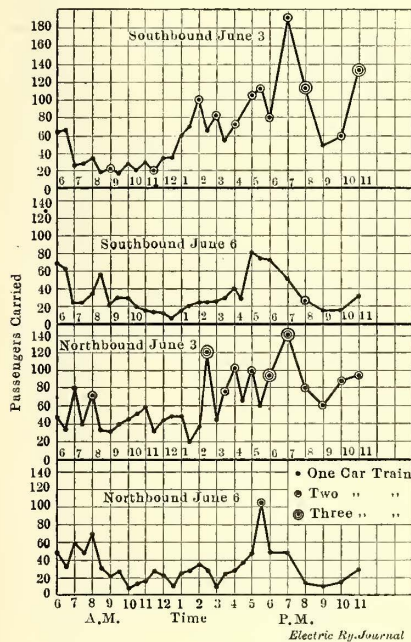


Fig. 1—Passengers per Trip of an Interurban Line

the combination of a motor car and a trailer. In obtaining extra seating capacity by the use of trailers many people seem to feel that they are, as it were, "putting one over" on their motor equipments and obtaining extra work out of them without their knowing it. In fact, some even seem to believe that just as the work of the motorman is not materially increased by the addition of a trailer, so the work of the motors likewise remains the same. This, however, is far from the fact. It is true that the power taken by a motor car when running at constant speed on level track is increased only a comparatively small amount by the addition of a trailer of the usual proportions, but in starting and accelerating or in propelling the car up grades the tractive effort which the motors must deliver is in almost direct proportion to the weight. In any service where stops are frequent or grades are severe the addition of a trailer means a considerable increase in the load on the motors.

In local service, where flag stops are made also, the greater the number of people carried on any given trip the greater, as a rule, is the number of stops which must be

made. Heavy traffic trips where trailers are employed thus necessitate a maximum number of stops on account of the greater number of people carried. Even if the trailer had no weight, the extra number of stops is sufficient to make such trips hard on the motors unless, of course, they are worked much below their capacity when operating without the trailer, and the use of a trailer under such circumstances, at the very time when it imposes the greatest burden on the motors, is frequently a prolific source of worry for the master mechanic, work for the armature winder and business for the spare-part salesman.

EFFECT OF TRAILER OPERATION ON MOTOR TEMPERATURES

Unfortunately, I have no data at hand from tests on interurban roads to show the effect on motors of adding a trailer. Figs. 2 and 3, however, taken from some tests made on single-truck city cars, should serve to illustrate

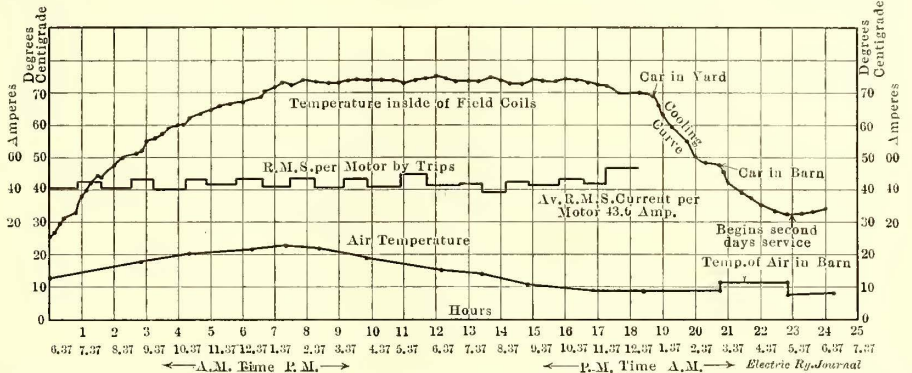


Fig. 2—Temperature and Root-Mean-Square Readings for Runs with Motor Car Only

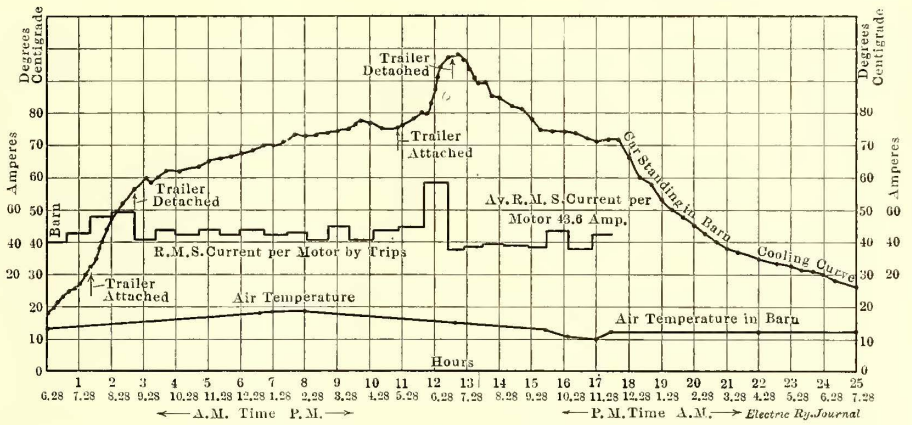


Fig. 3—Temperature and Root-Mean-Square Readings for Same Runs as Shown in Fig. 2, but with Trailer

the point.* In these tests a coil of iron wire was carefully calibrated in an oil bath and the relation between its resistance and its temperature accurately determined. A field coil was then made up with the iron wire coil on the inside and this field coil was placed in one of the motors on a car. Leads from the iron wire coil, connected to a portable Wheatstone bridge on the car platform, gave a ready means of measuring the temperature of the motor. Measurements could be made at any time without regard to whether the motors were running or standing still or whether the car was using power or coasting.

The car was put in regular service on several successive days; first, on a route where the cars were operated alone, and later on another route where a trailer was attached to each car during the morning and evening rush. By means of the arrangement described above temperature readings

*The results of these tests were included in a paper read before the American Institute of Electrical Engineers, reported in Vol. XXII, page 279. They were also referred to briefly in a paper prepared for the committee on equipment of the American Electric Railway Association in 1909. The data are so relevant to the present discussion, however, that the writer trusts he will be pardoned for repeating them here. [See also ELECTRIC RAILWAY JOURNAL, Oct. 7, 1909, page 755.]

were taken every five or ten minutes, not only during the day when the car was in operation, but also at night when the car was in the barn and the motors were cooling.

In addition to the temperature measurements, other readings were taken, from which the root mean-square current in the motors, which determines the heating, could be found.

The curves in Fig. 2 show the results obtained in a test with the motor car only. Those in Fig. 3 show the corresponding results where a trailer was hauled for the two trips noted.

It will be seen from Fig. 2 that the temperature of the motors at the start was about 25 deg., because they had not had time to cool off thoroughly from their service of the day before. During the first eight hours the temperature rose gradually until it reached a value of approximately 75 deg. C., at which it remained practically constant until the car was turned in for the night. It will be seen, also, that with the exception of a regular difference between the outbound and inbound trips, due to the lay of the land, the loads on the motors, as shown by the root mean-square current, were remarkably uniform.

Referring now to Fig. 3, we find that the addition of the trailer for the one trip in the morning, when the motors were fairly cool, merely caused the temperature to rise somewhat more rapidly than in Fig. 2, without causing it to reach any higher value. But in the afternoon, when the motors had reached the constant temperature at which they would otherwise have remained, the addition of the trailer for the short space of about an hour and three-quarters raised the temperature from approximately 75 deg. C. to 100 deg. C. Most of this increase took place on the heavy outbound trip during the latter half of the time. A motor, having once reached a high temperature, retains its heat for a long time, and even with the trailer removed and the motors working again at their normal loads a period of approximately two-and-a-half hours was required for the motors to cool down again to their normal running temperature of 75 deg. C. Had the trailer been retained for another round trip it is evident that a much higher temperature would have been reached and a much longer period required to cool again. Even as it was, a temperature of practically 100 deg. C. was reached on a cool October day with an air temperature of 15 deg. C. This means that on a hot summer day the temperature of the motors would have been dangerously close to the softening point of ordinary solder.

The variation in the loads on the motors with and without the trailer are shown by the curve of root-mean-square current. It should be noted that the load on the motors for the two inbound trips with the trailer was approximately 15 per cent and 5 per cent, and that for the two outbound trips 18 per cent and 50 per cent, greater respectively than the greatest load on any trip in the same direction with the motor car only.

OTHER OBJECTIONS TO TRAILERS

In addition to the effect on the motor equipments the use of trailers for rush-hour service has several disadvantages from a transportation department's standpoint. The most important of these is the matter of speed. Handicapped already in making time and maintaining the schedule, on account of the greater number of stops which usually must be made, the heavy trips, where trailers are employed, are delayed still further by the reduction in speed due to the added weight. The inability of a trailer to move by itself also causes some delays in picking it up, dropping it and in shifting or running around it at stub end terminals.

CASES WHERE USE OF TRAILERS IS ADVANTAGEOUS

Although their use for local traffic is attended by the various disadvantages noted above, trailers may be employed, with very good results, for certain other classes of service. It has already been pointed out from Fig. 3 that

although the addition of the trailer for the morning trip when the motors were fairly cool caused the temperature to rise more rapidly than it would otherwise have done, the value actually reached was not abnormal. From the general shape of the curve, moreover, it is evident that the trailer might even have been retained for a second round trip without causing the motors to exceed their ordinary normal maximum of 75 deg. C., and had the trailer been attached when the car first left the barn in the morning it might easily have been hauled for three round trips without causing as high a temperature as by hauling it for only one round trip after the motors had become warm. Thus, by taking advantage of the thermal capacity of the motors, attaching trailers only to motor cars which have been out of service for five or six hours and leaving them attached for only a limited number of trips, extra capacity for special occasions can sometimes be obtained without overheating the motors. In certain classes of service also the extra load which would ordinarily be imposed on the motors by the addition of a trailer can be compensated for by a reduction in the number of stops.

In the electrification of a branch line of a certain steam railroad, which I happen to recall, the equipment was designed with the idea that as a rule motor cars only would be used. They were intended to make flag stops about 1 mile apart. It was realized, however, that on certain special trips extra crowds would have to be handled. It was planned on such occasions to have each motor car haul a trailer, but when doing this to have it stop only at the original steam railroad stations, which averaged about $2\frac{1}{4}$ miles apart. By this reduction in the number of stops the motor cars were able to haul the trailers for any desired number of trips, to make the same schedule speed as when running alone, to impose less load on the motors and still to have even more margin for making up time.

EFFECT OF RECENT IMPROVEMENTS ON TRAILER AND MULTIPLE-UNIT OPERATION

The many improvements in motors and control during the last few years have an important bearing on trailer operation. Interpole motors should not be deliberately overloaded any more than the older types, but their superior commutating ability and the more heat-proof character of their insulation enable greater advantage to be taken of their thermal capacity than was ever before possible. So, too, the use of type HL control permits this to be done safely and the full power of the motors to be utilized without the risk of blowing up the controllers. Even with trailers at their best, however, the multiple-unit train offers many advantages. In the first place, the tractive effort required to operate two motor cars at any given speed on the level is considerably less if they are coupled together in a train than if they are run singly. At the same time, that required to start, to accelerate and to propel them up grades is no greater. On this account two motor cars, when operated as a multiple-unit train, will attain a higher maximum speed and thus have more margin for maintaining the schedule than if operated separately.

Since both cars are able to move independently the making up or separating of trains can be done with a minimum of shifting. At stub end terminals there is no need for any change in the relation of the cars, for either may be used as the leading car. If the motors have been properly applied in the beginning no question of overloading them need be considered in making up trains, since the weight handled per motor remains constant, regardless of the number of cars. On account of this uniform loading motors can be applied to the cars more efficiently, both as to size and gear ratio, than if trailer operation had to be provided for, and smaller motors, geared for lower speed, can be used for a given car and a given schedule. All cars can be alike, so that a less number of spares will give equal margin for emergencies. On account of the

ease with which two-car trains can be made up when necessary, smaller cars can be employed and cheaper operation thus secured.

Many special combinations can be worked out to suit local circumstances. For instance, a road having a main line with a branch at some distance from one terminal can run trains to the junction and split them into single cars for the rest of the route, thus reducing the headway on the main line, as well as effecting a saving in platform labor. Where necessary, a trailer can be added to a train of two motor cars, thus making a three-car train with only half as much extra weight per motor as where the trailer is connected to a single motor car.

In view of these and many other advantages for handling varying crowds and still maintaining a close schedule the employment of trailers, even under favorable circumstances, seems a mere makeshift when compared to the use of multiple-unit trains.

LITTLE THINGS THAT COUNT

BY J. C. SCHADE, ASSISTANT SECRETARY-TREASURER WINONA INTERURBAN RAILWAY, WARSAW, IND.

Before going into the subject assigned me I want to thank the committee for giving me the privilege of writing a paper for this meeting, as it is indeed a pleasure for an ordinary railroad man to break away from car miles, bent armature shafts and high-tension lines and delve into the classics for a few brief moments.

These conventions are the best part of the railroad business, especially to those who attend and take active interest, and every railroad man should make it a point to take an active part in all discussions. If you haven't much to say, say it anyway, as it may help some one else. The man who has lived all his life in that part of the country where cyclone cellars are necessary naturally thinks that the rest of the world lives in cyclone cellars. Bring that man to the city and he is amazed to find human beings dwelling from five to six and eight stories above the ground.

Some railroad people are in the same class with this man. They never get away from their own line. They do not know what is going on in the rest of the world. The primary object of these meetings is to exchange ideas for the general betterment of the service, and I will call attention to some of the little problems that are confronting us every day.

Interurban lines were primarily built for the purpose of handling local traffic, but with the widespread increase of trackage during the last few years some of our more energetic traffic men have been promoting long-distance travel, and from present indications through train service will become popular with the general public. To handle this class of business successfully it will be necessary to standardize equipment and methods of operation, and some roads will be compelled to build additional tracks in congested districts so as to conserve that one important factor in long-distance travel—time. It will also be necessary for interurban companies to follow the practice of steam lines and cut down curves and grades and build belt lines and cut-offs through towns. Suitable locations for passenger and freight stations should not be overlooked, and sites should be purchased now while prices are reasonable.

The time is not far distant when two or three-car train operation will have to be considered. Our present equipment will not permit of our handling crowds of 200 or more with marked satisfaction. Consequently our excursion business has not been developed and our revenues have suffered accordingly. During the month of July six motor cars, transporting six companies of the Indiana national guard, were passed over our line to Ft. Benjamin Harrison, taking six crews and six pilots. This movement should

have been handled in two three-car trains with two three-men crews and two pilots, or a total of eight men against eighteen. I believe a profitable excursion business could be worked up if we had the necessary trail cars to handle it.

While the campaign for long-distance traffic is going on let us not forget our local business, which I believe makes up from 90 per cent to 95 per cent of our revenue. Let us show every consideration to the farmer who lives along our lines, and keep our trains on time so that he will not have to wait at some isolated road crossing for a car that is from twenty to thirty minutes late. Some day we are going to get the farmer's freight business, which may not be large in individual instances, but "every little bit helps."

On-time trains are one of the best advertisements a railroad can have. When a train is late hundreds of people are being discommoded and some of the compliments paid your line and management would not look well in print. Our transportation departments should give this matter more thought and consideration. If the power or the equipment is at fault, make an effort to rectify the error. If the schedule is too fast, cut it down, but by all means keep the trains on time.

Clean cars are another very necessary requirement. Schedules should be arranged so that the cars can be swept out at the terminals. They should be thoroughly scrubbed inside and out at least two or three times each week.

The toilet rooms on some of the older type of interurban cars are merely excuses, and some of them mighty poor excuses. If we want toilet rooms on our cars let us have good ones, or none at all.

Imagine yourself in the seat of a dirty car on a hot day, a conductor in a shabby uniform, with dirty hands and a three days' growth of beard on his face, asking for your fare or ticket. This is a condition found on some of our lines. To overcome this have a talk with the shop foreman, and if you find that you do not have enough cars to make the proper lay-overs for cleaning and overhauling, get more cars. The next time you meet a motorman on duty with a three or four days' growth of beard hand him the price of a shave. You needn't say anything—just hand him the money. It will prove to be a good investment and can be charged to "advertising expenses."

The drinking-water proposition on interurban cars will stand considerable improvement. Instead of profiting by the experience of steam lines it seems that we are beginning where they began. It is true that most of our passengers are short hauls, and it would seem that they are not entitled to a 2-mile ride for 5 cents with a drink of pure, cold water thrown in. But we must remember that conditions have changed during the past five years, particularly on those lines that run through dry territory. Instead of giving a 2-mile ride and a drink of water for a nickel, let us give a good cool drink of pure water for 5 cents and throw in the 2-mile ride for "good measure."

Did it ever occur to any of you that electric fans are used everywhere except in interurban cars and in interurban stations? Figuratively speaking, we have electric current to burn, and it seems strange that we cannot find enough to operate electric fans in our cars and stations. It is true that while cars are in motion we get plenty of air, but it gets very hot at passing points and at stations when cars are standing still. Fans don't cost much money and the current consumed would hardly be noticed, and it would seem that a couple of fans in a car would make a hit with the traveling public.

Car lighting is another proposition that should receive consideration. We should all make it a point to bring this matter to the attention of the manufacturers whenever the opportunity presents itself, and by making a concentrated effort results will be forthcoming.

If we want to keep pace with the steam lines we must look after the little things that make travel popular and convenient by the "little things that count," namely: Re-

adjustment of freight rates, standardization in everything, on-time trains, clean cars, decent toilet rooms, and any number of other conditions which seem too small and trivial to claim our attention.

When you have a few days to spare take a ride over your neighbor's line, and if you see anything wrong tell him about it. It might make him mad, but tell him, anyway; he will thank you later. I will venture to say that there are any number of men in this meeting who on their trip to this convention have observed some seeming defect in equipment and operation on the roads over which they have come which would be of interest and benefit to the other members, and to get these observations before the convention I suggest that the program committee set aside an hour at each meeting to give members a chance to talk about these things. The supply men are perhaps in better position to criticize than anyone else, owing to the fact that they do considerable traveling over the various lines, but are naturally a little backward in making their criticisms, fearing perhaps that they might offend the feelings of some good customer. But I want to say frankly that on the part of the company with which I am connected we want you to make your criticisms known. If you do not find it convenient to talk to us about it, we will thank you to write, or, better still, you might offer your criticisms at these meetings for general discussion.

TRAFFIC

BY J. F. KEYS, GENERAL PASSENGER AGENT DETROIT UNITED RAILWAY

One of the important branches of the traffic department is that of special or chartered cars, and as this branch has not, I think, received much consideration at any of the meetings of this association I shall dwell especially upon it.

The chartered-car business is important not only directly from a revenue standpoint, but also as a means of developing both the regular passenger traffic and the express and freight traffic to a considerable degree.

In our folders and printed matter we continually advertise the beauty spots for picnics and other resorts on our lines and offer the services of the representatives of our passenger department in aiding in the selection of places for outings. We keep informed about the accommodations at the different hotels and resorts, some of which are noted for their fish, frog or chicken dinners and others for their liberality in granting concessions, such as the free use of their grounds, stoves and dancing pavilions, etc. The places which are run in a respectable manner are suggested to individuals or committees and many carloads of picnickers and convention delegates are taken out in chartered cars for a day's or evening's outing.

We have a large, beautiful parlor car, "Yolande," with kitchenette and dishes for twelve persons. This car has a set of twenty wicker chairs for a small party, or fifty leather chairs for a larger party, and is kept busy on our interurban lines with Detroit business alone. Circulars have been distributed broadcast in Detroit and vicinity descriptive of the car and containing views of it. A special crew has been detailed to operate the "Yolande" and parties are assured of every courtesy from it. The conductor is a negro, and besides his other duties makes himself useful in heating coffee, etc., serving luncheon and looking generally to the comfort of his passengers.

We have also done considerable business with funeral parties and have two large black cars for this purpose. Regular crews are detailed for these cars and are familiar with the different routes to cemeteries. These cars originally were advertised in the newspapers, and circulars descriptive of them have been placed in the hands of all undertakers. The result is that the cars are out practically all the time and quite often are used for one funeral in

the morning and another in the afternoon. Our funeral cars have forward compartments with panels which drop down to permit the loading of the coffin and floral pieces. In these compartments are accommodations for the pallbearers. The rear compartments are reserved for the family and friends. From now on we shall have to compete with the auto-hearse, but I believe that the low rates which we charge for the funeral cars will enable them to hold our share of the business.

We have but recently completed a series of weekly trips to forty different towns and cities on our system, made by the Wholsalers and Manufacturers' Association of Detroit for the purpose of meeting the proprietors of the various business houses in those towns. These trips were arranged by the chairman of the trades promotion committee of the association and our passenger department, and ten highly successful trips were conducted. From two to four cars were chartered for each trip. The various firms were supposed to be represented by at least one of the proprietors, and it was thoroughly understood that no business was to be solicited and no bills were to be collected. It was purely a trades promotion movement in the interests of Detroit business houses, and, from the warm reception received in all cities and towns visited and the entertainment given, it cannot but redound to the interests of the firms represented. Our passenger, publicity and freight departments were all represented on these trips and we made it our business to become acquainted with every man on each trip, as well as to meet the prominent men in the various places visited. In this way we were able to make more friends for our companies and in so doing will get more business, both freight and passenger. We were also able to straighten out or explain away some grievances that had been nursed for some time. In some cases merchants explained that their orders went to cities farther away because quicker deliveries were made, and this was the cue for our freight department representatives to get busy and solicit the business for our lines.

I have gone rather deeply into the details of these particular trips for the reason that I believe that such trips can be worked up to good advantage by other companies, especially to increase their freight and express business and also their passenger traffic, because the proprietors of the big firms must appreciate the number of calls their representatives can make in a day, at a small expense, by patronizing the electric lines.

Railway properties having city lines such as ours have an advantage over their competitors in working up business in that they have the facilities for advertising, which the others have not. Only last Thursday we ran a very successful excursion from Flint to Orion and return, carrying the grocers and butchers to the number of about 800 in thirteen chartered cars. In spite of very keen competition and low rates we were able to take this business from the railroads and maintain our regular rates by springing a few good talking points at the last minute in the way of advertising the excursion. At the cost of \$1.50 for 100 we had banners printed reading, "Grocers and Butchers' Picnic at Lake Orion, August 16th." We agreed to carry these banners on every city car in Flint for a week prior to the picnic, for which about fifty banners were required. We also agreed to give the committee fifty banners to be carried on the grocery, delivery and bread wagons in Flint. Although these were valuable mediums for getting the people out, it cost practically nothing. This party, on the going trip, was handled between 7 a. m. and 8 a. m. and was taken back on cars leaving hourly from 5 p. m. until 11 p. m., so that old and young were taken care of practically at their own convenience. The excursion was such a success that we were assured by the executive committee of the organization that we should have the business next summer.

The secret of the success of electric railway properties

is largely the frequency and convenience of the service and, like regular trains, chartered cars may be operated at practically any time and between any points.

I have endeavored in the foregoing to show where and how chartered-car business may be got and to emphasize the fact that all traffic departments derive benefits to a considerable extent therefrom. It is a well-known fact that the more people travel the more they wish to travel.

THE TROUBLES OF A BAGGAGE AGENT

BY O. E. ANTHONY, BAGGAGE AGENT TRACTION TERMINAL STATION, INDIANAPOLIS, IND.

The troubles of a baggage agent are many and frequent. Many times a day we have passengers come to the baggage room who do not know what is meant by the term "baggage," as specified by the rules of the Central Electric Traffic Association, as well as by the statutes of many States. That is, they ask us to check such articles as baskets of fruit, musical instruments, cases of beer and various other things not coming under the term "baggage." This causes much trouble and it takes valuable time to explain the matter to the passenger, for explain we must or offend him.

Then, again, agents along the various lines who do not understand the rules thoroughly will check articles not classed as baggage, and when the passenger wishes to recheck such articles at our station, and we refuse to do so, he often becomes very indignant. This annoyance could be lessened to a great extent by a campaign of education

traveling together and working out of the same trunks, it is allowable and perfectly regular under our rules to check 150 lb. of baggage for each ticket. But it often requires diplomacy and good judgment to find out whether this is true or whether the passenger is trying to impose on you and to avoid at the same time offending the passenger.

Another constant source of trouble comes from passengers who have baggage checked in coming to the baggage room within a very few minutes of the time they desire to leave and asking to have their baggage checked out immediately on a certain car, usually due to leave in from three to five minutes. We lift their old checks and issue new ones, but when we go to attach the checks to the baggage we find that there is a storage charge. Of course, we have to revert again to the C. O. D. check, which causes delay, and the baggage frequently misses the car on which the passenger departed.

There is also a great deal of trouble with C. O. D. checks attached to incoming baggage from points on various lines where the agents are not familiar with the rules relating to C. O. D. checks. They frequently send us baggage with only a C. O. D. check attached, or sometimes with two checks attached, but frequently these checks do not state the amount to be collected, the originating station or whether the C. O. D. item is for excess or storage. This causes a great amount of trouble and the patron usually gets very angry, as it means delay, and the only way of adjusting the matter is to communicate with the agent at the starting point. This leads me to make the suggestion again that a campaign of education be

TERMINAL BAGGAGE ROOM INDIANAPOLIS

RECORD OF BAGGAGE CHECKED OUT, AND COLLECTIONS FOR EXCESS, C. O. D. AND BAGGAGE STORAGE																																			
T. H. I. AND E. TR. CO.						I. U. T. CO.						I. AND C. TR. CO.						I. C. AND S. TR. CO.						I. C. AND W. TR. CO.						I. N. C. AND T. ELEC. RY. CO.					
DATE	HOURS	BAGGAGE CHECK	STATION	AMOUNT	EXCESS	DATE	HOURS	BAGGAGE CHECK	STATION	AMOUNT	EXCESS	DATE	HOURS	BAGGAGE CHECK	STATION	AMOUNT	EXCESS	DATE	HOURS	BAGGAGE CHECK	STATION	AMOUNT	EXCESS	DATE	HOURS	BAGGAGE CHECK	STATION	AMOUNT	EXCESS						

Form Used in Indianapolis Terminal to Record Baggage Checked Out and Collections for Excess, C.O.D. and Baggage Storage

among the agents at the smaller stations, for it seems that most of the trouble originates there, due no doubt to the fact that the agent acts as both ticket and baggage agent, as well as freight agent, and is kept very busy, especially at train time. The passenger under these circumstances usually insists that we must recheck his baggage, although it has been wrongfully checked by the agent at the starting point.

Commercial traveling men, as a rule, do not cause us much trouble. They are usually acquainted with the rules and do all they can to assist us in handling their baggage quickly. However, there are exceptions to this rule. A majority of commercial men carry excess baggage, and frequently, when in a hurry to get baggage out on a certain car, we accept the statement of the traveling man as to the amount of excess he is carrying. On numerous occasions we have found these statements to be incorrect, whether made so purposely or not I do not pretend to say. I think it a fair estimate to state that seven out of ten will make a correct statement, while the other three will make a false statement. Whenever a traveling man makes a false statement and we detect it before his baggage leaves the station we attach a C. O. D. check to the baggage to cover the excess. This all takes time, when time is valuable.

The traffic rules provide that each passenger shall be entitled to carry 150 lb. of baggage free. It often happens that a traveling salesman having excess baggage will attempt to have it checked out on the ticket of himself and a friend whose destination happens to be the same. This attempt is made to avoid paying excess and is against the rules. We refuse to check such baggage when we detect it in time. However, when there are two men

conducted among the local agents, especially at the smaller stations. It would also be well to conduct such a campaign among the traveling public, by printing the rules governing the handling of baggage in timetables and folders and also by bulletins or posters placed in all the stations along the various lines. I understand some of the roads are printing the rules in folders and timetables, but the practice should be universal.

A passenger will often purchase a ticket to some point at which he wishes to stop over and then present the ticket to us with the request that we check his baggage to another point farther on. The rules prohibit this being done, and as a result the passenger sometimes becomes annoyed.

Again, we have considerable trouble with passengers who, after purchasing a ticket and checking their baggage, decide for some reason not to make the trip as first contemplated. They come to the baggage room and ask us to cancel the baggage stamp so that they can get their money refunded on the ticket. This cannot be done under the rules, for, as a general thing, the baggage has already left the station. Passengers usually endeavor to do this in an effort to have their baggage transported free, assuming that after the baggage has left the station they can present ticket and have money refunded, which should not be done.

Very often, since interline tickets have been placed on sale, we have trouble with interline baggage checked on these tickets, due generally to the fact that the agent checking the baggage does not route it at all, or, if he does, does not route it correctly. This trouble and inconvenience only occur where there is more than one line running out of a junction to the destination. The baggage

check should invariably be routed like the ticket, and as much care should be taken in doing this as in preparing the ticket, for unless the routing appears on the check we have absolutely no way of telling what line to send the baggage over from the junction. This only impresses upon the writer the necessity of all agents becoming thoroughly familiar with all rules and routes.

We also have a great deal of trouble with people whose baggage is delayed for one, two or three cars. They cannot understand, it seems, why their baggage is not at its destination at the moment they arrive and seem to think it is all the fault of the baggage agent. Hence, as a rule, the agent has to take a severe "combing" from the angry passenger.

It frequently happens that baggage received, checked from other stations, or baggage received at the baggage room from local deliveries is not substantial. We must, and do, refuse to accept such baggage, and this generally means a long argument with an indignant patron, which is very trying, especially when we are in a rush—and it seems that these things always happen when time is the most valuable. The rules do not permit the checking or rechecking of such baggage.

In my opinion, the agent at junction points should retain and hold all lifted free checks for ten days or two weeks, as in case of mismatched checks, missent or lost baggage, so that it can be more quickly located. For illustration: A piece of baggage is checked to a junction point from some station on one of the lines, and a passenger presents his check at the junction baggage room with the request that it be rechecked to a station on another line. His original claim check is lifted, the new check given him and the lifted check is sent the next morning to the auditor of the issuing road. In the meantime the baggage may have been missent, either from originating station or perhaps from a junction point. In the latter case the fact that the original checks are not on hand for reference causes inconvenient delay to the agent in undertaking to trace by telephone and much annoyance to the patron, who cannot understand the situation.

The system of checking baggage from residence to destination is of great benefit to the traction roads and is conducive to the encouragement of patronage. This, of course, can be done only in conjunction with reliable transfer companies and cannot be undertaken except where intelligent men are employed by such companies.

One of the great troubles of an agent is in tracing mismatched and lost baggage. We have installed a system of records which is of great assistance in such cases. This record consists of a checking sheet, divided into several columns or spaces, one space reserved for each road running into the junction point. Each of these spaces is again divided into four divisions, two of which are for the numbers of the checks, one is for the name of the station to which the baggage is checked and the last column is for the amount of excess. For illustration: Assume that a passenger desires to recheck his baggage over a line other than the one upon which it has arrived. We lift his original check and issue him a new one. The number of the lifted or original check is placed in the first column, the number of the new check is placed in the second column, the name of the town to which the baggage is checked is placed in the third column and the amount of excess, if any, in the last column, all being under the line of road on which the passenger departed from the junction. Suppose the passenger, after arriving at his destination, finds upon presenting his check that the wrong baggage has been forwarded. The forwarding agent being advised by the agent at the destination point as to the number on the passenger's claim check and the number of check on the baggage, in case of mismatch, we refer to the checking sheet and ascertain the number of the check under which the passenger's baggage arrived at our sta-

tion. We take this number and look over the baggage on hand and find if the baggage with the original check number is still there. If so, it is easily straightened out. But suppose the baggage at the destination of the passenger has the proper check, but is not the right baggage. After the forwarding agent has been advised as to the check number held by passenger, we go to the check sheet and find the number of the check lifted, and then it is no trouble to find if the baggage is in the baggage room. But suppose the baggage we are looking for has been sent out under another check and is not in the house. We go to the check sheet and ascertain exactly where it was sent and the number of the check under which it was forwarded and the difficulty can usually be adjusted in a few hours.

I have enumerated several of the many troubles of a baggage agent, and I wish to say that none of these troubles is imaginary and that most of them occur many times every day. We deal with all kinds of people, some of whom are not accustomed to traveling and are not familiar with our baggage rules, and it takes time and the exercise of much patience to explain these rules—time that may cause a delay in forwarding the baggage of another passenger.

I should like to make some suggestions as to how to remedy every trouble of every baggage agent on earth, for we have these troubles daily, and many I have been unable to remedy, but I feel that I am not prepared to advise others, except always to preserve one's temper, to be courteous under all circumstances and to practise every known virtue. I have been on both sides,—that is, of the public and the agent—having been a commercial traveler for ten years, and in both of these callings I have learned that a soft answer turneth away wrath.

However, I wish to insist upon the fact that a campaign of education among the baggage agents generally, and the traveling public so far as possible, would help matters materially and assist to make the life of the baggage agent worth living.

INSURANCE

BY H. N. STAATS, INSURANCE EXPERT AMERICAN ELECTRIC RAILWAY ASSOCIATION AND CENTRAL ELECTRIC RAILWAY ASSOCIATION

Insurance is a contract whereby, for a consideration called a premium, one party undertakes to indemnify the other against loss. I wish to emphasize that there is but one party, namely, the present fire insurance companies, that undertakes to indemnify the great electric railway interests of this country against fire loss. I will admit that this one party is financially responsible, having from premiums paid by the electric railway companies money enough to pay all the losses of all the electric railway companies in the United States and in addition a considerable part of the losses of more hazardous property. This one party makes all the rules and regulations for all the people all the time. It formulates the contracts, compiles the forms, dictates the conditions, organizes the rating bureau and establishes the rates or premiums that must be paid by you for indemnity.

Where in this business world will you find another party that has such absolute control over its business as the old-line stock fire insurance companies have of the electric railway insurance business of this country? In all other lines of business there is competition; but, so far as I can learn, there is only one party at the present time to which the electric railway companies can apply for indemnity against loss by fire, and for this indemnity you are paying a big premium.

What is a premium? Webster says that a premium is "insurance money paid to underwriters." Webster also gives another definition: "A premium is a prize to be won by competition." What we need in this insurance business

is competition, and every member company of this association can help create competition and in so doing save the larger part of the money that is now being paid in high insurance premiums.

INSURANCE STATISTICS

About \$1,000,000,000 represents the value upon which insurance should be carried. The rates of insurance on this class of properties range from 15 cents per \$100, covering the less hazardous properties, protected with the most scientific means for preventing fires, to \$3 on each \$100, covering the most hazardous properties of this class. It is a conservative estimate that the present average rate on buildings and contents, including rolling stock, is 75 cents per \$100 of insurance carried. One billion dollars at this average rate makes a yearly premium of \$7,500,000. Electric railway and electric light interests are closely allied and should co-operate in a plan for obtaining their insurance at actual cost, or as near cost as possible.

W. H. Blood, Jr., the insurance expert of the National Electric Light Association, estimates that the average rate paid by the electric light and power companies of the country is 1 per cent and that the total annual premiums in 1907 were \$3,305,000. He believes a demand for a reduction from the present rates to be legitimate. From these data of Mr. Blood we can conservatively place the amount paid by electric light and power companies for indemnity against fire loss for 1911 at \$3,500,000. Add to this amount the premiums paid by electric railway companies for 1911, \$7,500,000, and we have a grand total of \$11,000,000.

In 1905 reports obtained from more than 400 electric railway companies indicated that during the previous ten years the losses sustained by them from fire were less than one-third of the premiums paid for insurance, and that there has been great profit to the insurance companies in the insuring of electric railway properties.

During the past five years rates of insurance have been materially reduced, but the amount of insurance carried by electric railway companies has been very greatly increased, so that the additional premiums will offset to a very considerable amount the reduction made in rates. At the same time these same properties have been greatly improved from a fire insurance standpoint. The electric railway companies have expended more than \$3,500,000 for automatic sprinkler equipments in their properties; many car-storage houses and car shops have been erected of slow-burning construction; the companies have appointed inspectors among their employees whose duty it is to safeguard the properties by eliminating in every reasonable way the hazards that go to create a fire; plans have been originated for safeguarding cars stored in car yards, and a general interest has been shown on the part of executive officers of traction companies in the subject of the insurance of their properties. All of this tends to lessen the hazards and make this class of property more desirable.

Many electric railway companies have established their own insurance funds, and are carrying a part of their insurance. I believe the time is coming when all their insurance will be cared for in this way.

Electric railway companies and electric light companies should be placed in a class by themselves, establish their own insurance funds and pay their own losses. They should not be called upon to help pay a loss on any other class of property.

Greater interest in this subject of insurance is now shown by electric railway and electric light associations, through their committees on insurance and by the appointment of insurance experts to aid the member companies, than ever before. I am confident that a foundation has been laid upon which electric railway and light companies of this country will at no distant date build an insurance organization of sufficient financial strength to insure against loss every electric railway and every elec-

tric light property of this country at cost, and that the average cost will not exceed 20 cents on each \$100 worth of property.

I strongly urge upon every electric railway company to protect its valuable interests with the most modern and scientific means to prevent and to extinguish fires. This is a duty that you owe not only to yourselves, but to the public you serve.

ADDITIONAL EXHIBITORS AT ATLANTIC CITY CONVENTION

The exhibit committee of the American Electric Railway Manufacturers' Association announces the following additions to the list of exhibitors at the Atlantic City convention to which spaces have been assigned:

Blake Signal & Manufacturing Company, Boston, Mass., (228-230)
Cooper Heater Company, Dayton, Ohio, (223)
D. & W. Fuse Company, Providence, R. I., (236)
James H. Denton & Company, New York, (208)
Electric Railway Equipment Company, Cincinnati, Ohio, (419)
Gold Car Heating & Lighting Company, New York, (217)
Holland Trolley Supply Company, Cleveland, Ohio, (414)
Heany Fire-Proof Wire Company, New York, (418)
Lord Manufacturing Company, New York, (416)
Lobdell Car Wheel Company, Wilmington, Del., (253)
Massachusetts Chemical Company, Walpole, Mass., (234)
McCord Manufacturing Company, Detroit, Mich., (330)
Philadelphia Holding Company, Philadelphia, Pa., (332-334-336)
Railway Motor Car Corporation, Philadelphia, Pa., (412)
John A. Roebling's Sons Company, Trenton, N. J., (225-227)
Sangamo Electric Company, Springfield, Ill., (417a)
Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., (345)
Standard Motor Truck Company, Pittsburgh, Pa., (209-211-213-215)
Universal Trolley Wheel Company, Springfield, Mass., (343)
Vixen Tool Company, Philadelphia, Pa., (270)

The preliminary list was published in the *ELECTRIC RAILWAY JOURNAL* of Aug. 5, and the number following each exhibitor's name in the list above refers to the number of the space occupied by him, as shown on the diagram in the previous article.

The exhibit committee says that with these additional exhibitors all of the space for which arrangements were made on the Pier has been assigned. This is a condition which has never occurred before at this time of the year in the history of the association and indicates that the exhibit at Atlantic City this year will be the largest in the history of the association. Steps are being taken by the exhibit committee to secure more space. The committee also announces that there will be no 110-volt direct current on the Pier; there will be 220-volt and 550-volt direct current, as in the past, and also three-phase, 50-cycle alternating current.

AVIATION FLIGHTS AT ATLANTIC CITY

The entertainment committee of the Manufacturers' Association has arranged with the Curtiss Exhibition Company, of which Glenn H. Curtiss is vice-president, to give exhibition flights of hydro-aeroplanes at Atlantic City during convention week for the benefit of the delegates at the convention. It is expected that these flights will take place on Oct. 12 and 13, weather permitting. The Curtiss Exhibition Company includes several street railway companies among its clients and has given aviation exhibitions at a number of street railway parks during the summer.

A recent trolley trip from Waukegan, Ill., to Boston, taken by Prof. J. E. Baggett, of the former city, covered 1512 miles and consumed seventy-eight hours. The trip from Albany to New York City was made by steamer, but otherwise the journey was by electric railway. The route was by way of South Bend, Ft. Wayne, Toledo, Cleveland, Rochester, Syracuse, Utica, Schenectady, thence by Albany to New York, to New Haven, Hartford, Springfield and Worcester. The total cost of the trip was \$24.59.

Cedar Point Meeting of the Central Electric Railway Association

A Full Report of the Discussion of Papers and Social Events of the Summer Meeting of the Association, Which Was Held at Cedar Point, Near Sandusky, Ohio, August 23 and 24.

A most enjoyable summer meeting was held by the Central Electric Railway Association at Cedar Point, near Sandusky, Ohio, on Aug. 23 and 24. The meeting was attended by more than 100 railway men and guests, and a number of ladies were also present.

SPECIAL CARS

H. E. Chubbuck, vice-president Illinois Traction System and president of the Illinois Electric Railways Association, and with him ten other officials of the McKinley system, were the guests of the Central Electric Railway Association and made the trip to Cedar Point in the office car of Mr. Chubbuck. Besides Mr. Chubbuck the party included C. F. Handshy, general superintendent; G. W. Quackenbush, traffic manager; Dr. H. M. Bascon, chief surgeon; E. W. Fowler, chief clerk to vice-president; F. G. Buffe, manager department of publicity, all of the Illinois Traction System; Robert Morrison, general superintendent Wichita (Kan.) Street Railways; L. E. Gould, Western editor *ELECTRIC RAILWAY JOURNAL*; J. A. Kucera, business manager *ELECTRIC RAILWAY JOURNAL*; C. L. Henry, president Indianapolis & Cincinnati Traction Company, and A. A. Anderson, general manager Springfield (Ill.) Consolidated Railway. The car traveled 604 miles from St. Louis, Mo., to Sandusky, Ohio. From St. Louis to Danville, Ill., it ran over the tracks of the Illinois Traction System. At Danville it was switched to the tracks of the Cleveland, Cincinnati, Chicago & St. Louis Railroad and was hauled as a coach in a regular passenger train to Crawfordsville, Ind. Here it was switched to the tracks of the Indianapolis, Crawfordsville & Western Traction Company for the trip to Indianapolis. The party reached Indianapolis on Monday night and left on Tuesday morning over the Indiana Union Traction Company's line for Peru, Ind. From Peru the run to Ft. Wayne was made over the line of the Ft. Wayne & Northern Indiana Traction Company and from Ft. Wayne to Lima, Ohio, over the Ohio Electric Railway tracks. At Lima the new terminal station was inspected, after which the car left over the Western Ohio Railway for Findlay. From Findlay to Fostoria the tracks of the Toledo, Fostoria & Findlay Railway were used and from Fostoria to Sandusky the run was made on the tracks of the Lake Shore Electric Railroad. The distance traveled from Indianapolis to Sandusky was 290 miles and the run was made in eleven hours and thirty-seven minutes, including the stop at Lima and waits at junction points.

The Indiana Union Traction Company also ran a special train consisting of a motor car and trailer from Indianapolis to Cedar Point and brought about fifty people.

WEDNESDAY AFTERNOON SESSION

The first business session of the meeting was called to order by President Peck at 2 p. m. on Aug. 23. Secretary Neereamer read the minutes of the last meeting held at St. Joseph, Mich., which were approved. President Peck congratulated the Central Electric Railway Association on having present at the Cedar Point meeting the presidents of three other electric railway associations, namely, Arthur W. Brady, president American Electric Railway Association; H. E. Chubbuck, president Illinois Electric Railways Association, and James A. Anderson, president Canadian Electric Railway Association. Mr. Peck said that Mr. Brady needed no introduction to the members, but he thought that they would like to hear from Mr. Chubbuck and Mr. Anderson.

Mr. Chubbuck said that he was glad to have an opportunity to thank the Central Electric Railway Association for the courtesies extended through him to the Illinois Electric Railways Association and the Illinois Traction System. He had found recently that under the present by-laws of the Central Electric Railway Association the Illinois Traction System could become a member only in a partial way. Steps would be taken to have the Danville, Urbana & Champaign division of the Illinois Traction System make application for membership in the Central Electric Railway Association immediately on his return to Illinois. When the physical connection between the Indiana lines and the Illinois lines was completed the Illinois Traction System as a whole would join the Central Electric Railway Association and take an active part in its work.

Mr. Peck said that the connection of the Illinois Traction System with the lines in Indiana, Ohio, Michigan and Kentucky would mark an important step in the progress of electric interurban railway development. It would materially improve the earning capacity of all of the connecting lines and would greatly strengthen the influence of the Central Electric Railway Association.

C. Dorticos, General Electric Company, then read a paper on "Headlights for Interurban Service," which will be found in abstract on page 349.

In reply to R. M. Hemming, Ohio & Southern Traction Company, who referred to the necessity for standardizing headlights and attachments, Mr. Dorticos said that the luminous arc headlight and Form B headlight would operate with the same resistance sets, but the luminous arc headlight could not be operated in this way at its full efficiency. The three-lead resistances for the General Electric and the Crouse-Hinds headlights were practically the same. He appreciated the important work which the standardization committee of the Central Electric Railway Association was doing in formulating standards for headlight apparatus.

H. N. Staats, insurance expert of the American and the Central Electric Railway Associations, next read a paper on insurance, which is printed in abstract on page 356.

Arthur W. Brady called attention to one fact which stood out prominently in Mr. Staats' paper. The figures for premiums and losses paid for old-line insurance could be based only on data obtained in 1905. Later figures were not available. There was a definite relation between the fact that only one-third of the premiums had been paid back to the companies and that reductions in premiums had taken place. Mr. Brady considered insurance engineering in line with the timely work of efficiency engineering. If the railroads secured results from the collection of statistics in 1905 it would be desirable to continue the collection of insurance statistics and he understood that to be an important part of the work which Mr. Staats would do for the association. Improvement in insurance methods and the reduction in premiums and losses which would follow constituted an important method or means for widening the gap between receipts and expenditures.

Mr. Staats said that the cost of obtaining and maintaining business by the old-line insurance companies was from 38 per cent to 42 per cent of the premiums. Associated electric roads could inspect their own properties at much lower figures. The Factory Mutual Insurance Organization of New England operated for less than 10 cents on

each \$100 premium paid. This included paying all losses. They returned 85 per cent to 95 per cent of the premiums paid in. The electric railways could do even better, because their property was scattered more widely. The monitor nozzle system installed in open yards ought to bring the cost to 20 cents in place of 60 cents as now charged. The insurance bureau will have its own inspectors.

R. A. Crume, Dayton & Troy Electric Railway, said that the electric railways in Dayton, Ohio, had been considering carrying their own insurance. They had paid large premiums for ten years, but fortunately had had no losses.

A paper on "Overhead Standardization" was next read by A. Schlessinger, superintendent overhead construction Terre Haute, Indianapolis & Eastern Traction Company. This paper is printed in abstract on page 347.

J. E. Cochran, Ohio Electric Railway, said that little improvement had been made in overhead construction in the past few years even though the service and the size of cars had been greatly increased. Many roads needed more feeder capacity.

A general discussion followed on lightning arresters.

H. L. Garbutt, Westinghouse Electric & Manufacturing Company, advised against the universal grounding of lightning arresters to the track rails.

Mr. Schlessinger said that a rail connection was desirable because in many cases a pipe ground was inefficient.

R. N. Henning had found the rail connection necessary. He had tried zinc and coke grounds, but they were inefficient, as were also pipes installed in dry ground. Later he grounded his arresters through the rails and trouble ceased. Thorough inspection was essential if good results were to be obtained.

W. D. Hamer, Electric Service Supplies Company, said that all arresters should have two grounds and thus protect against the inefficiency of one or the other. The rail ground was advisable, especially on well ballasted track, since the static would distribute itself over the rails and assist equalization.

Mr. Cochran had charge of arresters on 250 miles of track and used two kinds of arresters, one grounded to plates alone and the other to both plates and track. One type of arrester evidently was designed to care only for the static and was injured by the trolley current flowing when it was grounded to the rail. Thirteen years ago he installed 300 arresters and on ten of these arresters he provided counters attached to the armatures. He kept a record of the number of discharges to learn the characteristics of the arresters. The greatest number of discharges on one arrester in a single storm was six in one afternoon. Each arrester recorded from forty to 120 discharges during the season. Those arresters were connected to both earth and rail.

E. J. Burdick, Detroit United Railway, said that the arresters on his road formerly were bonded to the rails, but trouble from trolley current following discharges occurred until the rail grounds were removed. The present ground is a pipe $7\frac{1}{2}$ ft. long.

Mr. Schlessinger mentioned a section of cross-country high-tension line which was located in the "lightning belt" and gave much trouble until the 33,000-volt arresters were replaced by 44,000-volt arresters and a ground wire was installed at the top of the poles.

Mr. Dorticos said that good insulation had much to do with protecting motors from lightning discharges. He spoke of the rapidly increasing use of aluminum-cell arresters for car work.

Mr. Burdick said that the Detroit United Railway installed arresters wherever they could receive attendance, placing some of them at carhouses.

Mr. Hamer said that about 75 per cent of the arresters which his company repaired had been damaged because of poor grounds.

Mr. Burdick favored the use of two overhead trolleys placed at a height of about 18 ft. 6 in. If placed higher too great tension was required in the trolley pole. The use of two trolleys did away with overhead pans at sidings. If one wire broke the other would keep the brackets from running back. Cars could also be operated on the remaining trolley wire.

George Whysall, Columbus, Marion & Bucyrus Railway, said that he had moved 20 miles of second trolley wire to the pole and used it as a feeder, thus reducing the expense of maintenance 55 per cent. When two wires were used neither of which was over the center of the track the wheels wore unevenly. Cars could proceed past a break by holding the pole on the feed wire.

F. W. Coen, Lake Shore Electric Railway, said that his company had just been taking down double trolley wires and replacing them with one heavier wire. Thus better contact was obtained for heavy service.

Charles L. Henry, Indianapolis & Cincinnati Traction Company, described a freak lightning accident which had occurred on his line. Four telephone wires were carried on a cross-arm at the top of 40-ft. poles set 100 ft. apart. Lightning struck the wires and burned off three of them midway between poles.

A brief discussion followed on catenary trolley construction for direct-current roads. At the close of the session President Peck called attention to the work of the advertising department of the Illinois Traction System. Samples of this company's advertising literature were distributed among the members.

THURSDAY MORNING SESSION

The first paper read at the session on Thursday morning was by J. C. Slade on "Little Things That Count." There was no discussion on this paper, which is abstracted on page 353.

O. E. Anthony next read a paper on "The Troubles of a Baggage Agent." This paper will be found abstracted on page 355.

President Peck read a letter from E. C. Carpenter, claim agent Indiana Union Traction Company, recommending that all member companies of the association send in each month to the secretary of the association a statement of over and short baggage, using a special blank showing check numbers and a description of the baggage. Mr. Carpenter's letter was referred to the Central Electric Traffic Association.

There was no discussion on the paper on "Traffic," by J. F. Keys, which is abstracted on page 354.

Clarence Renshaw then read a paper on "Trailer Operation Versus Multiple-Unit Trains," which is printed in abstract on page 350.

H. A. Nicholl, Indiana Union Traction Company, said that his company operated trailer cars on certain runs. They required 25 per cent more power than a single-motor car and they were necessarily a makeshift. However, it was his opinion that their operation was the best solution of the problem on several runs where the traffic was more than could be handled by a single car. They had no difficulty in maintaining schedule speed. It was expensive to equip existing motor cars with motors and control apparatus suitable for multiple-unit service. Trailer operation required only one extra brakeman.

C. E. Morgan, Indianapolis, Crawfordsville & Western, said that he had just installed trailer service on his road and was now obtaining power and motor temperature data. The trailer-car train ran on a limited schedule without excessive heating of the motors. The power consumption was only 18 per cent more than for a single car.

E. F. Schneider, Cleveland, Southwestern & Columbus Railway, said that his company was not permitted to operate trailers into the city of Cleveland. In order to obtain a car of large seating capacity he was now rebuilding a car 57 ft. 6 in. long and making it of the front-entrance

type similar to the "near-side" cars in Buffalo. It will have a seating capacity of seventy-two.

E. J. Burdick, Detroit United Railway, described a test made to determine the power consumption of a motor car and a freight trailer on level and hilly track. On level track one motor car required 90 watt-hours per ton mile. With one trailer car the power consumption was 71 watt-hours per ton mile of train load.

Mr. Hall, electrical engineer Dayton & Troy Electric Railway, said that trailer cars gave good service on suburban runs. His company used trailers on Sunday and Monday morning on the limited trains which were operated through from Dayton to Toledo. He did not believe that the question of trailer cars versus multiple-unit operation could be settled without taking into account the local conditions. If the traffic required trains of two or more cars regularly, then the question arose whether to use a motor car of high capacity with a trailer or two motor cars and multiple-unit control. The latter involved a heavy investment in motors and control apparatus. If the traffic was moderately heavy, then it might be more profitable to use a high-power motor car and a trailer, thus avoiding excessive cost of electrical equipment.

The next meeting of the association will be held at Louisville, Ky., on Nov. 23.

SOCIAL FEATURES

On Wednesday afternoon a game of water baseball was played by teams representing the supply men and the railway men. The teams lined up as follows:

Supply Men		Railway Men	
Catcher—E. C. Folsom		Catcher—C. E. Morgan	
Pitcher—Elmer Smith		Pitcher—L. M. Burge	
First base—W. H. Bloss		First base—G. K. Jeffries	
Second base—Miles Lambert		Second base—J. F. Keys	
Shortstop—M. T. Kirschke		Shortstop—L. M. Clark	
Third base—W. D. Hamer		Third base—R. H. Rifenberick	
Right field—J. Seymour			
Center field—Fred Hornstein		Right field—W. H. Fowler	
Left field—H. L. Garbutt		Center field—J. F. Starkey	
Substitute—C. P. Billings		Left field—J. B. Crawford	
		Substitute—Fred Buffe	

The final score was 8 to 5 in favor of the railway men.

On Wednesday evening the supply men were the hosts at a whitefish dinner at which the attendance was about 175.

COMPENSATION FOR CARRYING UNITED STATES MAIL

The subject of compensation for carrying United States mail was considered in Washington on Aug. 9 at a conference in which the following participated: Edgar S. Fassett, Albany, chairman of the committee of the American Electric Railway Association on this subject; A. R. Piper, general freight agent Brooklyn Rapid Transit Company, a member of the committee; Gen. George H. Harries, representing the association; Mr. Holladay, acting second assistant postmaster-general, and Mr. Hornaday, superintendent of the division of miscellaneous transportation.

The recommendations formulated by the committee as to rates for this service were presented to the postal authorities as follows:

"For pouch service. From one to three pouches handled on passenger cars a minimum of 3 cents per car mile; for each additional pouch 1 cent per pouch per mile.

"That the rate for railway post-office service on city lines be 1½ cents per linear foot per car mile.

"That the rate for railway mail service on interurban lines be the maximum compensation given to steam railroads for like service."

It was agreed that the officials of the Post Office Department should present the matter to the Postmaster-General at an early date and communicate with the committee in sufficient time for a report to the association at the convention to be held at Atlantic City in October.

HANDLING CHARTERED CAR SERVICE IN BOSTON

BY EDWARD DANA, ASSISTANT TO SUPERINTENDENT OF TRANSPORTATION, BOSTON ELEVATED RAILWAY

Many street railway companies fail to realize the opportunities of the chartered or "special" car business. They care for all such as voluntarily comes their way, but do not exert themselves to as great an extent as they should to build up a substantial revenue from this source. More and more, however, will far-sighted managers, as the margin between income and expenditure is narrowed by the lengthening of the average haul, turn to this service as a consistent revenue producer.

This sort of business is, moreover, highly desirable for several reasons. It affords an opportunity in most cases to utilize men and equipment when the regular service is not

Figs. 1 and 2—Boston Special Cars—Application Blank and Manifest

under the maximum strain. Thus it enables men at the foot of the extra list to secure better wages. Several important things must be considered in connection with supplying this service. Inasmuch as the rates, although reasonable, are arranged to be profitable, patrons have a right to expect more than they do of the regular service and the company should endeavor in every way to fulfil this expectation and thus have well-satisfied customers. The crews should be neat in appearance. The cars should be

Fig. 5—Boston Special Cars—Receipt for Payment

as clean as it is possible to have them and in perfect repair, with all loose and noisy parts adjusted. Last, but not least, the service should be rendered as called for on the contract, the cars being at the designated points exactly on time, barring, of course, the unexpected. Even then street inspectors should exert every effort to extricate specials from any blocks or breakdowns which they have encountered. The following is the system of insuring against a

failure in this service followed by the Boston Elevated Railway.

A special car order (Fig. 1) is drawn and signed by the party ordering the car at the office of the superintendent of transportation. This form is in duplicate (yellow and

One remains in the division office, one to the starter at the carhouse, one to the conductor assigned, and one to the inspector in charge of the starting.

Upon receipt of the four copies the division telephones to the transportation office and verifies the order. This fact is noted on the duplicate order on file there. This is the first check. The division also notifies all divisions through which the car is to pass and verifies the receipt of the manifest from the transportation office in the division where the trip terminates.

Upon the day the car is scheduled to run the superintendent of the day telephones directly to the starter at the carhouse a short time before the pulling-out time and verifies the fact that all necessary arrangements have been made. The conductor in charge of the car fills in the necessary information on the manifest and returns it to the starter. He also makes out a special day card, Fig. 4, which he turns in in the same way as his regular work. If he receives the money he signs a receipt, Fig. 5.

The starter returns the conductor's manifest and his own to the division office and from this the return is made up as follows: One remains in the division office, one goes to the superintendent of transportation, one to the auditor and one to the receiving cashier. At the transportation office the return is checked with the original order and the

SPECIAL CAR MANIFEST		BOSTON ELEVATED RAILWAY CO.	
IMPORTANT		Special Car Return	
DELIVER AT ONCE		For DIV. OFFICE	For ORDER NO.
Superintendent, Division		Was Run	Date
		Number of Cars	Open
		From	To
		Time	Returning From
		Time	To
		Ordered For	Address
		Price \$	Per Car
		Total \$	
		Remarks	
THIS RETURN SHOULD BE ACTUALLY AS RUN.			
Cash fares collected by Conductor		\$	
Amount collected by Conductor		\$	
Amount to be collected by Treas.		\$	
Total			
Miles Run		Pass. Carried	
		Div. Supt.	

BOSTON ELEVATED RAILWAY CO.			
RETURN FOR SPECIAL CAR RUN PER ORDER NO.			
From	Station		
To			
Conductor's No.	Conductor's Badge		
Motorman's No.	Register No.		
Boston, 1911			
Reading of Conditions, Receipts	TRIPS	Serial Time	No. of Car
	1 In		
	1 Out		
	2 In		
	2 Out		
	3 In		
	3 Out		
	4 In		
	4 Out		
CASH COLLECTIONS		No. Cash Fares	
From Fares		Total Cash Fares	
Balance		TICKETS	
Total		St. Tickets	
		Chelsea Fares	
		No. Ex. rec'd	
		No. Ex. Sold	
		Total Pay. Pass.	
		Special Free Tickets	
		Fare Transfers Received	
		Transfer rec'd	
		Employee Tickets	
		Total Pass. Fare	

Figs. 3, 4 and 6—Boston Special Cars—Envelope, Conductor's Return Slip and Office Return Slip

white). The person who charts the car retains the original and the duplicate remains on file in the transportation office. The duplicate is then given to a stenographer who makes seven copies of Fig. 2, special car manifest. After verification, these manifests are forwarded in special en-

auditor holds the return as a check on the receiving cashier. Fig. 7 is a graphic chart of the routine followed in handling a special car.

The rates are based upon actual running time and a table showing the rates between some fifty-four important points has been computed. A charge is made if a car is held more than ten minutes, amounting to the wages cost plus 25 per cent. There is also a charge of \$2 for all cars started after 10 p. m. or returning after midnight. Special parlor cars are provided at increased rates, but the demand for such is hardly sufficient to warrant the investment on urban properties. The business during a year is about \$25,000. Upon a single day as many as 200 special cars have been operated by the Boston Elevated Railway Company without failure.

FARES FOR VACUUM CLEANERS

On Aug. 3 the Denver City Tramway issued the following bulleting to the trainmen:

"Numerous inquiries have been coming in as to whether or not vacuum cleaners should be transported upon the cars. Conductors will hereafter permit only the small size vacuum cleaner to be carried. These cleaners weigh approximately 50 lb. or 60 lb. A 5-cent fare will be charged for the same and registered. *NO TRANSFER WILL BE ISSUED FOR A VACUUM CLEANER.* Should a passenger attempt to board a car with one of these machines, conductor will inform him of this order, so that he may be fully apprised before taking his seat. The cleaners must be carried to the rear of the car and out of the way of passengers.

"On the Golden and Leyden lines west of Berkeley any passenger carrying a vacuum cleaner will be required to pay one full cash fare for the same in addition to his own. Such fare will be registered as a regular cash transaction."

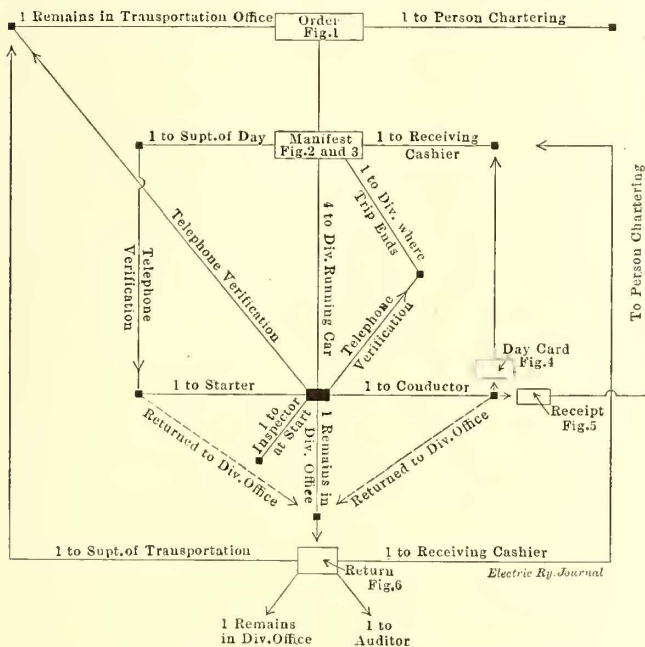


Fig. 7—Boston Special Cars—Diagram Showing Method of Issuing Orders

velopes, Fig. 3, as follows: One to the superintendent of the day, one to the receiving cashier, one to the division in which the trip terminates, and four to the division running the car. These four are further distributed after necessary detail instructions have been entered, as follows:

INTEREST OF EMPLOYEES IN MILWAUKEE FARE CASE

A brief presenting the claims of the employees of the Milwaukee Electric Railway & Light Company to consideration in the fare case now pending before the Railroad Commission of Wisconsin has been filed with the commission. The petition was presented by John Humphrey, chairman of the Board of Arbitration and Conciliation of Wisconsin. It asks the commission to take into consideration the effect which an order instituting a 3-cent street railway fare in Milwaukee would have on the effort being made by the men to secure higher wages and better hours.

The petition declares that trainmen in Milwaukee are forced to work longer hours and are paid less on the average than employees of similar properties in other cities. It is also stated that many of the men work long hours and receive no overtime for holidays. The petition says that the Legislature has fixed the hours of labor for the employees of steam railroads but not for trainmen on street railways, whose work is as responsible. Besides this, the men say that they need the protection of the State and that public safety demands better working conditions. In part the petition adds:

"It appears to your petitioners that while the Wisconsin Railroad Commission is conserving the interests of the public on the one hand, and inquiring into the interests of the public service corporations no less upon the other, it should, as a matter of public policy, consider the question of a reduction of fares or rates with particularity from the viewpoint of the employees of the public service corporations. They believe, moreover, that there should be an impartial investigation into the affairs of the Milwaukee Electric Railway & Light Company to determine whether the employees of this company are entitled to an increase of wages, and what provision, if any, has been made to insure them a living wage in the future.

"If the Wisconsin Railroad Commission were to make the investigation we seek, and were to announce its findings, your petitioners would gladly let their case rest with the public. Your petitioners believe that this investigation and report, when made, would prove of great assistance in establishing a desirable public policy for publicity, not only in regard to the relations of public service corporations with their employees, but with reference to the relations of all employers and employees of the State of Wisconsin."

Extracts from street railway franchise ordinances passed in other cities, referring to arbitration of labor disputes, are given and also comparisons of wages paid in various communities. The petition continues:

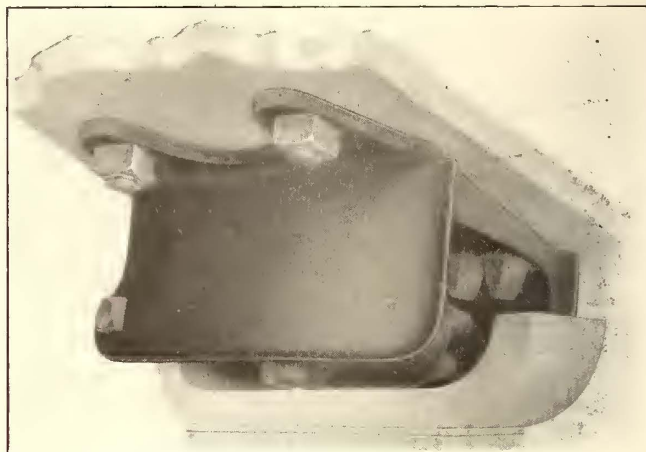
"The wages in the entire industry, but especially those of car men, are low. It would seem that if public utility regulation perpetuates the wages now paid, the regulation would be detrimental to the interests of the street railway employees of Wisconsin. As a rule, the car men work seven days a week and 365 days a year, with the exception of off days taken at their own expense."

It is also alleged that the wages of the men have not kept pace with increased cost of living and that the remuneration is far below that of laborers engaged in other lines of work.

J. D. Mortimer, vice-president and general manager Milwaukee Electric Railway & Light Company, is quoted as stating that the employees had nothing to do with the brief presented by Mr. Humphrey. He said that even should the commission decide to reduce the fares the representatives of the company would continue to exert every possible effort to maintain wages at the present high standard, advancing them as rapidly as possible from time to time and following the practice of the last fifteen years in this respect. Mr. Mortimer added that the argument advanced by Mr. Humphrey was anticipated by the brief submitted by counsel for the company to the Railroad Commission.

ANTI-FRICTION SIDE BEARING

The accompanying illustration shows an anti-friction side bearing for electric railway cars which has been developed by A. Stucki, Pittsburgh, Pa. Bearings of this design are now in service on about a dozen electric railways, among them the Philadelphia Rapid Transit Company, which has been using them on elevated cars for over one and one-half

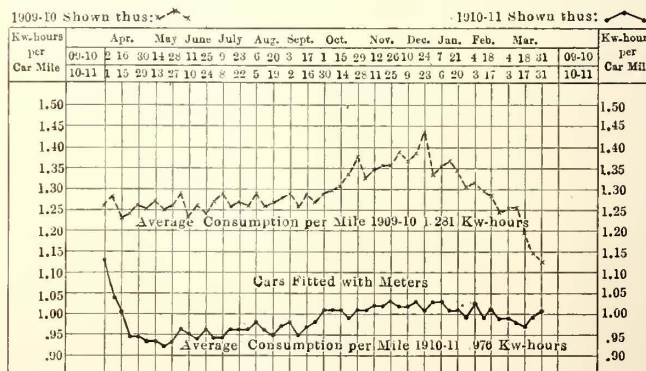


Side Bearing in Position

years past. This bearing is made of cast steel throughout and consists of two pieces only. The roller is very large and does not depend on journals for a rollway, as it simply turns on itself with the frictionless quality of a rolling pin. The bearing operates noiselessly without periodic lubrication. It can be made for any travel desired. Even with so great a travel as 24 in. the housing is comparatively short because the roller rolls on the top as well as the bottom surface. This feature is quite an advantage in locating motors, brake levers and other under-car equipment. It is stated that the ordinary truck side bearing plate with turned-up ends will work well with this bearing and at the same time eliminate the need for safety chains. Another design of this bearing is especially adapted for cars where a small side bearing is essential. The roller is very large and remains in the proper position, whether the body bolster is up or down, so that no sliding can take place. This saves the roller from wear and also makes a noiseless, frictionless bearing.

ENERGY SAVING ON THE CROYDON TRAMWAYS DUE TO THE INSTALLATION OF CAR METERS

Some interesting data on economies in energy consumption attained by installing car meters to check motormen



Effect of Current Checking Meters Installed on Croydon Tramways

are presented by T. B. Goodyer, tramway manager, in the report on the Croydon (England) Corporation Tram-

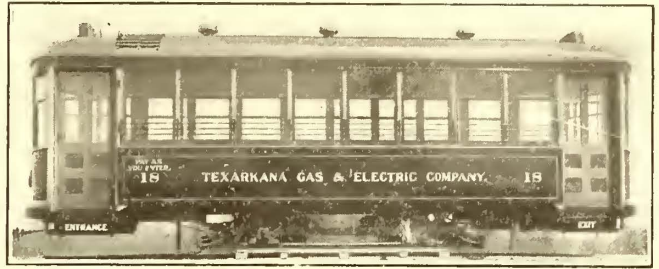
ways, for the year ended March 31, 1911. Mr. Goodyer states that after the installation of these meters the consumption of energy for traction, car lighting and corrugation removal purposes was 2,220,257 kw-hours, a saving of 668,464 kw-hours as compared with the preceding year. This improvement meant the use of 0.976 kw-hour per car mile, or 0.305 kw-hour less than in the preceding year. The cost of electrical energy per car mile was cut down from 1.684 pence (3.368 cents) to 1.441 pence (2.882 cents), a reduction of 24.77 per cent, equivalent to an actual saving of £4,985 (\$24,227.) The importance of this saving to the Croydon system can be appreciated from the statement that the tramway department's payment for energy supplied for traction and way building purposes by the electrical department amounted to £16,092 (\$78,207), equivalent to 25.23 per cent of the total operating expenses of the street railway system. The data given in the report were accompanied by a set of curves as reproduced in the accompanying illustration. The meters installed are of the C. H. type, which has recently been introduced to American electric railways by Wonham, Sanger & Bates, New York.

PLAIN ARCH ROOF CARS FOR FREEPORT, ILL.

The four single-truck motor cars recently built for the Freeport (Ill.) Railway & Light Company by the Danville Car Company present another instance of departure from the ordinary monitor deck. These new cars are 33 ft. long over the vestibules, 21 ft. long over the end plates and 8 ft. 4 in. wide over the yellow poplar sheathing. The bottom and vestibule platforms are of wood reinforced with steel. The vestibule floors are 6 in. below the car floor. The platform sills are of white oak reinforced with steel extending along the main sills to the bolsters and bolted to the side and end sills. The two doors at each side of each vestibule are fitted with shields to prevent

SINGLE-TRUCK ARCH ROOF CARS

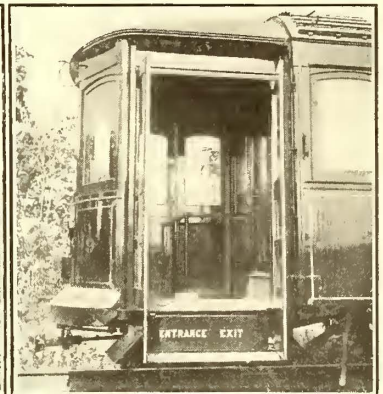
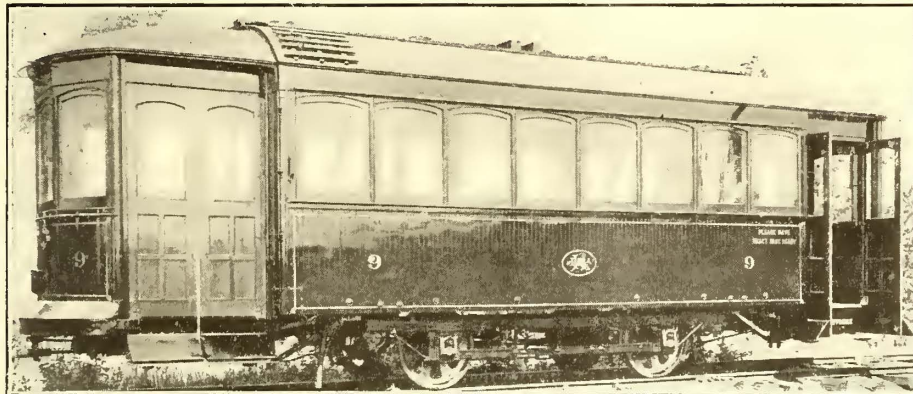
Three 21-ft. motor car bodies of the type illustrated have just been built for the Texarkana Gas & Electric Company, Texarkana, Tex., by the St. Louis Car Company. These cars are arranged for double-end operation and have open bulkheads for prepayment collection of fares. They are built with arch roofs, steel underframes and steel side girders. The bodies weigh about 10,000 lb. each. The general dimensions are as follows: Length over the corner



Single-Truck Car for Texarkana

posts, 21 ft.; length over the vestibules, 30 ft.; length over the bumpers, 30 ft. 8 in.; width over the posts, 8 ft. 3 in.; width over all, 8 ft. 7 in.; height from bottom of side sill to top of roof, 8 ft. 6 in.

The principal members of the underframe are two side girders made of steel plate 1/8 in. thick and 30 in. deep, reinforced at the top and bottom by plates and angles. The exterior of the cars below the belt rail is sheathed with steel and the vestibules are also lined with steel. The side openings are inclosed with double doors opening outwardly and operated simultaneously with the folding step by a lever arrangement from the motorman's or conductor's stand. The interior finish of these cars is cherry above the



Plain Arch Roof Car for Freeport, Ill.

passengers from standing on the step when the doors are closed and the car is in motion. As shown in the platform view, a rectangular railing serves as a barrier between the entrance and exit body doors. Double flooring with building felt between is used except in the aisle, where single flooring is laid with oak flooring strips screwed into and flush with the floor.

The interior of all doors, sashes, panels, moldings, etc., is of cherry, varnished and rubbed down to a smooth dead finish. The ceiling is of varnished maple veneer. All seating is of The J. G. Brill Company's longitudinal type upholstered in rattan. All side windows are arranged to drop and are made for use with storm window sash. Each car body is mounted on a single truck of 9-ft. wheel base and 30-in. diameter wheels. The two 40-hp motors per car are geared for a maximum speed of 30 m.p.h. Among the miscellaneous fittings on these cars are automatic draw-bars, trolley retrievers, fenders, headlights and hot-air heaters.

arm rest. Below the windows the side girder plates are painted and grained to match the cherry finish.

The car contains fourteen type K St. Louis seats and two longitudinal seats. Ventilation is provided by six Globe ventilators. The cars are heated with Consolidated car heaters.

AVIATION MEET AT ROCKFORD, ILL.

The aviation meet conducted by the Rockford & Interurban Railway at Rockford on August 4-6 was very successful. The exhibits were furnished by the Curtiss Exhibition Company, New York, who were represented by two aviators, Messrs. Ward and Havens. These aviators undertook several fancy flights as well as straight runs, among which was one to Beloit and return, and much entertainment was given. A charge for admission to the grounds of 50 and 25 cents was made, and it is estimated that 12,000 people were in attendance.

News of Electric Railways

Complaint Against Chicago & Oak Park Elevated Railroad Dismissed

The Railroad & Warehouse Commission of Illinois has recently dismissed the complaint of William N. Golden, of Chicago, against the Chicago & Oak Park Elevated Railroad, in which it was alleged, first, that the defendant road has failed to complete its entire road, as authorized by its charter, in ten years from the date of issue, in violation of the statutes of Illinois; second, that the defendant road does not ring a bell or blow a whistle at least eighty rods before reaching a crossing, in violation of the statutes of Illinois; third, that the defendant road does not furnish an axe, saw, sledge hammer, etc., for each car, as required by the statutes of Illinois; fourth, that the defendant road is guilty of discrimination in rates prior to July 1, 1907, and entered into a contract unlawfully with the city of Chicago, town of Cicero, and so discriminated in violation of the laws of Illinois; fifth, that the defendant road starts its trains or cars without signaling in Chicago and in Oak Park, in violation of the law; sixth, that the defendant's cars are not equipped with automatic couplers, in violation of the laws of Illinois.

In its finding the commission said in part:

"As to the first allegations, this commission has no jurisdiction to make an order in relation thereto and the road being substantially completed, as shown by the record, the commission holds there is no such failure to comply with the conditions of its charter as would justify the commission to direct a suit to be brought to forfeit the charter of the defendant road.

"As to the second allegation, while it may be in the letter of the law, it is not within the spirit of the law it seems to the commission to require roads similar to this one to place upon their car a bell, as required of steam roads on their locomotives, or to blow a whistle, as is required of steam roads, at least within eighty rods of the crossing, and hence the commission dismisses this charge as unnecessary to enter any order in relation to it at this time.

"As to the third allegation, the record shows that the defendant company does not furnish for each of its cars an axe, saw, sledge hammer, etc. While the language of the act of 1874 is broad, yet the detail of the act, together with the date of the same, clearly indicates that the Legislature could not have had in mind electric railways operating within cities, as no such cars were running at that time. The object of the section is plain, namely: In case of accident or collision in the country upon a steam road where such things are inaccessible, to enable employees or other persons available to assist in releasing passengers who, as a result of the accident, have been confined in the cars. This reason could not, with any degree of necessity, apply to the road in question, and for this reason the commission deems it unnecessary at this time to make an order requiring the respondent road to equip its cars with such articles.

"As to the fourth allegation, there is no testimony in the record whatever to justify this charge or to require the commission to take any action in relation thereto.

"As to the fifth allegation, the commission feels that the evidence is not sufficient to justify any action upon its part in relation to the same, and that the city of Chicago or village of Oak Park, if there is a manifest violation of law, which the record does not show to our satisfaction, is amply able to take care of that matter as coming clearly within its jurisdiction.

"As to the sixth allegation, the record shows that the cars of the defendant road are not equipped with automatic couplers. The act in regard to safety appliances on railroads is entitled: 'An act to promote the safety of employees and travelers upon railroads by compelling common carriers engaged in moving traffic by railroads between points in the State of Illinois to equip their cars with automatic couplers and continuous brakes, and their locomotives with driving wheel brakes, and for other purposes.'

"Section 1 clearly indicates that it could not apply to an electric interurban car. The same may be truthfully said of Section 2. And street cars are specifically ex-

empted from the provisions of the act by Section 6. The act in regard to the inspection of safety appliances on railroads is entitled: 'An act providing for the inspection of equipment and operation of safety appliances on railroads engaged in moving traffic between points in the State of Illinois.' The language of Sections 1 and 4 of said act clearly indicates that it was not intended to apply to electric cars. The last-mentioned act was passed in order to enforce the provisions of the first act, and in our opinion has no application to railroads operating by electricity. That being true, the commission is not required to make any order in relation thereto. In this view of the law, the commission is sustained by the opinion of Attorney General Stead rendered to this commission Jan. 22, 1906.

"While a large number of the charges made by the petitioner in the petition and in the brief are not sustained by the testimony in every particular, they are of such a character that the commission has instituted an investigation of a number of these charges upon its own motion and will enter a proper order in relation to the subject matter of such investigation as soon as such investigation is complete, if the charges are proved to be true."

Progress on the Boston & Eastern Railroad

Plans for the construction of the Boston & Eastern Electric Railroad from Boston to Beverly and Danvers, via Chelsea, Revere, Lynn and Salem, are being matured. On Aug. 14 a hearing was held before the Selectmen of Danvers, at which strong sentiment in favor of the new line was expressed. The company presented plans for its route in that town and with several minor modifications the plans met with popular approval. A hearing will be held by the Aldermen of Salem on Aug. 25 and by the city officials of Beverly on Aug. 29. Informal conferences with the city officials have already been held in Chelsea and Revere. Plans for the tunnel under Boston Harbor have been filed with the Boston Transit Commission and the Massachusetts Railroad Commissioners. Both of these boards must pass upon them. The route asked for is under Central Wharf and Central Street to India Square, thence up Water Street as far as Congress Street, where the company proposes to have its station, one approach being through Post Office Square and another from Liberty Square.

The road is designed to serve suburban and interurban traffic and it is proposed to run trains at intervals of fifteen minutes during the day in either direction between Boston and Peabody, Salem, Danvers and Beverly, and at ten-minute intervals between Boston and Lynn. Alternating trains would be express, making but two stops between Boston and Lynn. The other trains would make eight stops and require seven minutes more than the express trains. The running time from the Boston terminal to City Hall, Lynn, is set at fourteen minutes. The present steam railroads make the trip in from twenty to thirty-five minutes. The running time to Peabody Square is figured at twenty-two minutes, to Danvers twenty-eight minutes, to Salem nineteen minutes and to Beverly twenty-three minutes. There would be nineteen stations on the whole line. Rates for fare have been determined as follows between Boston and the points named:

	COMMUTATION RATE (FIVE-TRIP TICKETS).	
	Single Fare.	8 cents
Revere and Chelsea	6 cents	8 cents
Lynn	12 "	15 "
Peabody and Salem.....	17 "	20 "
Danvers and Beverly.....	22 "	25 "

Special workmen's tickets would be issued at a reduced rate.

The population of the territory traversed is 310,000, the density of population in the territory being 3600 per square mile as against 405 per square mile in the whole State. The project was first advanced in 1906. In August of that year application was made to the Railroad Commission for a certificate of public convenience and necessity. On Sept. 18, 1907, the commission made a finding stating that a new and different service was needed in the densely crowded territory northeast of Boston. It was, however, opposed to the route proposed and urged that any road built

should have an entrance to Boston under the harbor instead of by way of Sullivan Square, Charlestown, as originally planned. On Oct. 14, 1907, plans were filed by the company showing the route changed as outlined by the commission's suggestion. Nov. 17, 1908, after eight public hearings, the Railroad Commission made a decision stating that public convenience and necessity had been shown and that the new plan developed by the petitioners would afford the additional facilities demanded in the territory referred to. A certificate, however, was withheld on the ground that there was no law under which a tunnel could then be built, the commissioners stating that the petitioners must have recourse to the General Court to make the decision effective.

The Boston & Eastern consequently petitioned the Legislature for legislation allowing the company to build the tunnel. On April 6, 1909, the Legislature instructed the Railroad and Transit commissions to hear the case and report jointly upon the desirability of building the tunnel. After hearings the joint board reported, recommending a delay of one year pending the maturing of the general plans for Boston's transportation development. The Legislature finally passed an act allowing a tunnel to be built and the Governor signed the act. Last summer six public hearings were held by the Railroad Commissioners on the question of issuing a certificate of exigency, but the commission refused to make any decision upon the matter until the Legislature acted upon several questions pertaining to the project. The Boston & Eastern Railroad asked for reconsideration of this refusal on the ground that the majority of the board made a manifest error in law, that the refusal was based on reasons upon which counsel for the petitioners had no chance to argue and that the petitioners' rights under the decision of public convenience and necessity had been ignored. The commission heard the petition for reconsideration, but did not change its mind. Since then the Legislature has granted the road a certificate of exigency. The plans for the tunnel are the same as those submitted to the commission in 1908.

The act requires that the tunnel be built without cost to the city and that it shall accommodate the traffic of other traction companies if any such company desires to use it. The tunnel becomes the unincumbered property of the city of Boston after forty years.

Municipal Street Railway in San Francisco Not to Fulfill Its Promises

The San Francisco *Chronicle* says editorially in the issue of Aug. 4, 1911:

"The advocates of the Geary Street Municipal Railway promised great things, and they cannot complain if they are held strictly to their promises and condemned if they fail to make good in all of them.

"To begin with, they were to get rid, once and forever, of the 'unsightly poles' and 'the miserable nuisance of overhead trolley wires' and give us a 'really up-to-date road' with underground contact.

"Not only that, but the trolley poles, which—when they began to talk trolley—they said were to be so delightfully handsome as to be really adornments to the street, are about the worst-looking poles ever set up in the city.

"Next, there were to be seats for every passenger and cars enough to run to allow seats for all, regardless of rush hours.

"Now that is given up—although, without transfer privileges, there is likely to be room enough in the cars—and the management is glorifying itself because there are to be porcelain pendants instead of leather to hold up the strap-hangers.

"The construction of the road was to show a marvel of economy, and yet the only job finished—setting the poles—shows a cost of \$9 a pole, as against in the neighborhood of \$3, for which they could have been set by contract.

"The greatest number possible of men will be employed for the longest possible time at the highest possible wages.

"And when, sometime in the future, the road is finished and under 'municipal operation' we shall see it shunned by the people who own it because riding on any other line in the city will be more agreeable.

"It was folly for the city to undertake the building of a railroad which as an isolated unit would not be undertaken

by private capital on any terms, but with all the accumulated experience at command there is but one reason why a really model road should not be rapidly and economically constructed."

New York Transit Affairs

The Public Service Commission of the First District will hold a hearing on Sept. 14 on the form of contracts for Sections Nos. 7 and 9, which are to be readvertised for competitive bidding. The contract for Section No. 7, which extends from Fortieth Street under Lexington Avenue to Fifty-third Street, was awarded to Charles H. Peckworth, who repudiated his bid last week. Section No. 9, which extends from Sixty-seventh Street to Seventy-ninth Street, is also to be readvertised because only one bid was received for this section last October.

Counsel for the Admiral Realty Company, which recently tried unsuccessfully before Supreme Court Justice Ford to obtain an injunction restraining the Bradley Construction Company from beginning operations on the Lexington Avenue branch of the new subway, gave notice to the Public Service Commission on Aug. 21 of an appeal.

Plans for rapid transit extensions in the Borough of Queens are to be submitted to the Public Service Commission of the First District this week for approval. They were prepared by Leonard C. L. Smith, consulting engineer to Borough President Gresser. The plans will ask for the adoption, as part of the rapid transit system of the city, of the extension of the Second and Third Avenue elevated lines across the Queensboro Bridge and the extension of elevated lines from the Queensboro Bridge plaza to Woodside and Corona.

Value of Electric Railway Properties in Washington.

A statement issued by the Washington State Tax Commission shows the following values for electric railways:

Olympia Light & Power Company.....	\$256,330
Seattle Electric Company.....	14,347,987
Seattle, Renton & Southern Railway.....	907,953
Everett Railway, Light & Power Company.....	2,172,343
Whatcom County Railway & Light Company.....	1,729,460
Grays Harbor Railway & Light Company.....	806,359
Tacoma Railway & Power Company.....	3,580,323
Pacific Traction Company.....	132,779
Washington Water Power Company.....	3,611,526
Loyal Railway Company.....	14,964
Vancouver Traction Company.....	146,356
Seattle-Everett Traction Company.....	1,331,420
Yakima Valley Transportation Company.....	402,453
Walla Walla Valley Railway.....	1,009,455
Total.....	\$30,449,708

Value of Electric Railway Properties in Wisconsin.

The Wisconsin State Tax Commission has announced the following values for electric railways:

Milwaukee Electric Railway & Light Company.....	\$24,200,000
Milwaukee Light, Heat & Traction Company.....	6,650,000
Milwaukee Northern Railway.....	1,650,000
Sheboygan Railway & Electric Company.....	865,000
Green Bay Traction Company.....	705,000
Eastern Wisconsin Railway & Light Company.....	775,000
La Crosse & Onalaska Street Railway.....	20,000
La Crosse City Railway.....	460,000
Menominee & Marinette Light & Traction Company.....	240,000
Southern Wisconsin Railway.....	850,000
Duluth Street Railway.....	875,000
Total.....	\$37,290,000

Developments in Toledo Situation

The ordinance enacted recently by the City Council of Toledo, Ohio, providing for the payment of rental at the rate of \$250 per day by the Toledo Railways & Light Company for the use of streets upon which franchises have expired, became effective on Aug. 15. This ordinance calls for the payment of rent from the time the franchises expired, and the aggregate amount claimed by the city is now \$70,000. A copy of the ordinance was served upon the company on that day. Suit to recover the amount claimed may be brought under the ordinance in ten days.

City Solicitor Schreiber has prepared an ordinance extending the old ordinances to the term of the longest unexpired franchise, and if the company is willing to accept this and operate the lines affected at a fare of 3 cents, it is said that the claim under the rental ordinance will not be pressed.

This ordinance was drafted in compliance with instructions from the Council. The instructions did not show clearly whether it was the idea of the City Council that this rate should extend over the entire system or merely over the lines affected by the extension. Mr. Schreiber believes that the introduction of the tentative franchise ordinance will force the company to take steps toward a resumption of the negotiations. Mr. Schreiber presented the ordinance before the City Council on Aug. 21. The City Council met as a committee of the whole to consider the ordinance on Aug. 23.

Pennsylvania Car Operators Demand Higher Wages.—Trainmen of the Trenton, Bristol & Philadelphia Street Railway Company have asked an increase in wages from 21 cents to 25 cents per hour. An increase of 15 per cent has been asked by other employees. The railway company has refused to accede to the request.

Pacific Electric Company Opposes Use of Grooved Girder Rails.—Officials of the Pacific Electric Railway appeared before the Council, Pasadena, Cal., to discuss the use of grooved girder rails in place of T-rails on the extension to Pasadena. They said that the grooved rails would cost \$17,000 more per mile than T-rails, and that they were unsafe for fast running.

Danger Signals at Grade Crossings for Pacific Electric Railway.—Danger signals of the type recommended by the State Railroad Commission will be installed at the grade crossings of the Pacific Electric Railway, Los Angeles, Cal., the expense to be met jointly by the company and the counties affected. There are 704 grade crossings on the Pacific Electric system.

Minneapolis Traction Line Has Assessment Reduced.—The Board of Equalization of Minneapolis, Minn., at its final session on Aug. 8 reduced the assessment on the property of the Minneapolis & St. Paul Suburban Railway on the South St. Paul line from \$100,000 to \$35,000. The petition of the Minneapolis Street Railway for a reduction in assessment of \$150,000 was denied.

City Council of Kansas City to Petition for Third Receiver for Metropolitan Street Railway.—The lower house of the City Council of Kansas City, Mo., has adopted a resolution requesting the city counselor to petition William C. Hook, judge of the United States Circuit Court, to name a third receiver for the Metropolitan Street Railway, to represent the interests of the people of Kansas City. The resolution asks that Henry M. Beardsley be named as the third receiver.

Use of Streets by Los Angeles Electric Railway to Be Restricted.—In a message of the Los Angeles (Cal.) Board of Public Utilities to the City Council it was recommended that the Los Angeles & Redondo Railway be given until Aug. 31 to discontinue its use of the public streets without a franchise. It was also recommended that the Southern California Hardwood & Manufacturing Company be refused a permit to build a spur track to connect with the Pacific Electric Railway on the ground that an electric railway is not privileged to carry freight.

Pittsburgh Transportation Investigation.—John P. Fox, who is investigating street railway conditions in Pittsburgh for the city, has sent a communication to the City Council in which he refers to the report of Bion J. Arnold on the transportation situation. Mr. Fox says: "As Mr. Arnold's failure to find that a subway would pay in Pittsburgh appears largely due to a reliance on theoretical data, some of it five years old, would it not be well to avoid the same mistake this time, and to use all the actual facts as to existing traffic in order not to reach any erroneous conclusion again? I should be glad to explain the matter fully at any convenient time." The purpose of the letter of Mr. Fox was to induce the Council to provide funds to pay him for services from the middle of May to the middle of July. He stated that he had been informed by the Mayor that the appropriation to employ traction experts had been exhausted, but he continued in order to gather some data required by the legal department. The report of the city comptroller for the fiscal year ended Jan. 21, 1911, says that the city spent \$36,718 in the investigation of the street railway situation during the year.

Financial and Corporate

New York Stock and Money Markets

August 23, 1911.

The market on Monday was irregular and its tone was decidedly weak. Stocks rallied in the early trading Tuesday, but the majority of the gains were lost before the close. Trading to-day was exceedingly dull, the volume of transactions being the smallest since the beginning of the present decline. Price changes were few, several of the active stocks showing slight losses at the end of the day. Disquieting advices on the Moroccan question and discussion of railroad retrenchment plans comprised the chief features of interest in the Street. Quotations on the money market to-day were as follows: Call, 2@2¼ per cent; ninety days, 3¼@3½ per cent.

Other Markets

Slight gains were made in the Chicago market on Tuesday, Chicago Elevated preferred selling at 90.

Trading has been narrow on the Philadelphia Exchange during the week and aside from a few transactions in Steel the list has been neglected.

Prices have declined in Boston since last report and further losses were made in the copper shares in to-day's market.

Very little business is being done on the Baltimore Exchange and to-day's market was devoid of interest.

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

	Aug. 16.	Aug. 23.
American Light & Traction Company (common)....	a296	a296
American Light & Traction Company (preferred)....	a106½	a106½
American Railways Company.....	*44½	a45
Aurora, Elgin & Chicago Railroad (common).....	*44½	a44
Aurora, Elgin & Chicago Railroad (preferred).....	*87	a87
Boston Elevated Railway.....	126½	a127½
Boston Suburban Electric Companies (common).....	*15	a14
Boston Suburban Electric Companies (preferred).....	*75	a75
Boston & Worcester Electric Companies (common)....	*13	a12½
Boston & Worcester Electric Companies (preferred)....	*56	a56
Brooklyn Rapid Transit Company.....	*74¾	73¾
Brooklyn Rapid Transit Company, 1st ref. conv. 4c....	*86¾	86¾
Capital Traction Company, Washington.....	a131	a128¾
Chicago City Railway.....	a190	a190
Chicago & Oak Park Elevated Railroad (common)....	*3	a3
Chicago & Oak Park Elevated Railroad (preferred)....	*5	a5
Chicago Railways, pteptg., ctf. 1.....	*97	a98
Chicago Railways, pteptg., ctf. 2.....	*30¾	a29½
Chicago Railways, pteptg., ctf. 3.....	a12	a11½
Chicago Railways, pteptg., ctf. 4.....	*7½	a7
Cincinnati Street Railway.....	130	*130
Cleveland Railway.....	*99¾	a100¼
Columbus Railway (common).....	82	*82
Columbus Railway (preferred).....	95	*95
Consolidated Traction of New Jersey.....	76	a76
Consolidated Traction of N. J., 5 per cent bonds.....	a105	a105
Dayton Street Railway (common).....	a25	a25
Dayton Street Railway (preferred).....	a101	a101
Detroit United Railway.....	a75	a70
General Electric Company.....	151	a154
Georgia Railway & Electric Company (common).....	154	a159
Georgia Railway & Electric Company (preferred).....	92	a93
Interborough Metropolitan Company (common).....	a15½	15
Interborough Metropolitan Company (preferred).....	a42	41¾
Interborough Metropolitan Company (4½s).....	77½	*77¾
Kansas City Railway & Light Company (common).....	a19	a19
Kansas City Railway & Light Company (preferred)....	44	41
Manhattan Railway.....	a137	a138
Massachusetts Electric Companies (common).....	19	a18
Massachusetts Electric Companies (preferred).....	89½	a89
Metropolitan West Side, Chicago (common).....	*27½	*27½
Metropolitan West Side, Chicago (preferred).....	*75	*75
Metropolitan Street Railway, New York.....	*15	*15
Milwaukee Electric Railway & Light (preferred)....	*110	*110
North American Company.....	69½	a72
Northern Ohio Light & Traction Company.....	*50½	*50½
Northwestern Elevated Railroad (common).....	30	*30
Northwestern Elevated Railroad (preferred).....	*70	*70
Philadelphia Company, Pittsburgh (common).....	53	52
Philadelphia Company, Pittsburgh (preferred).....	44	42½
Philadelphia Rapid Transit Company.....	23	23
Philadelphia Traction Company.....	85½	85
Public Service Corporation, 5% col. notes (1913)....	a94	94
Public Service Corporation, ctf.	a107	107
Seattle Electric Company (common).....	a110½	a111½
Seattle Electric Company (preferred).....	*103	a103
South Side Elevated Railroad (Chicago).....	95%	95½
Third Avenue Railroad, New York.....	*8½	a9
Toledo Railways & Light Company.....	*6½	
Twin City Rapid Transit, Minneapolis (common)....	a107	a108½
Union Traction Company, Philadelphia.....	51	50¾
United Rys. & Electric Company (Baltimore).....	18	*18
United Rys. Inv. Co. (common).....	31½	a35
United Rys. Inv. Co. (preferred).....	60	a65
Washington Ry. & Electric Company (common)....	a44¾	a43
Washington Ry. & Electric Company (preferred)....	a85¾	a90
West End Street Railway, Boston (common).....	88	a88
West End Street Railway, Boston (preferred).....	88	*88
Westinghouse Elec. & Mfg. Co.....	65½	a67
Westinghouse Elec. & Mfg. Co. (1st pref.).....	114	a114

a Asked. *List sale.

Albia (Ia.) Interurban Railway.—Reynolds, Davis & Company, New York, N. Y., are placing at 98 and interest first mortgage 6 per cent gold bonds, dated June 1, 1910, and due serially June 1, 1913-1930, inclusive, but subject to call after June 1, 1913, at 101 and interest. The Albia Interurban Railway owns and operates the electric light, power and steam-heating plants in Albia, together with 10 miles of electric street and interurban railway running over private right-of-way except in Albia and reaching the mining towns of Hocking and Hiteman.

American Railways Company, Philadelphia, Pa.—Bioren & Company and Newburger, Henderson & Loeb, as syndicate managers, announce to holders of the \$2,435,500 American Railways Company collateral trust 5 per cent bonds, due Dec. 1, 1911, that the syndicate has purchased from the company \$2,500,000 new collateral trust convertible 5 per cent bonds, dated Aug. 1, 1911, and maturing Aug. 1, 1931, and issued for the purpose of refunding the maturing bonds. The syndicate advises holders of the maturing bonds that \$1,500,000 of the latter will be received for exchange, in the order of application for refunding, on and after Aug. 28, 1911, on the basis of 100½ and interest for the maturing bonds and 96½ and interest for the new bonds.

Bangor Railway & Electric Company, Bangor, Maine.—Directors have approved a plan for the reorganization of the company in connection with the Bangor Power Company, which has recently acquired all the properties and franchises formerly owned and operated by the Bodwell Water Power Company, the Veazie Lumber Company and the Penobscot Realty Company. The properties and franchises of the three companies named and of the Bangor Railway & Electric Company are to be placed under one management and control, either by actual merger or by stock ownership, and the combined enterprise will be represented by the outstanding capitalization of the Bangor Railway & Electric Company as follows: Bonds, including present bonds of the Bangor Railway & Electric Company and its underlying companies, also \$750,000 of new bonds, \$3,350,000; preferred stock 7 per cent cumulative (new issue), \$1,500,000; common stock (heretofore \$1,500,000), \$2,000,000. This plan will require an increase in the capital stock of the Bangor Railway & Electric Company to \$3,500,000, of which \$1,500,000 is to be 7 per cent cumulative preferred stock and \$2,000,000 common stock. The present stockholders of the Bangor Railway & Electric Company will receive for each share of stock held one share of new preferred and one share of new common. A special meeting of stockholders will be held on Aug. 26, 1911, for the purpose of voting upon the plan which has been outlined above and increasing the capital stock.

Boston (Mass.) Elevated Railway.—Directors of the West End Street Railway, Boston, Mass., on Aug. 18 issued a second circular to stockholders in which they answered the objections of the West End stockholders' protective committee to the proposed consolidation with the Boston Elevated Railway. They gave as their principal argument for consolidation the claim that the stock received in the transfer will be safer than stock in the West End system itself, and in support of the claim they give the opinion of John C. Gray that under the act the Boston Elevated cannot issue any stock, either before or after consolidation, that will have priority over or equality with either the first or second preferred stock issued in accordance with the act, except by the consent of two-thirds of the holders of the said stocks.

Chicago (Ill.) Elevated Railways.—Stockholders of the Northwestern Elevated Railroad held a special meeting on Aug. 21 and ratified the proposal authorizing an issue of \$25,000,000 first mortgage bonds. The trustees of the Chicago Elevated Railways voted nearly all of the company's capital stock. The bonds will be turned over to the trustees and held as security against money advanced to retire about \$19,000,000 of 4 per cent mortgage bonds on Sept. 1, and to liquidate floating debt.

Northern Ohio Traction & Light Company, Akron, Ohio.—W. R. Kimball, president of the Cuyahoga River Power Company of Akron, Ohio, has filed a protest with the Ohio Public Service Commission against an issue of preferred stock sold recently by the Northern Ohio Traction & Light Company, Akron, Ohio. In the protest it was stated that

part of the stock was sold to a director at less than par. At a hearing before the Ohio Public Service Commission, on Aug. 21, Charles Currie, general manager, and Will Christy, first vice-president, testified that \$1,000,000 of the authorized stock had been sold to W. E. Hutton & Company, Cincinnati, last March. As the public utilities law did not become effective till July 1, the commission holds that this transaction was not illegal.

Ohio Valley Electric Railway, Huntington, W. Va.—The American Railways Company, Philadelphia, Pa., has acquired about 98 per cent of the capital stock of the Ohio Valley Electric Railway, operating the local and interurban lines between Guyandotte, Ashland, Ky., Coal Grove and Ironton, Ohio; also all of the capital stock of the Consolidated Light & Railway Company, Huntington; Citizens' Light & Ice Company, Huntington; Ashland Electric Light & Power Company, Ashland, Ky., and Ironton Electric Company, Ironton, Ohio. The improvements contemplated by the new owners include an increase of the power generating station at Kenova by the addition of two 1000-kv turbines, the rebuilding of the substation at Huntington, adding 300 kw to the capacity, and an addition of 150 kw to the capacity of the substation at Cliffside. It is also planned to double-track the main line for a distance of about 8 miles if the proper ordinances can be secured from the city of Huntington. A new high-tension line giving a duplicate line from the power station at Kenova to Huntington is being constructed.

Railway & Light Securities Company, Boston, Mass.—Common stockholders of record Aug. 1, 1911, are offered the right to subscribe at par (\$100 per share) for the \$1,000,000 new 6 per cent cumulative preferred stock (callable at 125 and accrued dividend) at the office of the secretary and treasurer, F. J. B. Huntoon, 60 State Street, Boston, on or before Sept. 1, 1911, to the extent of one share for each share of common held. Subscriptions are payable in full at once.

Toronto (Ont.) Railway.—Stockholders ratified on Aug. 14 the proposed increase in the authorized stock from \$8,000,000 to \$12,000,000 and also the payment of a stock dividend of \$1,000,000 to holders of record Aug. 25 in the proportion of one share for every eight shares held on that date. Stockholders of record Aug. 25 will be allowed to subscribe for \$2,000,000 stock at par in the proportion of one share for every four shares held on terms to be announced later. The certificates for the stock dividend will be issued on and after Sept. 15.

United Railways & Electric Company, Baltimore, Md.—The \$195,000 outstanding car trust notes, series C, and the \$340,000 car trust notes of series B, that mature subsequent to Oct. 1, 1911, when \$85,000 are due, have been called for payment at 102½ and interest on Sept. 30.

Winona (Minn.) Railway & Light Company.—Judge Charles A. Willard in the United States District Court at Milwaukee on Aug. 15 appointed Howard Morris, of Milwaukee, receiver for the company on application of the Old Colony Trust Company, of Boston, trustee of the mortgage.

Winnipeg (Man.) Electric Railway.—The negotiations for the sale by the Winnipeg Electric Railway of its railway, power and lighting system to the city of Winnipeg have been suspended temporarily. A conference was held at Winnipeg on Aug. 11 between President MacKenzie and Mayor Evans and the special committee having charge of the negotiations. It is stated that the Mayor and aldermen declared that the city, before committing itself to purchase the company's property and plant, would require a thorough audit of every department. President MacKenzie replied that no audit would be permitted because the company would not think of allowing the city to go into the details of its business so long as the city was not bound in any way to purchase. All to which he could possibly agree was that if the city first passed the by-laws through the necessary stages and bound itself to purchase if the audit showed that the company earnings came up to the requirements already set forth by the Mayor, the company would permit an audit to be made to show that the earnings for the last six months met all the conditions named by the city. The negotiations were then temporarily suspended for ten days until after the return of President MacKenzie.

Dividends Declared

Brooklyn (N. Y.) Rapid Transit Company, quarterly, 1¼ per cent.

Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis., quarterly, 1¼ per cent., preferred.

Elmira Water, Light & Railroad Company, Elmira, N. Y., 2½ per cent., preferred.

Georgia Railway & Electric Company, Atlanta, Ga., quarterly, 2 per cent. common.

Rochester Railway & Light Company, Rochester, N. Y., quarterly, 1¼ per cent., preferred.

Terre Haute Traction & Light Company, Terre Haute, Ind., 3 per cent., preferred.

MONTHLY ELECTRIC RAILWAY EARNINGS

CAPE BRETON ELECTRIC COMPANY.

Period.	Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Surplus.
1m., June, '11	\$27,427	\$15,029	\$12,398	\$6,153	\$6,245
1 " " '10	25,755	14,990	10,765	6,144	4,627
12 " " '11	330,596	170,307	160,289	73,741	86,548
12 " " '10	308,419	170,395	138,024	74,083	63,941

COLUMBUS ELECTRIC COMPANY.

1m., June, '11	\$43,779	\$18,732	\$25,047	\$14,900	\$10,147
1 " " '10	37,295	17,859	19,435	17,615	1,820
12 " " '11	605,840	205,095	400,745	281,624	119,121
12 " " '10	409,697	210,486	199,212	171,291	27,921

GALVESTON ELECTRIC COMPANY.

1m., June, '11	\$43,830	\$31,519	\$22,312	\$8,612	\$13,700
1 " " '10	31,553	90,648	11,905	6,751	5,154
12 " " '11	407,854	220,457	187,397	99,494	87,893
12 " " '10	360,940	231,497	129,443	78,052	51,391

GALVESTON-HOUSTON ELECTRIC COMPANY.

1m., June, '11	\$134,934	\$77,537	\$57,398	\$25,076	\$32,322
1 " " '10	109,083	67,028	42,056	17,729	24,327
12 " " '11	1,416,149	827,791	588,358	304,992	283,756
12 " " '10	1,242,948	762,457	480,492	268,846	211,646

NORFOLK & PORTSMOUTH TRACTION COMPANY.

1m., June, '11	\$2,091,617	\$1,212,405	\$879,203	\$743,529	\$135,633
1 " " '10	1,920,841	1,110,489	810,351	777,217	33,135

NORTHERN TEXAS ELECTRIC COMPANY.

1m., June, '11	\$136,062	\$68,276	\$67,786	\$25,244	\$42,542
1 " " '10	120,964	64,701	56,263	20,162	36,101
12 " " '11	1,540,192	805,228	734,964	271,585	463,379
12 " " '10	1,350,515	729,162	621,352	215,216	406,136

SAVANNAH ELECTRIC COMPANY.

1m., June, '11	\$59,958	\$41,565	\$18,363	\$18,352	\$11
1 " " '10	53,610	35,596	18,014	18,007	7
12 " " '11	662,047	442,584	219,463	218,278	1,185
12 " " '10	611,836	398,559	212,877	212,444	433

SEATTLE ELECTRIC COMPANY.

1m., June, '11	\$433,701	\$242,969	\$190,732	\$115,347	\$75,385
1 " " '10	44,676	261,337	186,339	168,705	76,634
12 " " '11	5,551,611	3,104,191	2,447,420	1,334,685	1,112,735
12 " " '10	5,885,590	3,463,580	2,522,011	1,285,845	1,236,166

TAMPA ELECTRIC COMPANY.

1m., June, '11	\$56,813	\$31,192	\$25,621	\$6,895	\$18,726
1 " " '10	49,895	29,308	20,587	4,533	16,054
12 " " '11	615,365	327,038	288,327	76,609	211,718
12 " " '10	615,182	351,219	263,963	55,299	208,664

WHATCOM COUNTY RAILWAY & LIGHT COMPANY.

1m., June, '11	\$32,165	\$17,236	\$14,929	\$10,965	\$3,964
1 " " '10	30,460	18,220	12,240	8,473	3,768
12 " " '11	428,159	217,754	210,395	122,554	87,841
12 " " '10	418,219	237,765	180,454	101,565	78,889

Frank Hagerman, counsel for the Metropolitan Street Railway, Kansas City, Mo., has made the following explanation of the withdrawal of service on the intercity viaduct and of the reasons why the company could not meet the demands of the viaduct company for toll dues at present: "The month's rent due prior to the receivership has been ordered paid by the court with the obligations to others for current operations. All such bills will be paid at the same time, but the Viaduct company cannot, under the order, be paid, as it demands, in preference to or before other creditors of like class. The receivers have always been willing, and, of course, must and will pay such sums as the court says are reasonable for use of the viaduct made by them. The claim, therefore, is as good as gold. They will not, however, as demanded, adopt the old contract, which runs to June 1, 1925, and requires the payment of 20 per cent of all that is earned from every passenger who crosses the viaduct, no matter how far he rides, especially when there are other lines over which passengers may be transported without any further charge. Because of the failure of the receivers to meet the foregoing impossible demands made by it the Viaduct company conceives it has a right to cancel the contract and exclude the receivers from the use of the viaduct."

Traffic and Transportation

Order of New Jersey Commission Regarding Transfers in Newark

The order of the Board of Public Utility Commissioners of New Jersey regarding the transfer system of the Public Service Railway in Newark becomes effective, by its provisions, on Sept. 5. The board orders compliance with the ordinance passed by the Board of Street and Water Commissioners on Aug. 1, 1894. In part the decision says:

"We find that the Public Service Railway is legally bound to give a transfer to any passenger paying the fare of 5 cents upon any of its cars, such transfer entitling the passenger to a continuous ride in either direction on any street railway line intersecting with or connecting with the line upon which said transfer was given; and we do further find that the requirement to give such transfers may not be restrictive or delimited to a line that may take the passenger without further change to his ultimate destination, but that transfers must be given on any intersecting or connecting line that advances the passenger continuously toward his ultimate destination even though a re-transfer is required to bring him to his ultimate destination.

"The plain fact appears that the Public Service Railway has failed to render literal compliance with binding ordinances bearing upon the matter of transfers. Such failure it seeks to justify on two grounds. It contends that the language of the ordinance can be construed so as to permit such action on its part. It contends, also, that operating necessities require such action. Both of these contentions are, in our judgment, without foundation.

"Such ordinances as require transfers for 'a continuous ride,' or such a resolution of the Common Council as that of Dec. 5, 1890, which (if not wholly supplanted by the later ordinances of the street and water commissioners of July 19, 1894), required the giving of transfers from 'all places at which the said roads cross or intersect,' cannot bear the construction placed upon them by the respondents. A 'continuous ride' means a ride that enables the passenger to continue upon his journey by means legally available. It may allow one transfer or more. And if the carrier is under an obligation, as in this case the carrier is, to 'give to any person who has paid his fare of 5 cents on any such car a transfer ticket which shall entitle such person to a continuous ride in either direction on any street railway line intersecting with or connecting with the line upon which such transfer was given,' the carrier has no right to restrict transfers to certain designated lines which may carry the passenger without further change of cars to his destination.

"We dissent *in toto* from the contention of the company that a 'coincident line is not a connecting line.' Coincident trackage for lines which eventually diverge from the coincident trackage implies in the very nature of the case that the lines are 'connecting with' each other.

"If there was reasonable doubt as to the meaning of these terms as employed in the several ordinance provisions under consideration, the fact that over a long period of years the several companies affected thereby, including the respondent, placed a practical construction thereon in operation of the lines inconsistent with the construction now contended for by respondent, and in accord with the conclusion herein reached as to the intent thereof, would impel the resolving of such doubt in favor of the construction herein adopted.

"The arguments advanced by the respondent upon operating grounds are as follows: Service would be delayed if a passenger chose to take a transfer that would require him to board more than one car other than the one he originally boarded; unrestricted transfers would augment the number of stolen return trips; an unnecessary waste of electrical energy would be occasioned by such a system of transfers. These contentions, even if unqualifiedly valid from the operating standpoint, do not exempt the carrier from the legal obligations resting upon him.

"We are not satisfied that all such restrictions as are now without legal warrant imposed by the company in the giving of transfers are expedient or advantageous to the public or to the carrier. The requirements now imposed sometimes compel the passenger to take an indirect route.

"There is also reason to believe that some crowding upon cars might be avoided if the present illegal restrictions upon transfers were done away with.

"The contention of the respondent that unless limitations were imposed upon the issue of transfers there would be increased opportunity for dishonest patrons to obtain a return journey for a single fare, this board cannot entertain. Appropriate limitation of the duration of transfers, different colored transfer slips and other devices, among them the detection and prosecution of such offenses, are the proper remedies in the absence of municipal consent to the delimited issue of transfers. Because some dishonest passengers may be enabled by unlimited transfers more easily to steal a ride is no reason why the vast majority of honest patrons should be deprived of rights legally their own.

"Similarly, the respondent's averment that transfers permitting the holder to make a retransfer are impracticable is overthrown by the company's employment of identification slips for exactly this retransfer system now issued on the South Orange line to Maplewood.

"There is one additional feature of this case which ought, we feel, to receive notice in this opinion. When the change in the transfer system was made no notice thereof was posted in the cars. To withhold transfers legally due is unwarrantable, even if done mistakenly; but to initiate such a partial withdrawal of transfers previously given, with no notice to such effect posted in the company's cars, violates most unjustifiably the obligation which the carrier owes the public."

B. S. Josselyn on Courtesy

In an address made to the heads of the departments of the Portland Railway, Light & Power Company, Portland, Ore., recently B. S. Josselyn, president of the company, said in part:

"Be gentlemanly in all your dealings with the public. The acts of all, whether trainmen, linemen or those in the general offices, are held by the public to be the acts of the company. I mean that whatever you do or whatever you say the general run of the public seems to regard as the official act of the company itself.

"I am not ready to analyze for you just why this should be so, but I am ready to say that in a measure it is so. If we accept this as a basis, then it certainly is the duty of every member of the company's large family to act strictly in accord with the desires of the actual owner and representative of the company. In other words, you must do those things which you would do if you were the mind which directed the operations of the company.

"Do not construe my meaning with reference to the issuance of certain orders for the operation of the company, but rather as to your conduct as gentlemen—the matters that pertain to your ethical side, as it were. In your connection with the public you should treat it with the utmost consideration as to its rights and as to its privileges. Right in this line lies the future of our success, in a measure. When you walk down the street, or if you are on the car, or if you are in the home of some friend, good words for the good deeds of the company will go a long way toward popularizing with the public what too frequently is an unpopular institution in this country, namely, the street railway corporation.

"We can all be publicity agents for this cause. What greater task can be placed in the hands of any set of men than to be trusted with the lives of hundreds of thousands of men and women daily in carrying them from their homes to their places of business? In the performance of this work it devolves upon everybody to do his duty to the utmost.

"For these reasons I believe that all of us, when we go out into the public and meet our friends and our new acquaintances, should be ready and willing to explain to them how earnestly and sincerely we are endeavoring to do this to the best of our ability.

"The publicity which you can put forth to the best advantage is the publicity of a salesman. You are primarily engaged in selling car tickets and electric lights. You may be busy over the books of your office, or you may be engaged in figuring out power factor, yet you are selling the product of this company. Therefore, your attitude toward every man you meet marks to a degree the success with

which we sell our product. In other words, your public appearance, your smiles and your cheerful words are important factors in the disposal of our product.

"I will conclude with this advice: Give every man a cheerful greeting. Tell all that we aim to please; and act within the rights granted to us under our charter. If you do you plant the seeds of good-will, which will bear an abundant harvest for yourselves and for the company, too."

Conditions Governing Free Transportation in New Jersey

A memorandum issued by the Board of Public Utility Commissioners of New Jersey lays down rules on which free transportation may be given by public carriers. A summary of the findings of the board is as follows:

"First—Free transportation, or transportation at less than regular rates, may be legally afforded by a carrier where such transportation is of assistance in facilitating the administration of charities and thus in line with the public policy of this State.

"Second—Reduced rates of fare for intrastate trips to school teachers are prima facie discriminatory, and therefore illegal, unless there is a municipal contract with the carrier entitling the school teacher as a municipal employee to such reduced rate of fare.

"Third—There is no universal presumption in favor of the legality of railroad companies according to intrastate traffic the same free transportation specifically permitted to certain kinds of intrastate traffic by the interstate commerce act.

"Fourth—Persons engaged by railroad companies to perform special services may be allowed free transportation for intrastate journeys in this State only when the companies in all such cases avoid all illegal discrimination and when each company either universally grants such free transportation in said circumstances or universally abstains from granting such free transportation in such said circumstances."

Near-Side Stops in Kansas City, Mo.—The Metropolitan Street Railway of Kansas City, Mo., has begun the practice of stopping cars only on the near side of crossings except where physical conditions prevent.

Transfer Abuses Corrected in Sacramento.—The Sacramento (Cal.) Electric, Gas & Railway Company has made changes in its transfer system so as to eliminate the abuse of round trips on one fare, which were possible on several lines under the former system.

Report on Interurban Collision Near Milton, Wash.—A. W. Perley, inspector of railroad trackage and equipment for the Public Utilities Commission of Washington, has filed a report on the recent collision on the Puget Sound Electric Railway at Milton, holding the crew of the extra train responsible for the accident.

Seattle Transfers Must Be Used at Point Indicated.—An opinion has been furnished to Superintendent of Public Utilities A. L. Valentine, of Seattle, Wash., by Assistant Corporation Counsel Howard D. Hughes that the Seattle Electric Company is not required to carry any passenger who presents a transfer at any other point than that at which the transfer was issued.

Buffalo & Lake Erie Traction Company Increases Wages.—An agreement has been made by the Buffalo & Lake Erie Traction Company and its trainmen by which the following sliding wage scale will be adopted: For the last five months of this year, 21 cents, 22 cents and 23 cents per hour, according to length of service. From Jan. 1, 1912, trainmen will receive 22 cents, 23 cents and 24 cents per hour, and from Jan. 1, 1913, they will receive 23 cents, 24 cents and 25 cents per hour. The old scale has been 19 cents, 20 cents, 21 cents and 22 cents per hour.

Commission Orders Improvement in Car Service on Long Island.—The Public Service Commission of the First District has ordered the New York & Queens County Railway, Long Island City, N. Y., to provide daily, beginning on Aug. 24, except Sundays or holidays, a sufficient number of seats during each half-hour period to provide for all its passengers or to observe a specified schedule.

Boston Elevated Railway Submits Plans for Changes at Sullivan Square Station.—Plans for changes in the station

of the Boston Elevated Railway at Sullivan Square, so as to permit the operation of eight-car trains, have been submitted to the Massachusetts Board of Railroad Commissioners. On Aug. 15 a hearing was held on the subject. No opposition developed and the board took the matter under advisement.

Amendment of Minneapolis Ordinance Desired.—The Twin City Rapid Transit Company, Minneapolis, Minn., will ask the City Council to amend the ordinance passed recently so as to allow thirty-five persons to stand instead of twenty-four. A joint investigation is planned by the Council and the railway in order to ascertain the possibility of the operation of cars on a two-minute schedule over the important streets between 5:40 and 6:30 p. m.

Campaign Against Transfer Abuse by Central Pennsylvania Traction Company.—The Central Pennsylvania Traction Company, Harrisburg, Pa., has decided to enforce the newly enacted State law which prohibits the gift of transfers by passengers. The company has posted notices in its cars warning passengers of a purpose to prosecute any and all offenders. The company has been a sufferer financially from this practice in the past, and is determined to break it up.

Order Regarding Operation in Buffalo.—The Public Service Commission of the Second District of New York has ordered the International Railway, Buffalo, N. Y., to revise its orders requiring the operation of cars on Main Street when passing over special work in either direction at Main Street and Utica Street, so as to reduce the speed to not to exceed 1 m.p.h. The company is further ordered to replace the special work by new equipment, the new work to be fully completed on or before Oct. 1, 1911.

Passengers Compelled to Buy Interstate Tickets.—A public hearing will be given by the Board of Public Utility Commissioners of New Jersey in Jersey City, on Sept. 1, on the question of whether the steam railroad companies may refuse to sell tickets to Camden, Jersey City and Hoboken. Since the commission suspended operation of the increased fares until Oct. 3, railroad companies have refused to sell tickets to those cities, compelling passengers to purchase transportation to New York and Philadelphia, making the journeys interstate instead of intrastate.

Express Service Between Oakland and Hayward.—The Oakland (Cal.) Traction Company has established express service between Oakland and Hayward. Three through cars leave Hayward every morning except Sunday, and a like number leave Thirteenth Street and Washington Street, Oakland, every evening. From Hayward the cars make no stops to take on or leave passengers east of Elmhurst, and from Oakland no stops are to be made west of Elmhurst. The cars run at twenty-minute intervals. They leave Hayward at 6:34 a. m., 7:14 a. m. and 7:34 a. m., and leave Oakland at 5:20 p. m., 5:40 p. m. and 6 p. m.

Discussion of City Traffic Matters at Dallas, Tex.—Edward T. Moore, local manager of the Dallas Electric Corporation, Dallas, Tex., was present at a meeting of the City Plan and Improvement League on Aug. 8, called for the purpose of discussing desired improvement in general traffic. The question of the congestion on Lamar Street was taken up and it was agreed that the street should be widened and that franchises should be secured to permit the railway to use other streets in conjunction with the Lamar Street route. It was also agreed that car stops should be uniform, either on the near side or the far side of the crossing.

Automobiles Affect Interurban Traffic.—Interurban lines operating in the central West are feeling the loss of business to privately owned automobiles, which are rapidly increasing in number. In one town of 8,000 inhabitants in northern Indiana there are thirty-five machines. This town is near a city of 20,000 people. Until the last year the interurban company operating through both places derived a very gratifying revenue from the town. Now owners of machines go to the city in their autos and invite their neighbors to accompany them, and the company loses not only the business of the owners but that of many persons besides.

Panama-Pacific Traffic Plans.—Charles N. Black, vice-president and general manager of the United Railroads,

San Francisco, Cal., is quoted as follows in regard to the traffic plans of the company with reference to the Panama-Pacific Exposition: "It is too early yet to formulate just what will be done. There are no immediate extensions of lines contemplated for the exposition travel. The only line that it is proposed to extend at present, and on this some little work has already been done, is the Hayes and Masonic line out beyond the Affiliated Colleges into the Upper Sunset district. There is some problem over raising the fund guaranteed and that is causing a little delay."

Entrance of Interurban Lines to Chicago.—The Aurora, Elgin & Chicago Railroad, as described recently in the *ELECTRIC RAILWAY JOURNAL*, now operates to the center of Chicago over the tracks of the Metropolitan West Side Elevated Railway, and within a short time it is expected that the Chicago & Milwaukee Electric Railroad will secure an entrance to the "loop" district over the lines of the Northwestern Elevated Railroad from Evanston. It is reported that the pending changes in operation which shortly are to be made for the consolidated roads will not require negotiations with the city, because it is desirable to postpone such negotiations until the final plans are prepared for the merger of the surface lines with the elevated railways.

The Heart of Maryland Route.—The Frederick (Md.) Railroad has issued a very attractive folder, "The Key to the Heart of Maryland." The cover is in colors, decorated with a heart in red and a key inclosed in a border representing a chain. The folder itself is printed in brown and red, the text being in brown and the title of the company, "Frederick Railroad," in red at the top of each page and the slogan, "The Heart of Maryland," in red at the bottom of each page. The headings and the initial pieces are in black, the initials being inclosed in an outline heart in red. In the center of the folder there is a cross-page bird's-eye view of Frederick. There is a map showing the route of the Frederick Railroad and the lines which connect with it. At the back of the folder there are timetables and complete information for patrons of the line.

Decision in Regard to Charge for Transfers.—On the petition of the Middlesex & Boston Street Railway for permission to charge 1 cent extra when issuing transfers to connecting lines of the system, the Massachusetts Railroad Commission has ordered: "After a public hearing upon the application the board requested, and has now received from the company, a tabulation of its operations for the year ending June 30, 1911. This statement is preliminary to its annual return, to be filed later under the provisions of law. While an examination of this statement discloses a better financial condition of the company, we have not before us sufficient information to make a final order in the premises. Without, therefore, granting the petition for any specific time, the company is authorized to continue the withdrawal of free transfers until further notice by the board."

"Traction Parks for Summer Larks."—The advertising department of the Illinois Traction System, which is in charge of Fred G. Buffe, of Peoria, Ill., has just issued a sixteen-page illustrated folder entitled "Traction Parks for Summer Larks," which describes the many attractive resorts on this system. The advantages of the observation parlor car and sleeping-car services are also presented attractively. The folder contains a map of the system and a condensed timetable of limited trains. All trains to which observation cars or sleeping cars are attached are indicated in red in the timetable. It is noted that ten limited trains are operated daily for the 175-mile run between St. Louis and Peoria. These are in addition to the regular Peoria-St. Louis local trains and the other limited trains which operate between Springfield and St. Louis. Seven trains give through service between Danville and St. Louis, 230 miles. Two of these trains have observation parlor cars. The schedule speed of the limited observation car trains is 27 m.p.h. The new folder describing the parks and trains contains many advertising phrases such as "The road of good service," "See Illinois first," "Summertime is travel time," "Watch the automatic block signal work," "A Traction trip leaves pleasant memories," "Illinois Traction is the road of satisfaction," "You can sleep on the Illinois Traction System sleeping cars," "Travel Traction—satisfaction," "Electricity means cleanliness," "Travel is perfection under Illinois Traction protection."

Personal Mention

Mr. W. F. Cox has been appointed chief engineer of the Vicksburg (Miss.) Traction Company, to succeed Mr. Thomas Hunt.

Mr. B. S. Hinckley has been appointed purchasing agent of the Portsmouth (N. H.) Electric Railway, to succeed Mr. C. N. Chavalier.

Mr. G. K. Smith has been appointed auditor of the Northampton Traction Company, Easton, Pa., to succeed Mr. M. E. Kerney.

William H. Snyder has been elected treasurer of the Bucks County Electric Railway, Newtown, Pa., to succeed Mr. H. H. Harrison.

Mr. John E. Potter has been elected president of the Westmoreland County Railway, Pittsburgh, Pa., to succeed Mr. Joseph Keeling.

Mr. Arthur K. Brown has been elected vice-president of the Oak Bluffs (Mass.) Street Railway to succeed Mr. Andrew H. Highlands.

Mr. William Reid has been elected secretary of the Emigration Canyon Railroad, Salt Lake City, Utah, to succeed Mr. Leslie G. Young.

Mr. A. A. Coupland has been appointed auditor of the Muskogee (Okla.) Electric Traction Company to succeed Mr. William A. Drake.

Mr. H. C. Quisenderry has been elected president of the Lincoln Railway & Light Company, Lincoln, Ill., to succeed Mr. W. H. Schott.

Mr. F. William Rudall has been elected vice-president of the Westmoreland County Railway, Pittsburgh, Pa., to succeed Mr. Stephen Stone.

Mr. C. B. Brooks has been elected treasurer of the Sandusky, Norwalk & Mansfield Railway, Norwalk, Ohio, to succeed Mr. J. W. Frink.

Mr. O. C. Harrington has been appointed roadmaster of the Denver & Interurban Railroad, Denver, Col., to succeed Mr. A. W. Duncan.

Mr. Owen Sanders has been elected secretary of the Sandusky, Norwalk & Mansfield Railway, Norwalk, Ohio, to succeed Mr. J. W. Frink.

Mr. G. G. Watson has been appointed superintendent of the Ontario & San Antonio Heights Railroad, Ontario, Cal., to succeed Mr. A. W. Burt.

Mr. C. F. Thompson has been elected vice-president of the West Side Electric Traction Company, Charleroi, Pa., to succeed Mr. J. K. Tener.

Mr. J. Cortlandt Bacon has been appointed superintendent of the railway department of the Augusta Railway & Electric Company, Augusta, Ga.

Mr. Charles H. Carpenter has been appointed superintendent of the Oak Bluffs (Mass.) Street Railway to succeed Mr. Clarence Stewart.

Mr. Frank Samuelson has been appointed acting auditor of the Metropolitan Street Railway, New York, N. Y., to succeed Mr. H. W. Brown, deceased.

Mr. S. A. Culbertson has been elected president of the Pascagoula Street Railway & Power Company, Pascagoula, Miss., to succeed Mr. Charles T. Ballard.

Mr. W. K. Page has been appointed master mechanic of the Western New York & Pennsylvania Traction Company, Olean, N. Y., to succeed Mr. William Enser.

Mr. C. V. Weston has resigned as president of the South Side Elevated Railroad, Chicago, Ill. Mr. Weston will remain temporarily on the board of directors of the company.

Mr. J. S. Hambleton has resigned as general manager of the State Belt Electric Street Railway, Pen Argyl, Pa., to become general manager of the Wilmington Southern Traction Company, Wilmington, Del.

Mr. F. L. Richards, superintendent of St. Louis terminal of the Illinois Traction System, has had his jurisdiction extended to include the 100 miles of line between the McKinley Bridge at St. Louis and Springfield.

Mr. J. V. H. Torner has resigned as shop foreman of the Chippewa Valley Railway, Light & Power Company, Eau

Claire, Wis., to become connected with the electrical department of the Sanitary District of Chicago.

Mr. Earl L. Mosely has resigned as chief engineer of the Grand Junction & Grand River Valley Railway, Grand Junction, Col. He was presented with a gold watch and fob by the officials and employes of the road.

Mr. H. E. Rodenhouse has been appointed assistant superintendent of the Western division of the Pacific Electric Railway, Los Angeles, Cal. Mr. Rodenhouse has been connected with the company for the past ten years.

Mr. B. I. Kilpatrick has resigned his position as master mechanic of the Slate Belt Electric Street Railway to become master mechanic of the Wilmington & Southern Traction Company, Wilmington, Del., in the capacity of master mechanic.

Mr. W. G. Davidson has been elected treasurer of the Spokane & Inland Empire Railroad, Spokane, Wash., vice Mr. H. B. Ferris, resigned. Mr. Davidson is now secretary and treasurer of the company and Mr. Ferris holds the title of comptroller.

Mr. J. T. Funk, superintendent of the Louisville (Ky.) Railway, has been appointed a member of a special committee on convention and excursions of the Louisville Commercial Club. A number of special meetings will be held during the State Fair in Louisville next month, and the committee to which Mr. Funk has been appointed will be charged with the work of arranging for these meetings.

Mr. Walter N. Cargill, who for eleven years has been superintendent of power stations for the Bay State Street Railway, in Lynn, Mass., has resigned his position to become connected with Stone & Webster, Boston, Mass. In recognition of his long term of service with the company, the officials of the road gave a complimentary dinner at the Hotel Brenton, Mayhan, on Aug. 16, at which Mr. Cargill was presented with a gold watch chain.

Mr. W. H. Newhouse, who has resigned as purchasing agent of the Louisville & Northern Railway & Lighting Company, the Louisville & Southern Indiana Traction Company, and the United Gas & Electric Company, New Albany, Ind., has become connected with the Yager & Newhouse Coal Company, Louisville, Ky. As previously stated in the *ELECTRIC RAILWAY JOURNAL*, Mr. Newhouse will be succeeded at New Albany by Mr. C. H. Dallow.

Mr. L. E. Butler, who has been appointed superintendent of motive power of the Evansville & Southern Indiana Traction Company, Evansville, Ind., was graduated from the University of Michigan in 1906 and served as an apprentice with the General Electric Company in 1907. During the following year Mr. Butler had charge of the sanitary district power station at Lockport, Ill., and was also connected with the Commonwealth Edison Company at the Fisk Street Station in Chicago. Mr. Butler also had charge of work for the Lounsbery Construction Company, which operates in Chicago and vicinity.

Mr. Thomas R. H. Daniels, who has been chief engineer of the Birmingham Railway, Light & Power Company, Birmingham, Ala., since May 1, 1911, began his railway career in 1898, when he entered the employ of the Rhode Island Company, Providence, R. I., as assistant engineer on track work. He resigned from that company in 1904 to become assistant engineer with Westinghouse, Church, Kerr & Company, New York, on the construction of the terminal station of the Pennsylvania Railroad in New York City. In 1906 Mr. Daniels severed his connection with that company to take charge of track work as assistant engineer with the United Railroads of San Francisco, and two years later he resigned to become engineer for the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind. He held that position until May 1, 1911, when he became chief engineer for the Birmingham Railway Light & Power Company.

Councilman A. E. Burke, who was a conductor on the street railway lines in Cleveland for many years, has announced that he will introduce an ordinance in the City Council after the summer vacation to provide for a pension fund for employes. He would assess the men a small amount, the money to be handled by the company.

Construction News

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

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

RECENT INCORPORATIONS

Salt River Valley Electric Railway, Phoenix, Ariz.—Chartered in Arizona to build a 60-mile electric railway to connect Phoenix, Ingleside, Scottsdale, Tempe, Mesa, Chandler, Alhambra, Glendale and Peoria. Construction will begin about Oct. 15. The repair shops will be located at Phoenix and the company will probably furnish power for lighting purposes. Capital stock authorized, \$600,000. Capital stock issued, \$200,000. Officers: F. M. Winter, president; Jacob Kleck, vice-president; C. C. Lewis, secretary; J. M. Swetman, treasurer; J. C. Harwood, purchasing agent, and W. S. Furman, general counsel, all of Phoenix. [E. R. J., Aug. 5, '11.]

***Chilliwack (B. C.) Tramway.**—Incorporated in Canada to build an electric railway within the municipal limits of Chilliwack.

***Etowah Valley Railroad, Dahlonega, Ga.**—Application for a charter has been made in Georgia by this company to build an electric railway from Ball Ground through Creighton to the northern boundary of the State in Towns County, via Forsyth, Lumpkin, Dawson and White Counties. The company will also furnish energy for lighting and heating purposes. Capital stock authorized, \$15,000. Incorporators: G. R. Glenn, H. D. Gurley, John H. Moore, T. J. Smith, J. M. Brooksher, J. E. Tate, H. Head, J. F. Sargent, W. H. Jones, B. F. Anderson, W. B. Townsend and Craig R. Arnold, all of Dahlonega.

Evansville, Henderson & Owensboro Traction Company, Evansville, Ind.—Application for a charter has been made in Indiana by this company to build a 10-mile electric railway between Evansville and Henderson, with a branch to Owensboro, via Zion, Hebbardsville, Curdsville and Sorgho. The company has leased from the Illinois Central Railroad a 6-mile line between Henderson and Evansville, which will be electrified and prepared for immediate use. Cars will be ferried over the Ohio River by a gasoline boat capable of carrying two cars. Capital stock, \$100,000. Incorporators: W. H. McCurdy, A. F. Karges, M. S. Sonntag, D. E. Cadick, W. A. Carson, Charles C. Tennis, C. H. Battin, Christ Kanzler, John M. Funke, Philip Speck, William A. Koch. [E. R. J., Oct. 30, '10.]

Oklahoma City & Eastern Railroad, Oklahoma City, Okla.—Chartered in Oklahoma to build an electric or steam railway between Oklahoma City and Henryetta, a distance of 90 miles. Capital stock, \$3,000,000. Directors: J. J. Johnson, Charles Hoopes, W. J. House, F. S. Combes and M. L. Spittler.

Dallas Southern Traction Company, Dallas, Tex.—Application for a charter has been made in Oklahoma by this company to build a 100-mile electric railway to connect Dallas and Waco, via Hutchins, Wilmer, Ferris, Waxahatchie, Forreston, Italy, Milford, Hillsboro West and Days Lake. A 35-mile branch will be built to Ferris to Corsicana via Ennis. Surveys have been made and construction will soon be begun. Capital stock \$2,000,000. Directors: Edwin S. Webster, Elliott Wadsworth, Russell Rob. Marshall M. Phinney, Boston; Edwin T. Moore, Dallas; David Daly, Edwin B. Parker, C. R. Wharton, J. H. Tallichet, Thomas H. Botts, W. A. Stevens, Raymond Neilson and H. A. Van Easton, all of Houston. [E. R. J., July 29, '11.]

FRANCHISES

Berkeley, Cal.—The Oakland Traction Company has received a franchise from the City Council for a single or double-track extension in Berkeley.

Los Angeles, Cal.—The Los Angeles Railway has asked the City Council for a franchise on Vernon Avenue and Jefferson Street in Los Angeles.

San Luis Obispo, Cal.—Walter G. Lincoln has received an electric railway franchise from the Board of Supervisors in the city and county of San Luis Obispo. [E. R. J., July 22, '11.]

Watts, Cal.—The Pacific Electric Railway, Los Angeles, has asked the City Council for a franchise over certain streets in Watts, in order that a line may be built to Homer Junction connecting the Redondo line and the Long Beach line.

Turners Falls, Conn.—The Connecticut Company has asked the Selectmen for a franchise to relocate its tracks in Turners Falls.

Marengo, Ill.—The Woodstock and Sycamore Traction Company has received a railway franchise in Marengo.

Gary, Ind.—The Gary, Hobart & Eastern Traction Company has asked the Board of Works for a franchise on Thirty-seventh Street in Gary.

Burlington, Ia.—The People's Gas and Electric Company has received a franchise from the City Council to double-track its North Hill line from the terminus of the double-track on Fourth Street to Osborn Street in Burlington.

Louisville, Ky.—A franchise providing for a line on Sixth Street south of Hill Street has been passed by the General Council of Louisville and signed by the Mayor. The franchise will be advertised and sold. It will enable the Louisville Railway, the prospective purchaser, to extend its Sixth Street line for a distance of one-mile from the present terminus of the line. A steel viaduct will be erected at the intersection with the tracks of the Louisville & Nashville Railroad. The cost of this will be shared by the Louisville Railway and a manufacturing company located at that point.

***New Orleans, La.**—Frank Brinker and H. S. Armstrong, representing the South Claiborne Avenue Improvement Association, New Orleans, will ask the City Council for a franchise for a line on South Claiborne Avenue to Melpomene, Rampart, Julia, Carondelet and Canal Streets. The committee will submit the proposed franchise to the New Orleans Railway & Light Company.

Brockton, Mass.—The Bay State Street Railway has asked the City Council for a renewal of its franchise in Brockton.

Danvers, Mass.—The Boston & Eastern Railroad has asked the Board of Selectmen for a franchise in Danvers.

Eveleth, Minn.—The Mesaba Electric Railway, Duluth, has received a franchise from the City Council for a franchise in Eveleth. The City Council of Virginia has also granted this company a similar franchise in Virginia. Oscar Mitchell, president. [E. R. J., Aug. 19, '11.]

***Hastings, Minn.**—The Hastings Construction Company has received a franchise from the Dakota County Commissioners for an electric line through Dakota County.

Trenton, N. J.—The Morris County Traction Company has obtained the approval by the Board of Public Utility Commissioners of an ordinance passed by the borough of Chatham, authorizing the laying of a double-track line on Main Street, in Chatham.

Little Falls, N. Y.—The Little Falls & Johnstown Railway has received a franchise from the Board of Aldermen to build its line between Little Falls and Johnstown. This 28-mile railway will connect Little Falls, St. Johnsville, Ephratah and Johnstown. J. L. Hess, 103 Park Avenue, New York City, president. [E. R. J., July 29, '11.]

Rock Hill, N. C.—The North Carolina Traction Company, Danbury has received a fifty-year franchise from the City Council in Rock Hill.

***Lorain, Ohio.**—The Village Council of Lorain has passed an ordinance granting a twenty-five-year franchise for the construction of an electric railway in Lorain.

Sewickley, Pa.—The Beaver Valley Traction Company, New Brighton, has asked the Council for a franchise in Sewickley.

Watertown, S. D.—Ferris Brothers have received a twenty-year franchise from the City Council to build an electric railway in Watertown and extend it to Lake Kampeska. [E. R. J., Aug. 12, '11.]

Weston, W. Va.—The Clarksburg & Weston Electric Railway, Clarksburg, will ask the City Council for a franchise in Weston.

TRACK AND ROADWAY

Calgary (Alta.) Municipal Railway.—Many improvements are being planned by this company to extend and double-track its lines in Calgary and in East Calgary.

Ft. Smith Light & Traction Company, Ft. Smith, Ark.—An extension will be built by this company to Van Buren as soon as the new bridge across the river is completed.

Jonesboro, Ark.—Preston Hatcher, Jonesboro, is organizing a company to construct an electric interurban line to connect Jonesboro and Nettleton. The Johnson Construction Company, Memphis, Tenn., has been engaged to furnish estimates on the cost of construction. [E. R. J., Sep. 3, '10.]

Northern Electric Railway, San Francisco, Cal.—It is reported that this company will spend \$1,000,000 on an extension of its line from Yuba City to Colusa. All right-of-way has been secured and franchises obtained. The company is having soundings made in the Sacramento River at Meridian, where a large combination bridge is planned by this company and the Counties of Sutter and Colusa.

***Berlin Street Railway, Meriden, Conn.**—This company has been organized to build an electric railway between Meriden and Berlin, with a branch line from Berlin to New Britain. Construction will be begun at an early date. Capital stock, \$50,000. Officers: H. M. Kochersperger, president; J. T. Kelly, New Haven, secretary, and C. J. Danaher, attorney.

Shore Line Electric Railway, New Haven, Conn.—This company placed in operation on Aug. 14 its new branch between Guilford and Foxon.

St. Petersburg Railway & Electric Company, St. Petersburg, Fla.—Plans are being perfected by this company to begin work soon on its extension from St. Petersburg to Coffeepot Bayou.

Illinois Central Electric Railway, Canton, Ill.—Preliminary arrangements are about completed and in a few days contracts will be let and construction will be begun on the extension of this line from Norris to Farmington.

Springfield Northwestern Interurban Railroad, Springfield, Ill.—The organization of this company, which proposes to build an electric railway between Springfield and Petersburg, via Andrew, Cantrall, Athens, Tice and Old Salem, has been perfected. The company has \$15,000 capital stock. The following were elected directors: Homer J. Tice, Greenview; R. Y. Kincaid, Athens; E. D. Keys, W. F. Workman, Ralph N. Baker, Frank Reisch, Jr., and S. E. Prather, Springfield. [E. R. J., Aug. 12, '11.]

Evansville & Chrisney Railway, Evansville, Ind.—Surveys are being made and as soon as they are completed this company will let contracts for the construction of its line between Chrisney and Lynnville, via Booneville. J. P. Chrisney is interested. [E. R. J., Mar. 11, '11.]

Capital Circuit Traction Company, Indianapolis, Ind.—It is reported that trust deeds have been filed by this company in favor of the Farmers' Trust Company, Indianapolis. Bids for the construction of the second division between Lebanon and Sheridan will be ready soon. John A. Shafer, Indianapolis, is in charge of construction. [E. R. J., Mar. 11, '11.]

Southwestern Traction & Power Company, New Orleans, La.—During the next ten weeks this company will award contracts to build 19 miles of new track. Its interurban line will extend from Spanish Lake to the lower corporate limits of Jeanerette at St. Mary's Parish line. It will also build its tracks in New Iberia. F. W. Crosby, Tenegre Building, New Orleans, president. [E. R. J., July 8, '11.]

Portland (Maine) Railroad.—Tracks are being laid by this company in Portland from Morrills Corner to Woodfords, via Forest Avenue, over which the cars of the Portland, Gray & Lewiston Railroad are to enter Portland.

Plymouth & Sandwich Street Railway, Manomet, Mass.—Work will soon be begun by this company on its line between Plymouth, Bourne and Sandwich. It will begin at the terminal of the line near Manomet and extend 12 miles to Sandwich. Locations have been secured by the company in Bourne and Sandwich. Plymouth has voted to subscribe \$50,000 for this project and it is expected that Bourne and

Sandwich will also have financial interests in the railway. This new line will form a link in a through route between Boston and the entrance to the Cape Cod Canal, now being built between Sandwich and Buzzards Bay.

Worcester (Mass.) Consolidated Street Railway.—Work has been begun by this company establishing the lines of new track locations, the franchises for which have been approved by the Railroad Commissioners.

Saginaw, Mich.—The franchise recently granted to Alex. J. Groesbeck, Detroit, by the City Council of Bay City was ratified at a special election on Aug. 15. The right-of-way has been secured between Saginaw and Bay City and the terminal carhouses will be erected at Bay City. This road, according to announcement, will give service inside the city where the city lines do not operate. Power will be furnished from the Au Sable hydroelectric plant.

St. Louis & Jennings Railway, St. Louis, Mo.—This company has awarded the contract for the construction of its railway to the Fruin-Colman Construction Company. The line will extend from the end of the Union-Florissant line to West Walnut Manor in St. Louis, to be operated as an extension of the Bellefontaine and the Union Avenue lines between Walnut Park and West Walnut Manor. [E. R. J., Aug. 12, '11.]

Interurban Construction Company, Hastings, Minn.—Surveys have been completed and most of the right-of-way secured by this company on its line from the end of the Twin City Rapid Transit Company's line at Inver Grove, via Hastings to Cannon Falls, and Rochester. Officers: A. T. Stebbens, Rochester, president; Edward Feldhauser, St. Paul, vice-president, and W. L. Sonnag, St. Paul, general manager. [E. R. J., Aug. 19, '11.]

Twin City Rapid Transit Company, Minneapolis, Minn.—C. G. Goodrich, president of this company, states it is prepared to build the new Johnson Street line, and to extend the Bryant Avenue line to Fiftieth Street; the Twentieth Avenue north to Broadway and Second Street N.E. line, and extend either Cedar Avenue or Bloomington Avenue line to Thirty-eighth Street in Minneapolis. The company will ask for no concessions from the City Council in return for this work.

Northern Ohio Light & Traction Company, Akron, Ohio.—This company has secured the right-of-way over the old hydraulic race from the corner of Federal Street and North Main Street in Akron with a view to building a high-level track to carry its cars across the Cuyahoga Valley. These improvements are to be made within a few years, but officers of the company say they have formulated no definite plans for them. They are preparing to carry out their plans and the purchase was necessary.

Tri-State Railway & Electric Company, East Liverpool, Ohio.—The Weirton branch of this company will be placed in operation by Sept. 1. It will extend from Steubenville to Weirton.

Springfield & Xenia Railway, Springfield, Ohio.—Plans are being made by this company for the construction of an extension of its Washington Street line in Springfield across the esplanade to the Arcade, where the new union traction station is to be located.

***Ottawa, Ont.**—It is reported that a new company is in process of organization to build an electric railroad between Ottawa and points on the Gatineau River. The intention is to reach all the summer resorts between Ottawa and Farmpoint, including Chelsea, Kirk's Ferry, Kingsmere, Cascades, and Farmpoint.

Port Arthur & Ft. William Electric Railway, Port Arthur, Ont.—This company will extend its Arthur Street branch $\frac{1}{2}$ mile in Port Arthur.

Toronto (Ont.) Railway.—About 10 miles of the 15 miles of new track under construction by this company in Toronto are now completed. The $1\frac{1}{2}$ -mile line from Spadina Avenue to Ossington Avenue of the Harbord Street line will soon be placed in operation.

Oregon Electric Railway, Portland, Ore.—Plans have been completed and work will soon be begun by this company on its extension from Portland to Eugene. The company has placed in operation its new line through Portland to the North Bank depot on Eleventh and Hoyt Streets.

Duquesne & Dravosburg Street Railway, Duquesne, Pa.—Right-of-way is being secured by this company to build an extension from Duquesne to Carrick, via Bull Run and Lincoln Place.

Hanover & McSherrystown Street Railway, Hanover, Pa.—An extension will be built by this company from Hanover to Abbottsville. Right-of-way has been secured and construction will soon be begun.

American Railways, Philadelphia, Pa.—This company, which has acquired the property of the Ohio Valley Electric Railway Company and the Consolidated Light & Railway Company, Huntington, will double-track the main line, a distance of 8 miles, if it can secure franchises from the City Council of Huntington.

Sunbury & Northumberland Electric Railway, Sunbury, Pa.—It is reported that this company is preparing plans to build an extension from Sunbury to Milton, Montandon and East Lewisburg. It will join with the Lewisburg, Milton & Watsontown Passenger Railway at East Lewisburg.

Waynesburg & Blacksville Street Railway, Waynesburg, Pa.—This company advises that it has begun the construction of its 16-mile electric railway between Waynesburg, Spraggstown and Blackville. Capital stock, authorized, \$250,000. Capital stock, issued, \$84,650. Officers: William M. Laws, Waynesburg, president; W. R. Hawkins, vice-president; R. E. Kent, secretary and treasurer, and J. G. Sampson, chief engineer. Headquarters: People's National Bank Building High Street, Waynesburg.

Watertown (S. D.) Electric Railway.—This company advises that it will probably begin this fall on the construction of its electric railway in Watertown. The company will purchase power from the Watertown Light & Power Company and also use its repair shops. Capital stock, authorized, \$100,000. Officers: W. J. Ferris, La Crosse, Wis., president; Robert Ferris, Yankton, S. D., vice-president; J. W. Ferris, Watertown, secretary and general manager, and C. H. Bell, Watertown, superintendent. [E. R. J., Aug. 12, '11.]

Johnson City (Tenn.) Traction Company.—This company has begun the extension of a 1-mile line from the city limits to the Tennessee State Normal School. It is reported that the improvements are being made in connection with the proposed extension from Jonesboro to Johnson City, for which a bond issue will probably be made at Jonesboro.

St. Louis, Brownsville & Mexico Railway, Brownsville, Tex.—Plans are being made by this company to build an electric railway between its station in Brownsville and the station of the Rio Grande Railway in Brownsville.

Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.—It is reported that plans are being considered by this company for the extension between Corpus Christi and Ingleside.

Mineral Heights Traction Company, Greenville, Tex.—Construction has been begun by this company on its 3-mile electric railway between Greenville and Mineral Heights. A. R. Nicholson, president. [E. R. J., May 27, '11.]

Galveston-Houston Electric Railway, Houston, Tex.—The steel viaduct at the southern city limits of Houston for the use of this company is practically completed, the work of tracklaying across the structure being finished and the rails connected up with the balance of the line at both ends of the bridge. The work on the line between Galveston and Houston is completed except the 3 miles at the causeway.

San Antonio (Tex.) Traction Company.—During the next few weeks this company will rebuild about a mile of track in San Antonio with 87-lb. grooved girder rails, replacing 60-lb. T rails. The company is in the market for about 1600 6-ft. steel ties.

Sherman, Tex.—It is reported that the Board of Trade of Paris is giving its official support to the proposed interurban electric railway that is to be constructed between Sherman and Paris. The sum of \$10,000 has been subscribed toward a total fund of \$30,000 to pay the cost of the preliminary survey. The people of Sherman have subscribed \$10,000 and the remaining \$10,000 is being raised along the route. [E. R. J., Aug. 19, '11.]

Utah & Salt Lake Electric Railway, Salt Lake City, Utah.—This company has approved the surveys made by its engineers and plans to begin the construction of its 70-mile electric railway between Salt Lake City and Payson within a few months. Stephen Chipman is said to be interested. [E. R. J., July 29, '11.]

***Lynchburg, Va.**—Business men of Lynchburg and Campbell County are considering plans to construct an electric line from Madison Heights, Amherst County, to Altavista. It is reported that considerable capital has been subscribed for this purpose.

Washington & Old Dominion Railroad, Richmond, Va.—The route of this electric railway has been practically decided upon. It will extend from just below Dominion Heights to Falls Church. Surveys have been nearly completed and it is stated that this company is negotiating with the Southern Railroad for the purchase of the old Bluemont Railroad. Charles M. Henckley, president. [E. R. J., May 13, '11.]

Bellingham-Skagit Railway, Bellingham, Wash.—Work has been begun by this company at Mount Vernon. Arrangements are being made for the construction of an 800-ft. trestle. It has been definitely announced that the road will cross the Skagit River 2 miles north of Mount Vernon on its own bridge. This line will eventually connect Bellingham, Burlington, Mount Vernon, Sadro and Woolley. E. C. Macey is in charge of construction.

Kittitas Railway & Power Company, Cle Elum, Wash.—Contracts will soon be awarded by this company to build its 38-mile railway between Roslyn and Cle Elum, via Ronald and Janesville. H. N. DeWolfe, Box 656, Tacoma, secretary. [E. R. J., Jul 22, '11.]

***Seattle, Wash.**—Plans are being made by this city to build a 3-mile electric railway from Raglan Station to Cedar Lake. [E. R. J., Mar. 25, '11.]

Twin City Electric Company, South Bend, Wash.—Work has begun by this company in Raymond on its line between Raymond and South Bend. R. Fulcher, San Francisco, has charge of the construction. [E. R. J., July 8, '11.]

Wenatchee Valley Railway & Power Company, Wenatchee, Wash.—Surveys are being made by this company between Wenatchee and Cashmere. This is part of a plan to build a 50-mile electric railway between Wenatchee and Leavenworth. [E. R. J., July 22, '11.]

Grafton (W. Va.) Traction Company.—Work has been begun by this company on the construction of its new concrete bridge to cross the West Side in Grafton. When the bridge is completed the company's Walnut Street line will be extended about 1½ miles.

***Mount Morris & Morgantown Street Railway, Morgantown, W. Va.**—This company has secured most of its right-of-way and will soon award contracts for the construction of the line between Mount Morris, Madsville and Randall. It will connect with the Morgantown & Dunkard Valley Railroad at Randall. Officers: Aaron Garlow, Morgantown, president; J. W. Rogers, Mount Morris, treasurer, and W. I. Pomeroy, Mount Morris, secretary. [E. R. J., Aug. 5, '11.]

Waupaca Electric Light & Railway Company, Waupaca, Wis.—This company advises that it will soon build several extensions of its lines in Waupaca. One branch will be to the Wisconsin Veterans' Home and the other will extend to the Waupaca-Green Bay Railway line in Waupaca.

SHOPS AND BUILDINGS

Georgia Railway & Electric Company, Atlanta, Ga.—This company has awarded the contract to build a new car shop in Atlanta to George A. Clayton. The structure will be 140 ft. x 240 ft. and of fireproof construction. The cost is estimated to be about \$50,000.

Southwestern Traction & Power Company, New Orleans, La.—During the next ten weeks this company will award contracts for the construction of repair shops in New Iberia.

Boston (Mass.) Elevated Railway.—It is reported that this company expects to begin work at once on the con-

struction of its new elevated terminal station at Main, Center and Middlesex Streets in Malden.

Piedmont Traction Company, Charlotte, N. C.—Bids are asked for by this company for the construction of its stations and freight buildings along the route. W. S. Lee, Charlotte, vice-president.

Northern Ohio Traction & Light Company, Akron, Ohio.—The old Webster, Camp & Lane machine shops, now used by the Wellman-Seaver-Morgan Company, have been purchased by this company, and it is said that they will be converted into a terminal station for all the interurban roads entering Akron.

New Castle & Beaver Falls Street Railway, Beaver Falls, Pa.—It is reported that this company plans to build a passenger and freight station in Wampum.

Philadelphia (Pa.) Rapid Transit Company.—It is reported that this company is considering plans for the opening of freight stations at different points along Market Street between Front Street and Sixty-third Street, in Philadelphia. The company has received permits for the construction of two buildings in Philadelphia. One structure will be located on East Letterly Street and will be 65 ft. x 93 ft., of brick construction. The cost is estimated to be about \$33,000. The other building will be a one-story brick lumber storage house, 65 ft. x 56 ft., and will be erected on East Cumberland Street.

Roanoke Railway & Electric Company, Roanoke, Va.—This company will soon build a new carhouse and repair shops in Roanoke.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—Negotiations are being made by this company for the purchase of the Racine theater to be used for carhouse purposes.

Sheboygan Light, Power & Railway Company, Sheboygan, Wis.—The contract for the erection of a new carhouse 123 ft. x 80 ft. in Sheboygan has been awarded by this company to Ackerman & Son. The structure will be 123 ft. x 80 ft. The company has begun work remodeling its office building in North Eighth Street and Pennsylvania Avenue in Sheboygan.

POWER HOUSES AND SUBSTATIONS

Wilmington & Philadelphia Traction Company, Wilmington, Del.—Construction has been begun by this company on the new addition to its Brandywine power station on Buena Vista Street, adjoining No. 1 plant nearest to Market Street in Wilmington. Work is progressing rapidly.

Augusta-Aiken Railway & Electric Company, Atlanta, Ga.—A 3000-hp turbine is being installed by this company at its new power house addition in Augusta.

Metropolitan Street Railway, Kansas City, Mo.—This company has purchased from the General Electric Company a 15,000-kw steam turbine generator to be installed at its main power house at Second Street and Grand Avenue in Kansas City.

Cincinnati (Ohio) Traction Company.—This company will soon build a two-story substation inside its present car house on Reading road, Mount Auburn.

American Railways, Philadelphia, Pa.—This company, which has taken over the Ohio Valley Electric Railway, Huntington, W. Va., will increase the power generating station at Kenova by the addition of two 1000-kw turbines. The company will rebuild the substation at Huntington, adding 300 kw to its capacity, and add 150 kw to the capacity of the substation at Cliffside.

Johnson City (Tenn.) Traction Company.—This company is enlarging its power house. A new boiler room is being built and additional boilers will be installed.

Nashville Railway & Light Company, Nashville, Tenn.—A site on First Avenue and Second Avenue, in Nashville, has been purchased by this company on which it expects to build an addition to its power house.

Union Utilities Company, Morgantown, W. Va.—Plans are being considered by this company for the construction of new substations in order to provide current for the new lines in and about Morgantown. It is estimated that the substations will cost about \$10,000 each.

Manufactures & Supplies

ROLLING STOCK

Rockford & Interurban Railway, Rockford, Ill., is in the market for eight trucks.

Sioux City (Ia.) Service Company is building six 44-ft. pay-as-you-enter cars in its own shops.

Emporia (Kan.) Street Railway has ordered four open cars from the American Car Company.

Chicago (Ill.) Railways has ordered 600 Brill 27-GE-2 trucks without wheels from the American Car Company.

Third Avenue Railroad, New York, N. Y., has ordered four long cab storage battery snow sweepers from The J. G. Brill Company.

Monmouth, Macon & Southern Railroad, Monmouth, Ill., has ordered a 55-ft. gasoline motor car from the McKee Motor Car Company.

Ontario & San Antonio Heights Railroad, Ontario, Cal., has ordered three combination motor car bodies from the G. C. Kuhlman Car Company.

Kentucky Traction & Terminal Company, Lexington, Ky., has ordered six Brill 27-MCB-2 trucks without wheels from the American Car Company.

Rome Railway & Light Company, Rome, Ga., has ordered two 20-ft. 8-in. closed motor cars mounted on Brill 21-E trucks from The J. G. Brill Company.

Muskogee (Okla.) Electric Traction Company has ordered ten 21-ft. 3-in. closed motor cars mounted on Brill 21-E trucks, from the American Car Company.

Detroit (Mich.) United Railways has ordered fifty 31-ft. 3-in. closed pay-as-you-enter motor car bodies from the G. C. Kuhlman Car Company. This item confirms the report published in the ELECTRIC RAILWAY JOURNAL of Aug. 19, 1911.

Central Pennsylvania Traction Company, Harrisburg, Pa., noted in the ELECTRIC RAILWAY JOURNAL of Aug. 19, 1911, as having purchased several cars, has ordered six 25-ft., semi-convertible, pay-within motor car bodies, mounted on Brill 39-E trucks, from The J. G. Brill Company.

Connecticut Company, New Haven, Conn., noted in the ELECTRIC RAILWAY JOURNAL of May 20, 1911, as having ordered thirty-three straight-side closed motor cars from the Wason Manufacturing Company, has specified the following details for these cars:

- Seating capacity.....44 Conduits,
- Weight (car body only), flexible and iron pipe
16,500 lb. Couplers...Ry. Co. standard
- Bolster centers, length..19 ft. Curtain fixtures,
- Length of body...30 ft. 8½ in. National Lock Washer
- Over buffers.....41 ft. 3 in. Curtain material...pantasote
- Width over sills...8 ft. 1¼ in. Gongs Dedenda
- Over all.....8 ft. 4½ in. Hand brakes Peacock
- Height, rail to sills....33 ft. Headlights,
- Sill to trolley base..8 ft. 8 in. Smith incandescent
- Body wood Motors four
- Interior trimmahogany Paint..Ry. Co.'s Std. yellow
- Headlining birch Sanders Kilbourn
- Roof.....square deck Seats, style.....longitudinal
- Underframe composite Seating material.....rattan
- Bumpers.....7-in. angle iron Steps Stanwood
- Car trimmings.....bronze Ventilators,
- swinging deck sash

TRADE NOTES

United States Steel Products Company, New York, N. Y., has opened an office in Toronto, Ontario, under the management of F. C. Bunke.

Titan Steel Casting Company, Newark, N. J., is receiving bids for the construction of an addition to its plant. Additional cranes will also be installed.

Allis-Chalmers Company, Milwaukee, Wis., has announced that its Scranton plant will be entirely closed down by Jan. 1, 1912, and that the hydraulic department will be taken to Milwaukee and the sugar machinery department to Chicago. C. L. Glasgow has been appointed Montreal district sales manager of Allis-Chalmers-Bullock, Ltd.

McKeen Motor Car Company, Omaha, Neb., reports that it has shipped one standard 70-ft. gasoline motor car to the Oregon Short Line Railroad, Ogden, Utah. This is the third car delivered to that railway and is the one hundred and twenty-seventh McKeen motor car to be placed in service.

C. P. Lindsley, president of the Lindsley Brothers Company, manufacturers of western cedar poles and cross arms, Spokane, Wash., is making an extended inspection trip to the company's pole yards, which are located in northern Idaho, northeastern Washington and British Columbia. The British Columbia headquarters are at Nakuso, on Arrow Lake.

Gano Dunn, who for some years has been first vice-president, chief engineer and a director of the Crocker-Wheeler Company, has resigned from that company in order to accept an important engineering and executive position. Mr. Dunn will sail shortly for Europe to attend, as president of the American Institute of Electrical Engineers, the meeting during the Turin Exposition of the International Electrotechnical Commission, to be held on September 7, 8 and 9, and also the following meeting of the International Electrical Congress.

Western Electric Company, New York, N. Y., has made selling arrangements with the National Tube Company, Pittsburgh, Pa., to handle the Shelby seamless cold-drawn steel trolley poles for the entire country. The company has completed arrangements whereby it will soon open a new house at Richmond, Va., where a complete stock of telephone apparatus and supplies, power apparatus and general electrical supplies will be carried. H. W. Hall, formerly manager of the Denver house, will have charge of the Richmond organization, and with him will be associated specialists on the various lines handled.

Wonham, Sanger & Bates, New York, report the receipt of orders for H-B life guards from the United Traction Company, Reading, Pa., and the Erie & Suburban Railway, Buffalo, N. Y. The company has received repeat orders from the following companies: Houston (Tex.) Electric Company, Kentucky Traction & Terminal Company, Lexington, Ky.; People's Railway, Dayton, Ohio; Northern Texas Traction Company, Ft. Worth, Tex.; Southwestern Interurban Railway, Arkansas City, Kan.; Savannah (Ga.) Electric Company. The Philadelphia (Pa.) Rapid Transit Company has been supplied with 1000 H-B life guards since June. The fifty near-side cars for this company as well as the sixty near-side cars of the International Traction Company being built by The J. G. Brill Company will also be equipped with H-B life guards.

Prepayment Car Sales Company, New York, reports that the pay-as-you-enter system is attracting a great deal of attention abroad and a number of the leading tramway companies are investigating this system of fare collection. One of the first lines to be equipped for a thorough try-out of the pay-as-you-enter system is the Gateshead & District Line of the British Electric Traction Company and it is probable that the system will also be installed on the Potteries & District Tramway Company's lines. The subject has also recently been considered by the Tramways and Light Railways Association, having been brought to the attention of that association at its last meeting through a paper by Gerald J. H. Hooghwinkel entitled "A Few Reasons Why Electric Traction in England Remains Stationary." An abstract of this paper was published in the *ELECTRIC RAILWAY JOURNAL* of July 29.

ADVERTISING LITERATURE

Barrett Manufacturing Company, New York, N. Y., has published a revised edition of its specifications for roofing.

Hess-Bright Manufacturing Company, Philadelphia, Pa., has issued an indexed file for the classification of its data sheets.

Standard Steel Works Company, Philadelphia, Pa., has issued an illustrated catalog of rolled-steel rings, shells and ring dies.

Jeffrey Manufacturing Company, Columbus, Ohio, has issued an illustrated bulletin describing its single roll coal crushers.

Dayton Manufacturing Company, Dayton, Ohio, has is-

sued several circulars describing its car hardware and other specialties.

Niles-Bement-Pond Company, New York, N. Y., has issued a 28-page illustrated catalog describing its heavy engine and gun lathes.

National Carbon Company, Cleveland, Ohio, has published an illustrated review of the various commutator slotting devices on the market.

Frank Ridlon Company, Boston, Mass., has issued its August list of new and second-hand motors which it has on hand for immediate shipment.

Chester Graphite Company, Chester Springs, Pa., has issued a booklet describing the use, method of application and giving prices of its flake graphite.

Root Spring Scraper Company, Kalamazoo, Mich., has issued a descriptive catalog showing the methods of installation and operation of its track scrapers.

Ohio Brass Company, Mansfield, Ohio, has issued No. 4, Vol. 6. of the O. B. Bulletin describing installations of its electric railway and mine haulage material.

Perry, Coffin & Burr, Boston, Mass., bankers, are mailing a booklet which shows the growth in population of cities in the United States and the population of foreign cities.

C. W. Hunt Company, New York, N. Y., is distributing a 16-page illustrated booklet giving specifications of its electric storage battery and trolley locomotives for industrial use.

Electric Railway Improvement Company, Cleveland, Ohio, has issued a 28-page illustrated booklet describing its electric copper-welding outfits for the installation of rail bonds.

W. N. Matthews & Brother, St. Louis, Mo., have issued an illustrated booklet with detachable return order postal describing its guy anchors. The company has published an illustrated booklet describing the Matthews fuse switch.

Chandler Brothers & Company, Philadelphia, Pa., have issued a circular containing a special study of the Philadelphia (Pa.) Rapid Transit Company. The circular contains a table showing the number of passengers carried each year for a ten-year period, also a table showing the high and low quotations of P. R. T. stock for the past five years.

H. W. Johns-Manville Company, New York, N. Y., is distributing a new 400-page electrical supplies catalog, No. 15, which illustrates and describes the electrical products of the company. The catalog contains many additions to the company's line of electrical supplies, among which are J-M fibre conduit for telephone, lighting, railway and electrical purposes; J-M linolite system of illumination for general lighting, third-rail insulators, high-tension porcelain insulators, incandescent lamps and lighting arresters.

General Electric Company, Schenectady, N. Y., has issued Bulletins Nos. 4849, 4866, 4867, 4868 and 4872. Bulletin No. 4849 is a catalog of motor-generator sets ranging in capacity from 95 kw to 7000 kw. Bulletin No. 4866 is an illustrated catalog of Thompson horizontal edgewise instruments for switchboard service. Bulletin No. 4867 is a descriptive catalog of electric locomotives for switching and light freight service. Bulletin No. 4868 is a catalog of rotary converters in capacities ranging from 25 kw to 2500 kw, and contains a table of a complete list of rotary sales to April 5, 1911. Bulletin No. 4872 is a descriptive catalog of transformer oil-drying and purifying machines. The company has also issued Bulletins Nos. 4837 to 4843, inclusive, describing its different types of circuit breakers.

NEW PUBLICATIONS

The Universal Directory of Railway Officials, London.— Compiled by S. Richardson Blunderstone, editor of *The Railway Engineer*. The Directory Publishing Company, Ltd., London. New York: A. F. Walker, 140 Liberty Street. 723 pages. Price, \$3, postpaid.

This is the seventeenth annual edition of this directory, and includes the names of the companies and the companies' officials, and a short description of the equipment of steam railroads in all parts of the globe and of the tramways in the United Kingdom operated by mechanical power. There are also a personal index of all of the railway officials mentioned in the directory, an index to the main railways and an index to the countries.