Street Railway Journal

VOL. XXII. NEW YORK, SATURDAY, NOVEMBER 28, 1903. No. 22.

PUBLISHED EVERY SATURDAY BY THE
McGRAW PUBLISHING COMPANY

MAIN OFFICE:
NEW YORK, ENGINEERING BUILDING, 114 LIBERTY STREET.

BRANCH OFFICES:
Chicago: Monadnock Block.
Philadelphia: 929 Chestnut Street.
Cleveland: Cuyahoga Building.
London: Hastings House, Norfolk Street, Strand.

Cable Address, "Stryjourn, New York,"—Lieber's Code used.

TERMS OF SUBSCRIPTION.

In the United States, Canada and Mexico.....$4.00 per annum
Single copies, first issue of each month, 25 cents; other issues, 10 cents.

To all Countries outside of the United States, Canada and Mexico.... { $6.00 £1-5s M 25 Fr. 31

Single copies, first issue of each month, 40 cents; other issues, 15 cents.
Subscriptions payable in advance, by check or money order. Remittances for foreign subscriptions may be made through our European office.

EDITORIAL NOTICE

Street railway news, and all information regarding changes of officers, new equipments, extensions, financial changes and new enterprises will be greatly appreciated for use in these columns.

All matter intended for publication must be received at our office not later than Tuesday morning of each week, in order to secure insertion in the current issue.

Address all communications to

THE STREET RAILWAY JOURNAL,
114 Liberty Street, New York.

The Electrical Equipment of the New York Central Railroad

The contracts awarded last week for electrical equipment by the New York Central & Hudson River Railroad Company, and mentioned elsewhere in this issue, constitute one of the most important events which have occurred in the history of electric traction since the equipment of the West End Railway, of Boston, in 1888 and 1899. That installation marked the confidence of the largest street railway company in the world at that time in what was then a new motive power. The contracts awarded last week by the New York Central & Hudson River Railroad, coupled with the adoption of electricity for its New York tunnel by the Pennsylvania Railroad Company, prove in an equally conclusive manner the confidence of steam railroad owners in what has been up to the present a comparatively untried motive power for heavy traffic conditions. It is true that the local conditions in each of these cases are particularly favorable for electricity. The fact that both the Pennsylvania Railroad and New York Central Railroad will enter New York through a tunnel barred steam from consideration. Nevertheless, in the case of the New York Central Railroad the desire to avoid the gases of combustion in the tunnel could not have been the only reason for the selection of electricity. If this was so electric operation could have been used only between Forty-Second Street and Mott Haven, or any other convenient point on the line near the northern end of the tunnel, where a change could be made. If this had been done the installation would have been similar to that in the Belt Line tunnel of the Baltimore & Ohio Railroad, or on the Paris terminus of the Orleans Railway Company, of France. The notable feature of the proposed New York Central installation is that electricity has been adopted not only for the tunnel section but as well for the service extending for a radius of about 50 miles on the main line and branches; in other words, for the entire suburban business.

In other respects, also, the New York Central contract is a notable one, as it includes: the adoption of steam turbines in 5000-kw units, the selection of direct-current distribution by polyphase transmission, in spite of the fact that the conditions are in many respects more favorable for polyphase motors than if the road was an ordinary street or elevated railway, the selection of 2200-hp locomotives, designed for operating at 60 m. p. h., and the use of gearless motors.

For the last ten years New York City has been the greatest center in the world of electrical development, on account of the electrical equipment of its vast system of surface and elevated lines. The work, viewed as a whole, is now approaching completion, but the new work here announced will keep the city for ten years or so longer as the great center of electric railway interest through the equipment of the subway and the electrical installations proposed by the New York Central Railroad and Pennsylvania Railroad. From a traffic standpoint, the former will be, in many respects, the most interesting of any which can be made, for the density of traffic from the Grand Central Station is probably as great as that from any other station in the world, and the possibilities of electricity for suburban traffic will have to be compared with one of the best steam services of this kind in existence. An opportunity will, therefore, be given for determining the relative economies and efficiencies of the two systems under the same conditions. As previously stated, we believe that very little difference will be found in the actual cost of power per ton-mile run, but that electricity will be found to show an enormous saving in practically every other respect, especially in maintenance and in train service, while the incidental advantages of electricity in comfort and higher speeds will have an enormous effect upon the total amount of business developed on the line affected.

Cincinnati's Interurbans

The attitude of most large cities of the country toward interurban electric lines, especially in the Middle West, has been of friendly sympathy and co-operation, but in the case of Cincinnati the most worthy projects for a long time received no encouragement whatever. All who have knocked for admission at her gates have been commanded to wait at the outer portals. This was largely brought about by the local traction interests, which wished to retain absolute control of the local service, and for this reason opposed the operation of interurban cars within the city limits, even over the tracks of the local

company. As soon as amicable arrangements were made for admitting the interurbans, the latter secured ample facilities for handling their prospective business in a convenient locality, and made their headquarters attractive for shoppers from other towns, who appreciate the conveniences afforded. The details of the system worked out by Mr. Scrugham and his associates are fully explained in the articles presented this week and in the last issue of the STREET RAILWAY JOURNAL upon "Cincinnati Interurban Development." A very comprehensive system has been established extending between 30 miles and 40 miles out of Cincinnati and including the Cincinnati & Eastern, the Suburban, and the Rapid Railway, each organized and built as a separate railway, and now operated as a division of the Interurban Railway & Terminal Company. The projectors very wisely built the lines in the most substantial manner, and an excellent idea of the standard of construction adopted in every department may be gained from these articles, which are freely illustrated. Everything about the service is of a superior character, including the roadbed and line equipment, the power plant and distribution system, the rolling stock and the freight and passenger buildings. Under the circumstances very efficient service might well be expected, and in this the community served has not been disappointed.

The manner in which the projectors have approached this problem and the methods they have employed throughout show that they are alive to the requirements of the situation as well as the benefits to be reaped. A study of the plan of operation the organization and the system of management cannot fail to be beneficial to others engaged in the operation of similar lines, as well as those who are about to enter this field.

Cincinnati waited long and patiently for interurban electric service, and the men back of the present enterprise found it difficult to secure a favorable hearing. But now that they have gotten together they are certainly making a brave showing, and a continuation of this co-operation cannot fail soon to produce results that will make the city as conspicuous for its fine interurban service as it formerly was for the lack of it.

The Conversion of Steam Roads

Almost weekly we hear, and often publish, rumors that the suburban system of some prominent railway is about to be reformed and converted to electric traction. Sometimes the report is a mere vague rumor, sometimes very specific and rich in corroborative detail, but the fact is that the change is very infrequently carried out, and that improvements rumored for years still hang fire and nothing is done. On the other hand, competing trolley lines multiply month by month, new suburban and interurban lines are constantly being projected, and usually are promptly put through. The steam line almost always has the advantage of position, in that it operates wholly on its own right of way, with few or no grade crossings, with every opportunity for a complete block signal system, and it generally serves an established community, well trained in the use of its rather infrequent stations. On form, the steam road should be convertible to an unusually effective electric system, with a heavy traffic already built up along the line and a far better chance of paying than a new road running through a partially developed country and under the necessity of building up its own traffic. One must instinctively ask, under such circumstances, why is it that the railroads are so slow in improving their opportunities. It is not wholly due to inertia, and certainly is not due to general distrust of electric traction, for in most matters railroad men are alert enough, and they certainly have had opportunity to learn, to their cost, the deadly competition that a well-run trolley line can put up. In fact, some of the very railroads that cling stubbornly to the locomotive for their suburban service are paralleling their own roads with interurban trolley lines. For example, one of the best short interurban lines with which we are acquainted is that operated between Manchester and Concord, N. H., by the Boston & Maine Railroad, which runs as dingy a suburban service out of Boston as ever roused the ire of a chronically-kicking commuter. And certainly no one has accused that worthy system of lack of means or condoled with it as a victim of cut-throat competition.

No; to view the facts in their proper light, the steam railroads are neither negligent nor asleep, and one has to seek definite reasons for their slowness to take up what is generally recognized as the best form of rapid transit. The broad facts are probably well known to many of our readers that the hesitation comes in the main from two sources of doubt—first, a conservative hesitation as to the probable saving to be accomplished at a somewhat large first cost; and, second, the really grave difficulties that beset the terminal problem. The first count in the indictment must, on reflection, be adjudicated in favor of the electric system, as a general principle. Of late years there have been many comparative estimates made in the light of pretty complete data on the cost and running expense of heavy interurban lines. We know of no case in which a comparison between the known cost of the steam service and the estimated cost of electric service has not, upon the whole, shown a probable saving sufficient to justify the expenditure. More than this, experience has already shown that a well-conducted electric service will in every case so increase the gross receipts as to put the change on a sound financial basis. One is, therefore, driven to the conclusion that the terminal difficulty, the serious problem of working electric trains and steam locomotives through the same yards and into the same or adjacent terminals, is really the one serious bar to the general adoption of electricity as a motive power for suburban trains. In fact, some railroad men frankly state that this is the difficulty over which they stumble. It is, perhaps, unfortunate that so many of the more serious attempts at heavy electric traction have been made by reliance on the third rail; for, useful as that device is within its own proper sphere, the man who undertakes to work out a practical third-rail system through and about a big terminal yard, has cut out for himself a task that is likely to keep him busy for a long time. Nothing delights an old railway man more keenly than to spring this problem on an ardent electrical enthusiast and then to watch his victim squirm.

But while we desire to go slowly in drawing conclusions from very recent experiments, we cannot resist the temptation of throwing up the Berlin-Zossen work at the dubiously minded. For, while the detail of such a system has not been worked out in its relation to suburban rapid transit, as we understand it in this country, and while we are not at all predicting that polyphase motors are the last word on the traction problem, we must, nevertheless, recognize that these experiments have emphasized the great fundamental fact that lies at the bottom of future electric traction. It is this—that if fast and heavy electric trains are to run over long distances, doing serious work, the voltage on the working conductors must be raised far above its present customary limits. Until this fact is fully recognized and the principle is put into regular practice, we are certain to potter along with makeshifts of various sorts, more or less

effective in special cases, but not effecting any material advance in the art. We have often pointed out how heavy electric traction is separating itself from street railroading in general, how the interurban lines may be divided into two rapidly diverging classes, and how these classes are founded on two radically different phases of rapid transit. It is daily becoming clearer that the fast interurban road is tending to follow the lines, as it must assume the responsibilities, of general railroading. This being so it is equally clear that the customary methods of electrical distribution, suited to ordinary tramway work and to minor electric service generally, must be radically changed to meet the conditions of the greater field. We, in this country, have temporized long enough in this matter. The lesson of Zossen must not be forgotten, even though the skill and ingenuity of American engineers may radically improve upon what has been there taught. We have in our country the greatest railroad systems on the face of the earth, and the most splendid opportunities for rapid transit, but if we are to make the most of them we must cut loose from traditions, however sacred, and to build for the twentieth century.

Interurban Limited Service

The buffet cars described in this issue, which are to be employed in the "limited" service given by the Indiana Union Traction Company, again call attention to the increasing importance that this limited service is assuming among high-speed interurban lines. It is the intention to place these buffet cars on the limited runs between Indianapolis, Anderson, Muncie, Marion and Logansport. While it is not the expectation that the small buffet with which these cars are equipped will prove exceedingly profitable in itself—indeed, it is not intended that this feature shall do more than support itself—the management considers that it will have accomplished its object if it adds to the attractiveness of the limited service enough to justify its maintenance. A traveling man who wants to cover as many towns as possible in a week will not fail to appreciate the service which will enable him to secure refreshments on the road.

This limited service, as now carried on, more than competes with the fastest steam railroad trains between the larger towns which it reaches. True, the interurban limited cars are handicapped by being obliged to run slow through the city streets, but as this service is carried on in the vicinity of Indianapolis, the loss of time is compensated for, as far as the passenger is concerned, by the time taken to reach the steam railroad depots from the business centers of the several cities toucehd, which averages as much as is required by the interurban cars in entering over the city tracks. This, together with the lower fares and more frequent service of the electric line, puts the steam railroad practically out of consideration for local traffic. In this connection it may be mentioned that the schedule time between cities for the interurban cars, as usually published, is likely to be misleading, in that it does not represent the actual running time from the center of one city to the center of the other. Thus, in Indianapolis, the leaving time given is that at the interurban waiting room, which is at one side of the business center. The leaving time from the business center is approximately 5 minutes later than this, and the arriving time at the other towns reached en route is likely to be 3 minutes to 5 minutes earlier than the leaving time from those towns given on the time-tables. Many of these details are not taken into account by the uninitiated when considering the time required in going from one city to the other, but they are appreciated by those who travel frequently, to the advantage of the interurban. For example, the leaving time given in the time-tables for limited cars on the Indiana Union Traction Company shows 1 hour and 25 minutes difference between Indianapolis and Anderson, but the actual running time between the business centers of these cities is nearer 1 hour and 15 minutes.

The extent to which this limited service is being developed is astounding to those who have not watched it closely for the last two years, and the best interurban lines recently built have all been surveyed with the idea of maintaining a fast limited service of this class. Besides the direct profits from the limited cars which a company maintains, this service, undoubtedly, has an advertising value and tends to create traffic which would not otherwise exist. An interurban road, depending, as it almost entirely does, on what is known as created travel, that is, travel which did not exist before the road was built, is certainly justified in maintaining such a service wherever conditions are right for it. Experience around Indianapolis indicates that people are willing to pay at least 25 per cent higher fare for the sake of a saving of 25 per cent in time. As to cost of operation, limited cars making few stops cost less per car-mile to operate than the locals, both in wages and motive power expenses. Of course, a time comes when the adding of more limited cars interferes with the locals, because of the large number of meeting points on a single-track road, and then it is time to figure on double track.

Chicago Strike Ended

As we are going to press word comes from our Chicago representative that the Chicago City Railway Company and its former employees have agreed upon terms of settlement, and that the strike on the South Side lines is practically closed. As a result, the entire community relished its dinner, and gave more fervent expression of its gratitude on Thanksgiving than it would otherwise. It has been a trying ordeal for the company and its patrons, and undoubtedly for many of the men, and was marked by great intensity of feeling on all sides.

"This is going to be a very quiet strike," said President Mahon, of the Amalgamated Association of Street Railway Employees, when the men quit their posts. "There will be no violence, no rioting. Everything will be conducted in an orderly manner." With this promise the labor leaders withdrew, and the struggle was on. What was the result?

The first car to leave the barns was assailed with a shower of brickbats, obstructions were piled on the tracks, a blockade was presented at every crossing, and those who had the temerity to patronize the cars were assailed by the strikers, threatened, bullied and roughly handled. The company's property was destroyed and damaged, its employees waylaid and assaulted, the principal thoroughfares on which cars are operated were choked by trucks in charge of belligerent teamsters, and the streets lined with strikers and their sympathizers, ever ready for an opportunity to engage in open warfare with the street railway and its new employees. Cars could only be operated under strong police protection, and then at infrequent intervals. In every scrimmage, where the police succeeded in making arrests, strikers and other union men were found among those leading the disturbances.

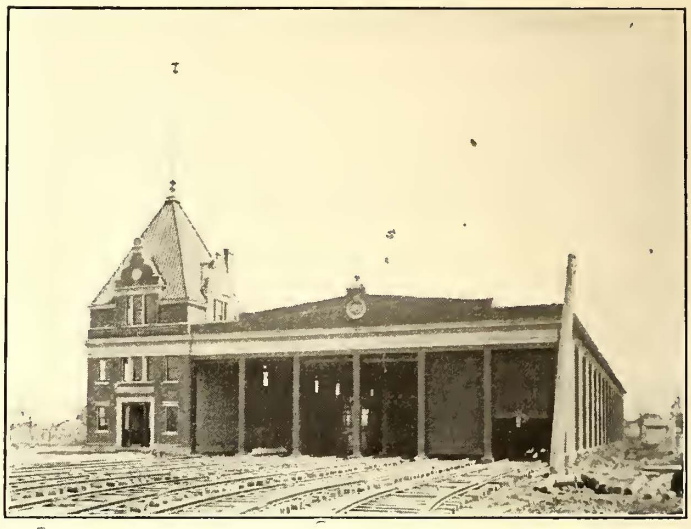
Now that the strike is over the folly of these demonstrations is brought home to the men themselves. The men who are known to have participated in these disturbances will not be taken back. We are glad the company insisted upon this point—it makes for law and order. It was a decisive victory in every way for the company.

CINCINNATI INTERURBAN DEVELOPMENT—II

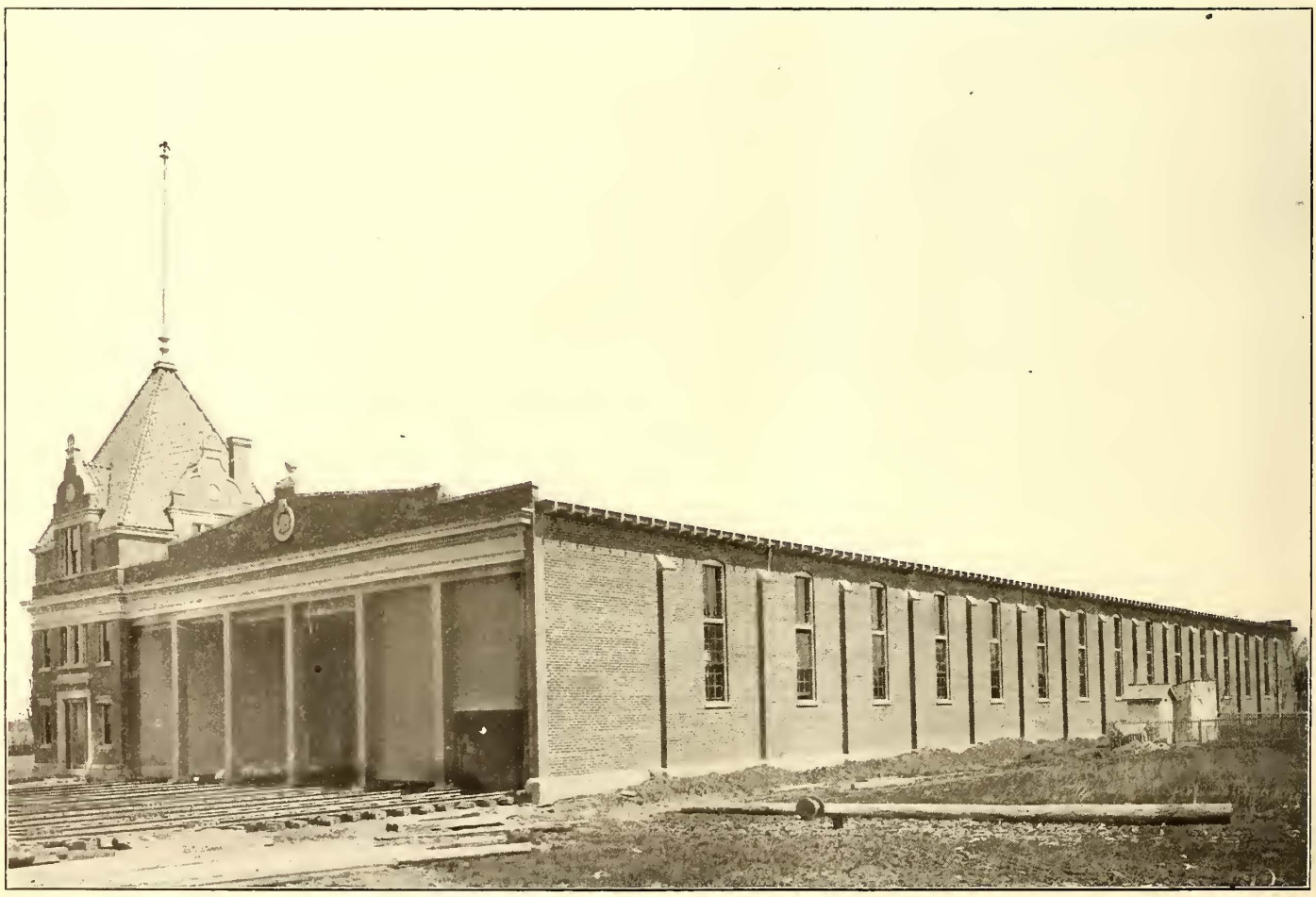
RAILWAY BUILDINGS

In designing the buildings of the system especial attention was paid to artistic effects, the aim being to make them attractive as well as substantial. The manner in which this was done may be judged from the accompanying views of car houses, power stations, sub-stations and the terminal station.

There are two car houses and repair shops, one at Deer Park, on the Rapid Railway, and the other at Coney Island, at the junction of the Suburban and the Cincinnati & Eastern; the latter serving both roads. The buildings and arrangements are practically identical except that the Deer Park house has a wing that is used as a sub-station. The buildings measure 253 ft. 6 ins. x 76 ft. On one side is a three-story office building, 23 ft. x 23 ft. The front is buff colored pressed brick with stone trimmings, and the roof is of tile with ornamental designs. The first floor is partitioned off for the cashier and the starter. The partitions are all Florentine glass, the fixtures and furniture are all antique oak, and the floors all hard wood. A fireproof vault is built in. The second floor is a waiting room for motormen and conductors, and is provided with lockers and tables. Papers and magazines are furnished to the men. The third floor is devoted exclusively to the despatcher's office. One man handles the Cincinnati & Eastern and the Suburban from the office at Coney Island, while the Deer Park man handles the Rapid Railway. To the rear of the office is a store room, 20 ft. x 16 ft.; machine shop, 42 ft. x 16 ft.; blacksmith shop, 22 ft. x 16 ft.; armature room, 18 ft. x 16 ft., and oil room, 16 ft. x 16 ft. The machine shop contains a planer, lathe, drill press, wheel press and other tools. In this shop is a 50-hp motor, which supplies power and operates a pump which takes water from an 8-in. driven well, and delivers it to a 20,000-gal. tank 12 ft. above the roof. There is an automatic sprinkler system throughout the house, and a 6-in. main is connected with hydrants at various points where reels of 2½-in. hose are maintained. The line also supplies a filterage tank which provides the employees as well as the water coolers in the cars with pure water. The car house proper has a cinder floor, and is provided with six tracks. Three of them have pits the full length, in which are used Dorner & Dutton car jacks. The roof supports are all steel, resting on concrete, and the roof is covered with asphalt. At Deer Park a one-story house, 60 ft. x 135 ft., provided with two tracks, is to be erected for carpenter and paint shop.

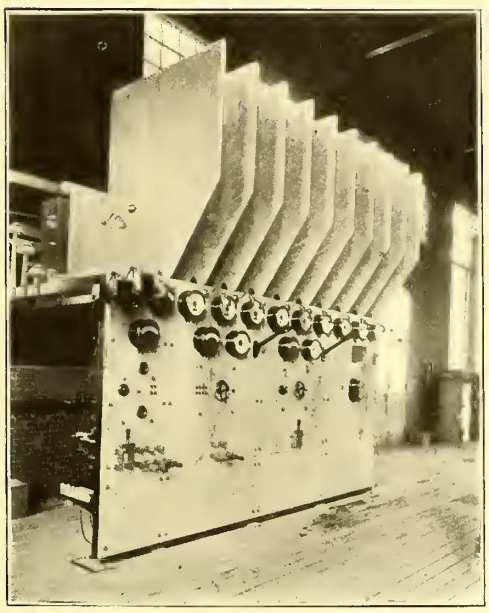


DEER PARK CAR HOUSE, RAPID DIVISION. A DUPLICATE OF THIS HOUSE IS LOCATED AT CONEY ISLAND ON C. & E. AND SUBURBAN DIVISIONS

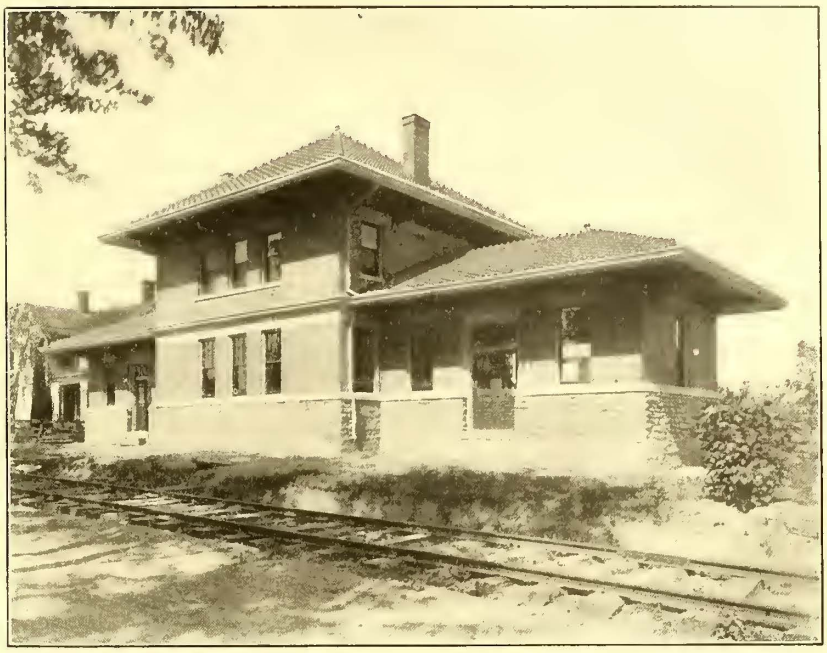


SIDE VIEW DEER PARK CAR HOUSE

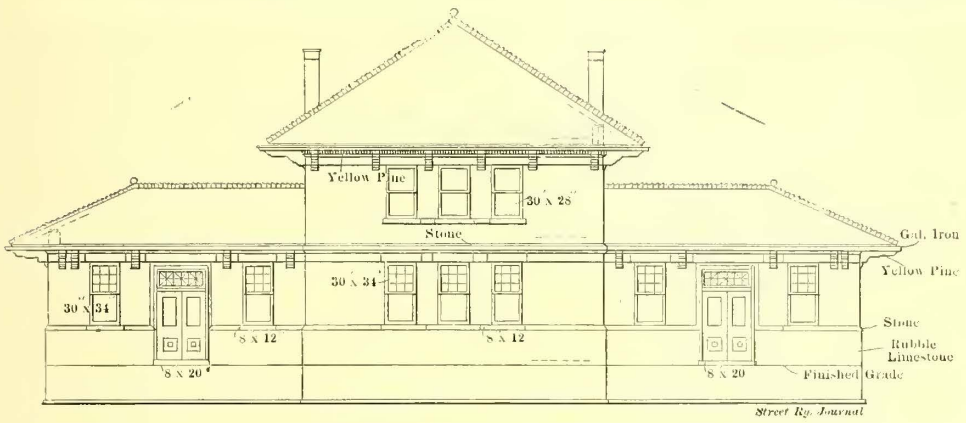
Two very attractive sub-stations are located on the Suburban



SWITCHBOARD, POWER HOUSE NO. 2, SOUTH LEBANON



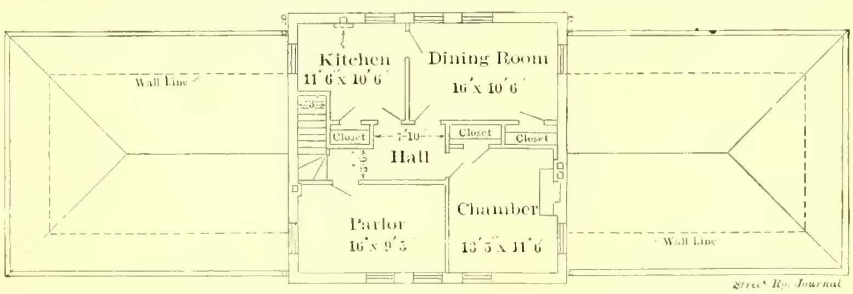
VIEW OF SUB-STATION AT FORRESTVILLE, OHIO (SUBURBAN DIVISION)



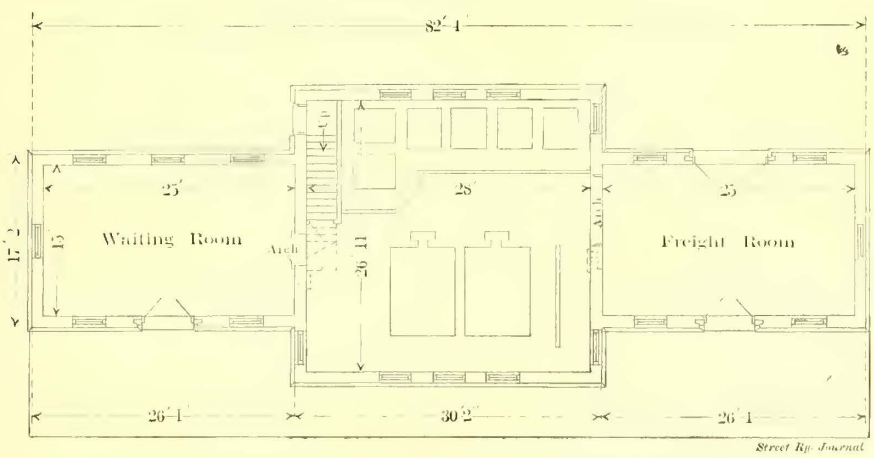
FRONT ELEVATION OF SUB-STATION FOR THE SUBURBAN DIVISION AT FORRESTVILLE, OHIO

Railway. The one at Forrestville is stone and buff pressed brick, with stone trimmings and oranamental tile roof. It is two stories in the center, the upper floor being arranged with a suite of five rooms for the attendant and family, while the lower floor is the rotary and transformer room. There are two 25-ft. wings, one for the passenger waiting room and the other for an express room. The station at Amelia has ornamental slate roof with an extended roof around the entire building, forming a protection for passengers. In front is the waiting room for passengers, and back of this is the express room, which is reached by a spur at the side. The rotary room is in the rear. The attendant has a fine suite of rooms on the second floor, which is reached by a private door at the side.

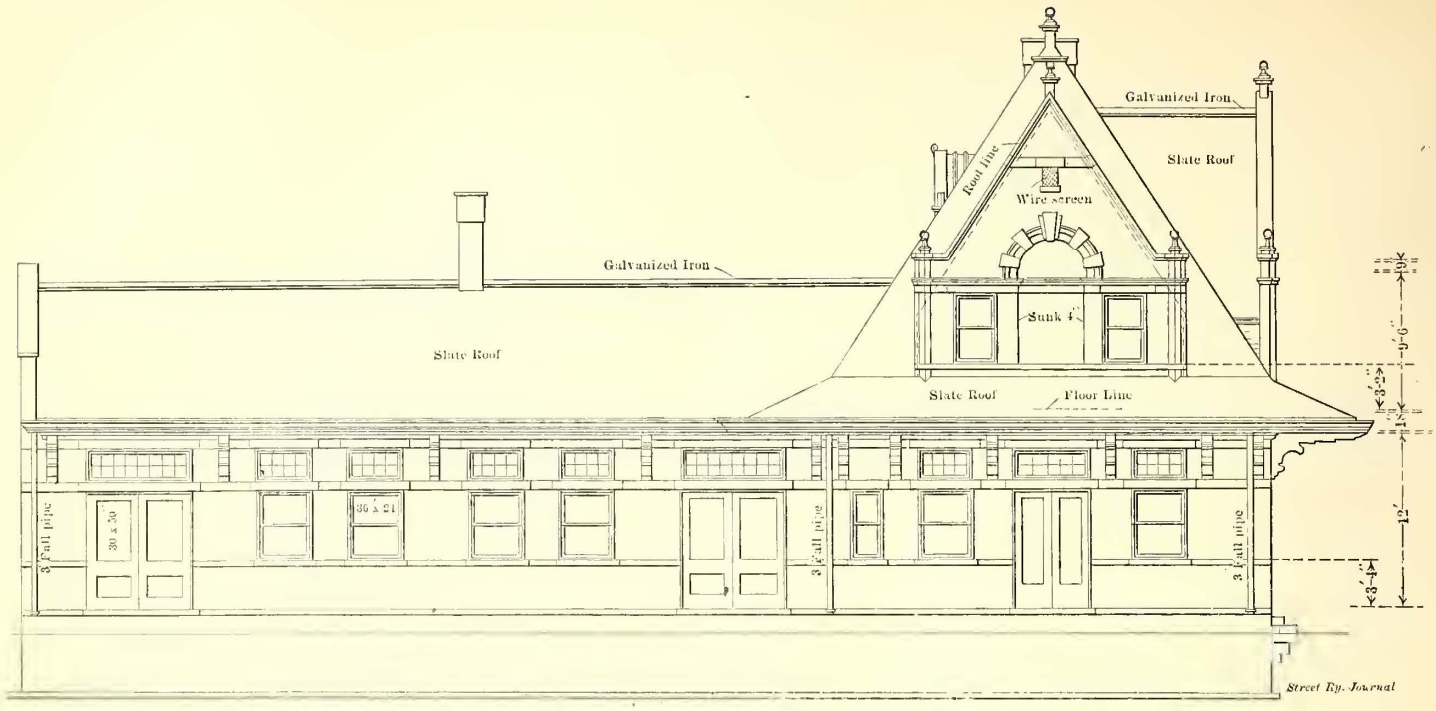
The STREET RAILWAY JOURNAL of Aug. 30, 1902, contained the preliminary plans, together with a description of the terminal station which the Scrugham syndicate proposed erecting. This building has recently been completed, and is now occupied. It is undoubtedly one of the finest structures ever erected by an electric railway, and for elegance and completeness the station portion probably cannot be equalled in the country. The building is six stories high, measuring 60 ft. x 202 ft. 10½ ins. The front is of buff colored pressed brick, with trimmings of selected Bedford stone, much of which was carved after being put in place. The mortise work is all carved stone, and the effect of the whole is very pleasing. Half of the first floor is devoted to the general waiting room and to the express room. In the waiting room are a ticket office provided with vault for tickets, cigar and newsstand, check room and passenger elevator. Adjoining the general waiting room is a waiting room for ladies,



SECOND FLOOR PLAN OF SUB-STATION FOR THE SUBURBAN DIVISION AT FORRESTVILLE, OHIO



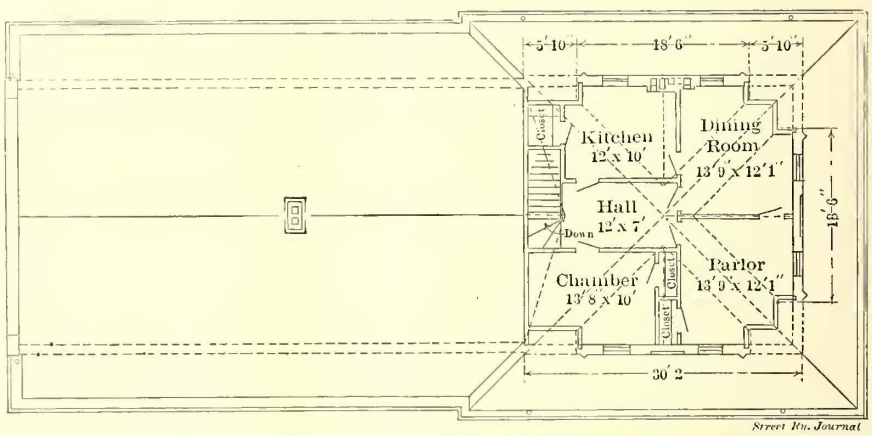
GROUND FLOOR PLAN OF SUB-STATION FOR THE SUBURBAN DIVISION AT FORRESTVILLE, OHIO



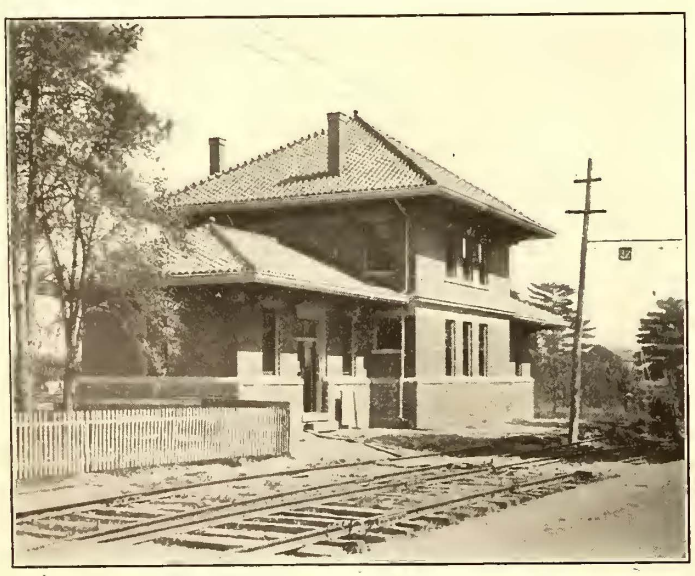
FRONT ELEVATION OF SUB-STATION FOR THE SUBURBAN DIVISION AT AMELIA, OHIO

and a colored maid is in constant attendance. The flooring is all mosaic tile in attractive design. The stairways and baseboards are all white marble, and the windows are all chipped glass. The skylight has stained glass of handsome design, the chandeliers are of Pompeian bronze with frosted globes, and there is a marble water-cooler in the center of the room.

All passenger cars run inside the building, and stand there until the time of departure. There are two tracks running through the building, one being used for freight and express. The freight department is in the rear, and is provided with a freight elevator and other necessary appliances. Wagons drive into the building and unload goods onto platforms or directly into the cars. In the basement is a boiler for heating the building and supplying steam to a Buckeye engine, which is directly connected to a 75-kw, 125-volt generator, supplying current for lighting and for two electric elevators. The second floor is fitted up with convenient suites for the general offices of the company, while a portion of the third floor is fitted up for the engineer's offices. The balance of the building will be rented out to tenants, and it is believed that this alone will be sufficient to pay the interest on the investment.



SECOND FLOOR PLAN OF SUB-STATION FOR THE SUBURBAN DIVISION AT AMELIA, OHIO



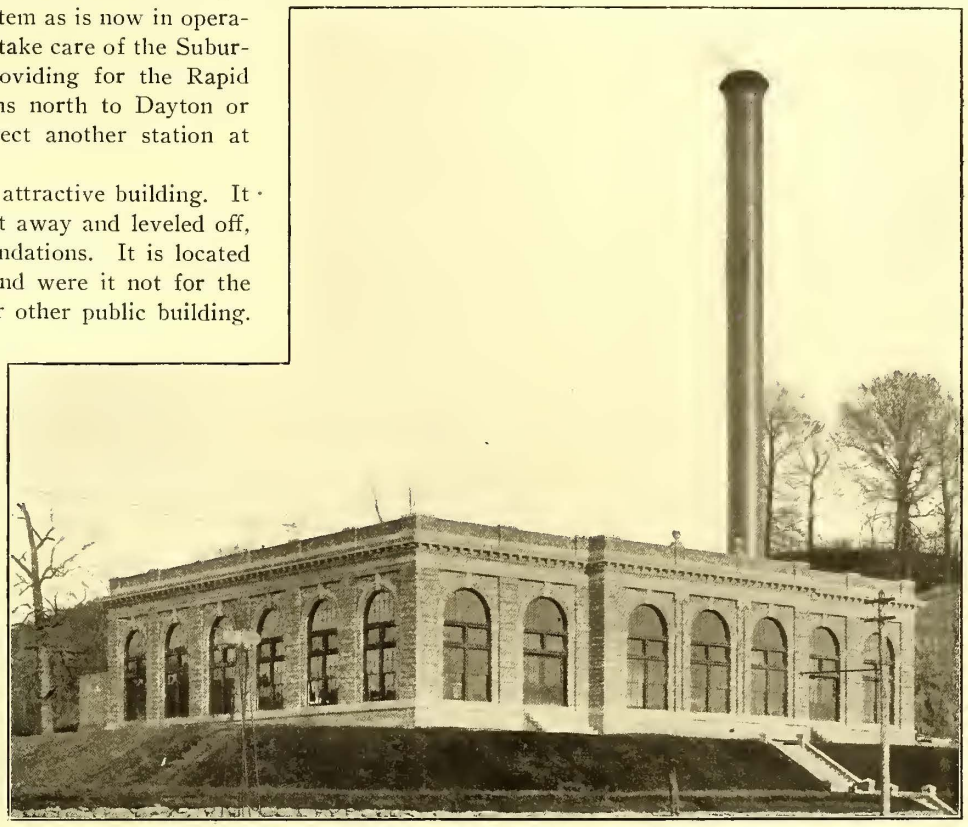
DEPOT AND SUB-STATION AT FORRESTVILLE

SUB-STATION AND DEPOT AT AMELIA, OHIO, SUBURBAN DIVISION (LIVING ROOM FOR ATTENDANT UPSTAIRS OVER GENERAL WAITING ROOM IN FRONT)

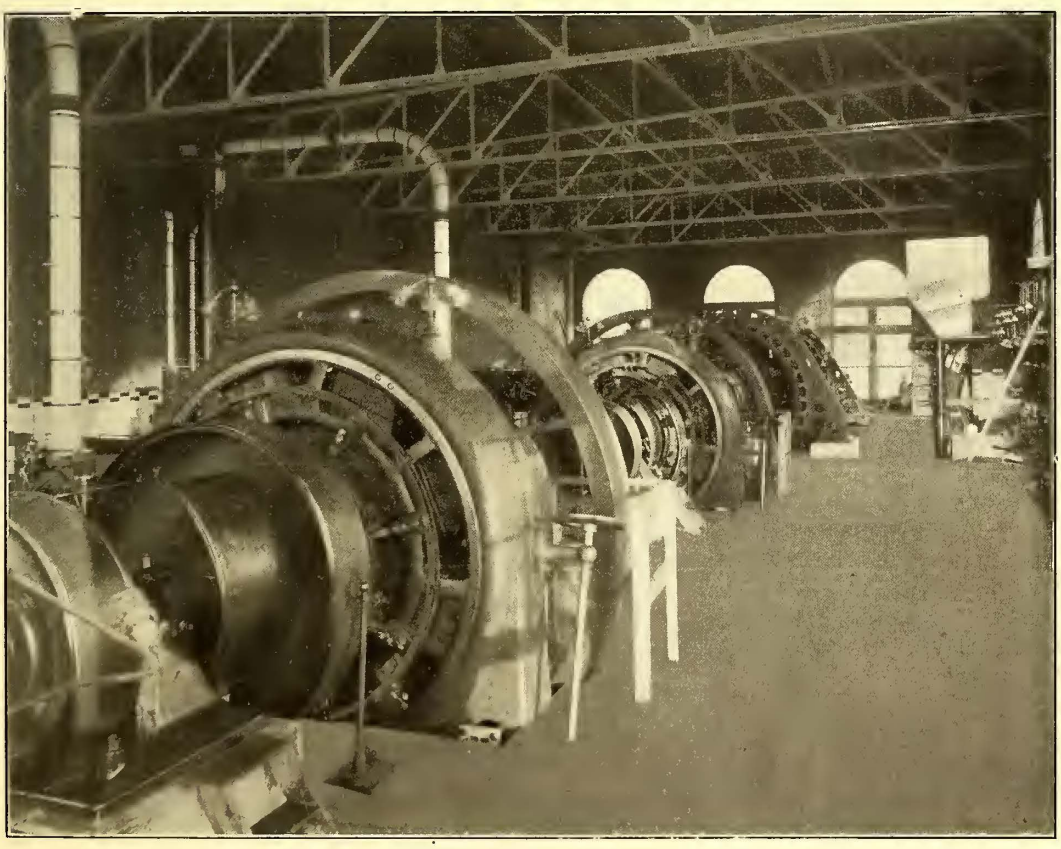
POWER HOUSES

Two power stations are employed in operating the system. The first station was erected at a point near Coney Island to provide for the Cincinnati & Eastern Railway. At that time it was not known whether the syndicate would be able to carry out all its plans, and in consequence the station was not designed to take care of so extensive a system as is now in operation. Later the station was enlarged to take care of the Suburban Railway, but when it came to providing for the Rapid Railway, in view of possible extensions north to Dayton or Xenia, it was thought desirable to erect another station at South Lebanon.

Station No. 1, at Coney Island, is an attractive building. It stands on a bluff, and a hillside was cut away and leveled off, the gravel taken out being used in foundations. It is located directly opposite Coney Island Park, and were it not for the stack it might be taken for a library or other public building. A stone embankment extends across the front, and it is reached by a flight of stone steps. The exterior is of buff brick with Bedford stone trimmings. The windows are arched, with brick designs above, and cornices are carved. The building is 120 ft. x 122 ft., and it is divided through the center by a brick wire wall, provided with steel rolling doors. The roof is supported on lattice work steel trusses, above which are joists carrying matched long-leaf yellow pine flooring, with asphalt roofing above. The interior of the engine room is finished to a height of 5 ft. with Tiffany glazed brick. All foundations are solid concrete. The boiler room floor is concrete, while the engine room floor is hard wood with rubber mats around all machinery. The equipment for the original road included two Buckeye cross-compound condensing engines, cylinders 18¼ and 36-in. x 33-in. stroke, direct-connected to 400-kw, 500-volt, 800-amps. direct-current Westinghouse generators, operating at 125 r. p. m. Steam was supplied by three 325-hp water-tube boilers. This equipment supplies the Cincinnati & Eastern Railway, including 13 miles of single track in one direction and 4 miles of double track in the other direction.



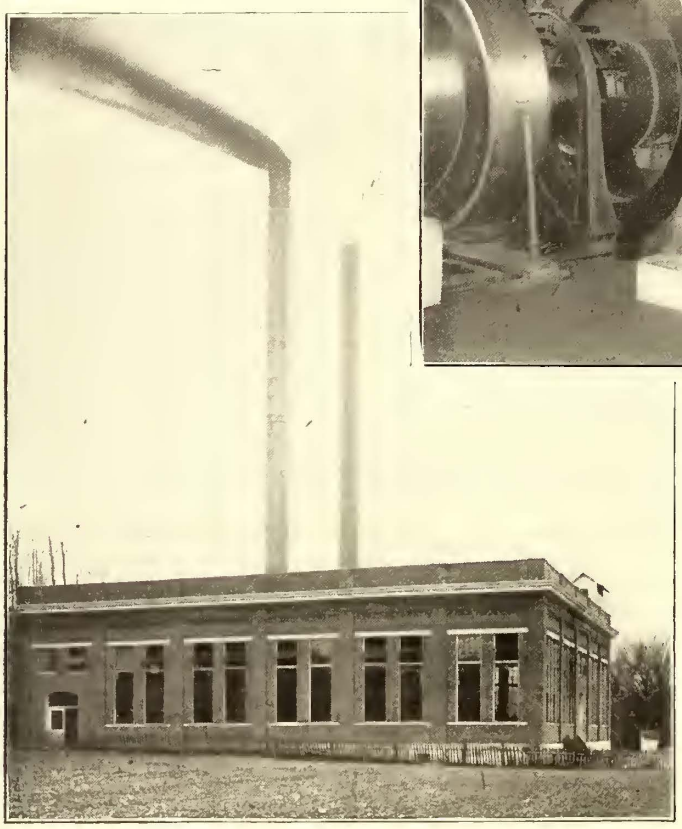
POWER STATION NO. 1, AT CONEY ISLAND (C. & E. DIVISION)



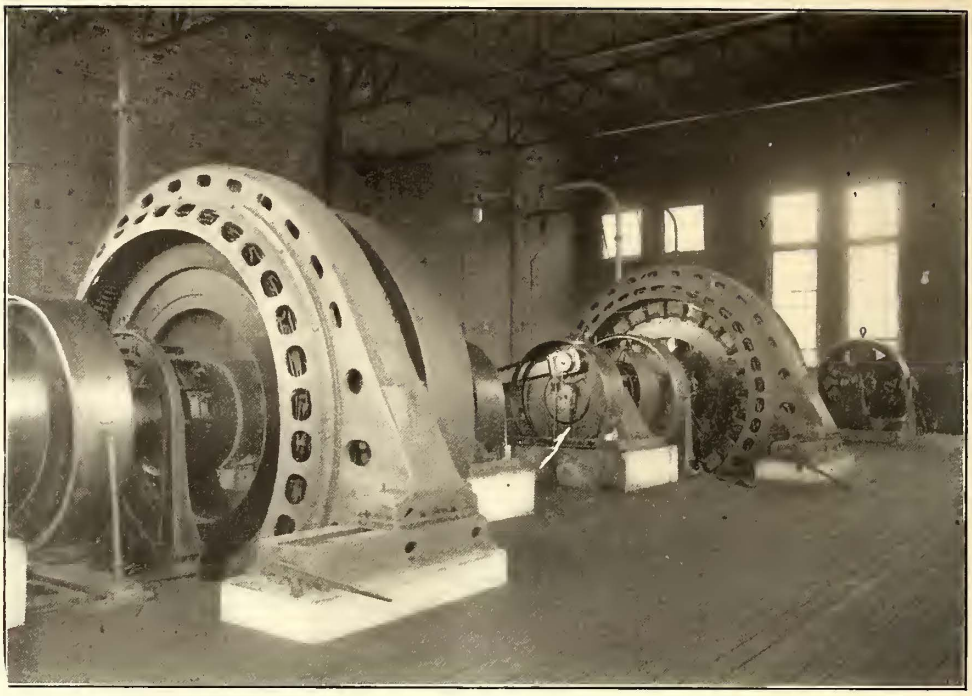
ENGINE ROOM, SHOWING TWO 400-KW DIRECT-CURRENT AND TWO 500-KW ALTERNATING-CURRENT UNITS, WITH SWITCHBOARDS, AT POWER HOUSE. NO. 1, NEAR CONEY ISLAND

The new units installed for the Suburban Railway are two cross-compound condensing Buckeye engines, rated at 800 hp each, directly connected to 500-kw, three-phase alternators. The cylinders measure 22 ins. high pressure, 40 ins. low pressure by 36-in. stroke. The engines have piston type valves, and operate at 125 r. p. m. They are designed with extra heavy main bearings, as are the smaller engines in the house. The engines have an economical range of from 600 hp to 850 hp, and are guaranteed to consume not to exceed 15 lbs. of dry steam per ihp per hour. The fly-wheel of each engine weighs 20,000 lbs., is 13 ft. in diameter and has 22-in. face. The generators are of the compound-wound, revolving field type, and are wound for a pressure of 10,000 volts, the same as is used on the transmission lines. The current is three-phase, 25 cycles and 3,000

alternations. The output of each terminal is 28.9 amps. There are two exciter sets, one a 7¾-in. x 12-in. Buckeye simple engine, direct connected to a 37½-kw, 125-volt generator, and the other a 60-hp motor, taking current from the direct-current machines at 500 volts, directly connected to a 37½-kw, 125-volt generator. Adjoining the direct-current machines is the direct-current switchboard, consisting of seven Vermont panels mounted on an angle-iron frame. There are two machine panels, four feeder panels and one load panel. Each machine panel has a main switch, voltmeter, ammeter, rheostat and circuit breaker. Each line panel has main switch, voltmeter, ammeter and circuit breaker. The load panel has a Thomson recording wattmeter, Weston ammeter and Weston voltmeter.

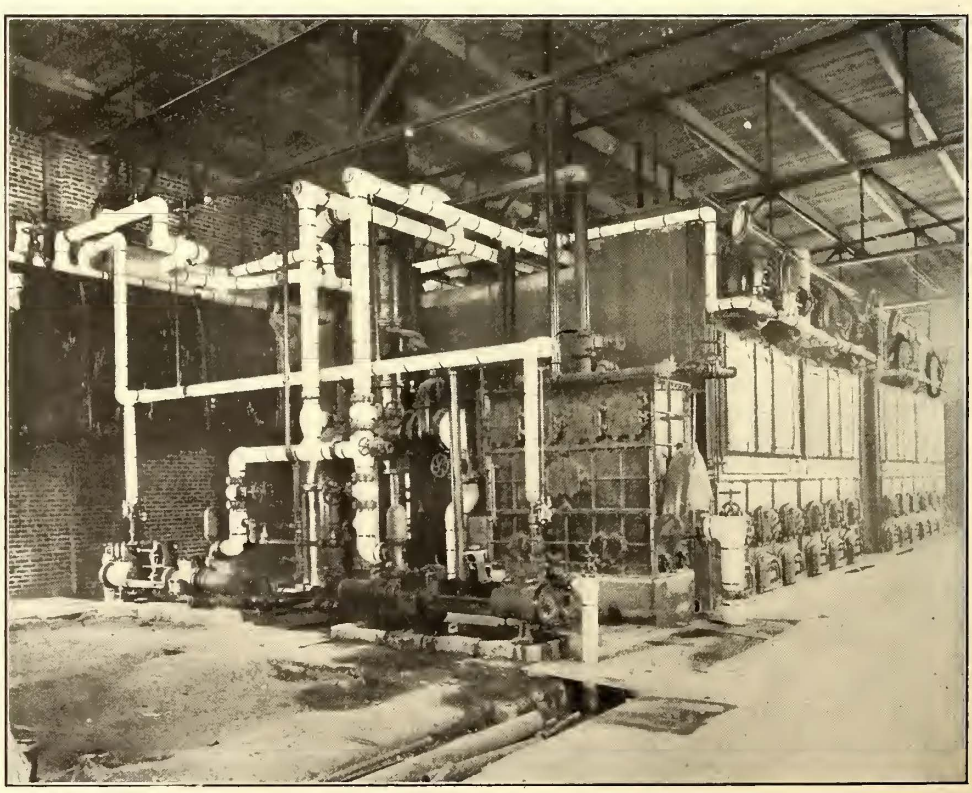


POWER HOUSE NO. 2, AT SOUTH LEBANON—RAPID DIVISION

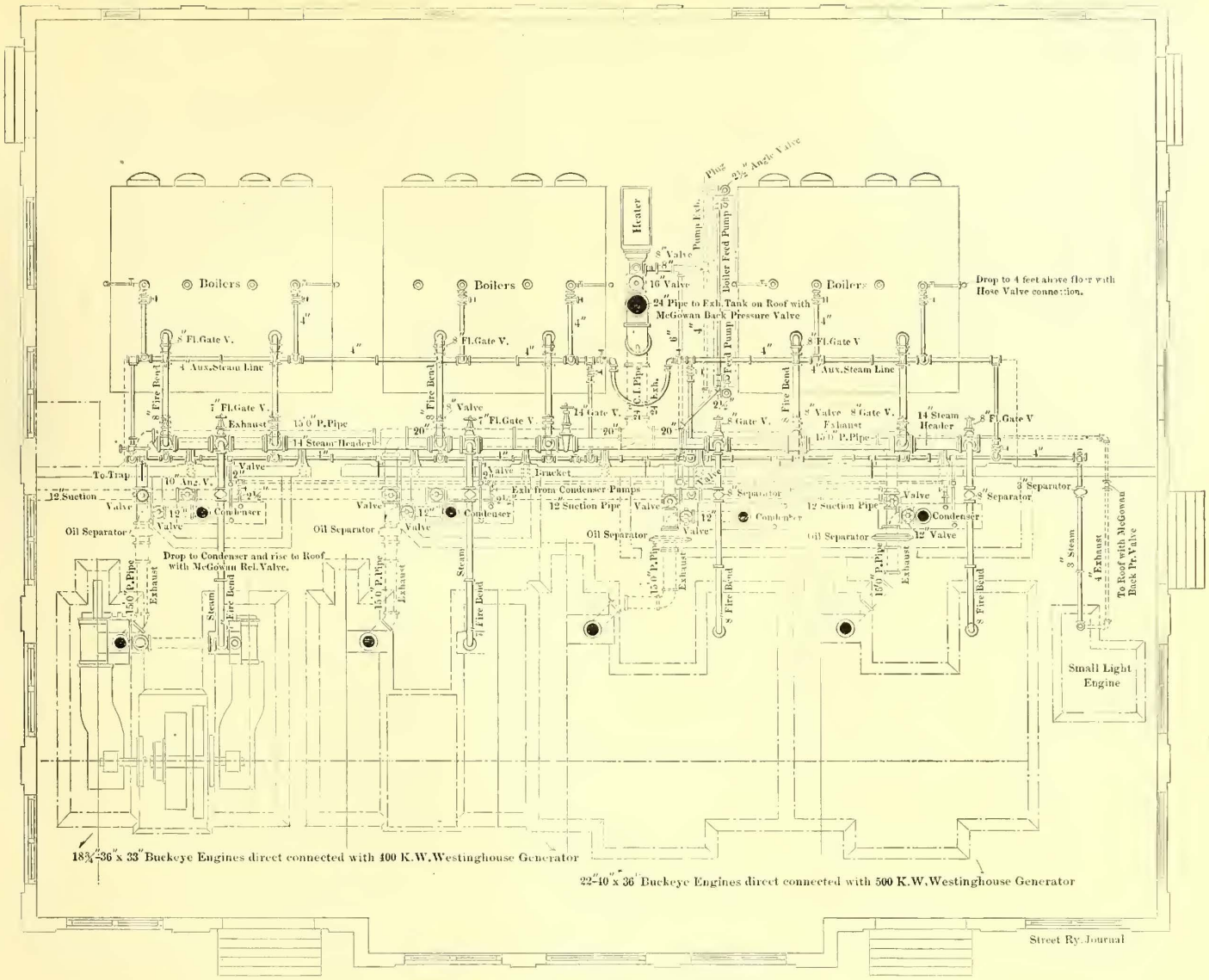


SOUTH LEBANON POWER PLANT NO. 2, SHOWING TWO 500-KW 10,000-VOLT ALTERNATORS AND ONE 400 ROTARY

The high-tension switchboard is made of five blue Vermont marble panels 2 ins. thick, 10 ft. 2 ins. tall and 4 ft. wide. The first panel, which is the load panel, contains two 500-amp. direct-current deadbeat ammeters, one 150-volt direct-current voltmeter, two 10,000-volt static ground detectors, three rheostats, a voltmeter plug and receptacle, a 300-amp., 300-volt unit blade switch, two 300-amp., 300-volt double-pole switches, a 100-amp., 600-volt double-pole switch with field discharge attachment, and a non-automatic starting and stopping rheostat. On a bracket at the side of this panel are two 150-volt alternating-current voltmeters. On the first machine panel, known as panel "B," are three 50-amp. alternating-current long-scale ammeters, one 200-amp. direct-current deadbeat ammeter, one 800-kw polyphase indicating wattmeter, a starting switch rheostat voltmeter and receptacle, synchronizing plug and receptacle and a 200-amp. field discharge switch. The second machine panel contains the same instruments except that the voltmeter plug and receptacle are omitted. Panel "D," the first line panel, contains three 60-amp. long-scale ammeters, a switch, a time relay and a 1200-kw polyphase integrating wattmeter. The remaining panel is the same except that the wattmeter is



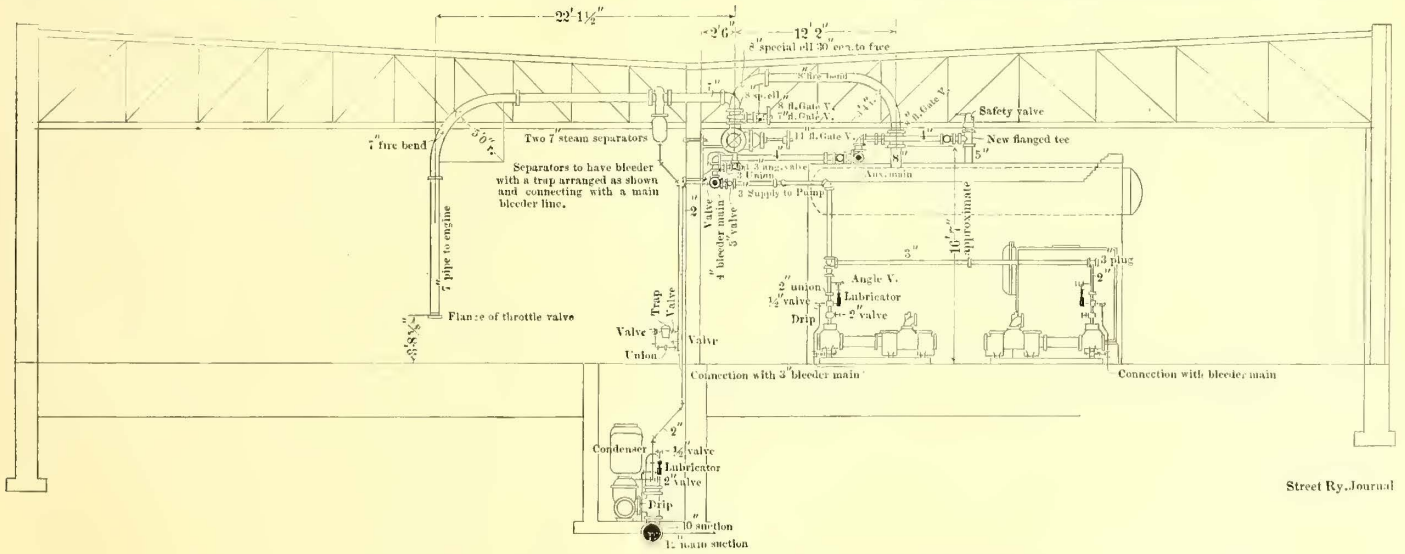
VIEW SHOWING PIPING, PUMPS, HEATER AND BOILERS IN POWER STATION NO. 1. TWO MORE BATTERIES OF BOILERS HAVE SINCE BEEN ADDED



PIPING PLANS FOR POWER HOUSE NO. 1

omitted. Above the panels, and with each leg separated by marble barriers, are 500-amp., three-phase, 10,000-volt stick type circuit breakers, those protecting the machines being hand-operated and those protecting the lines being automatic. The outgoing lines, both high tension and direct current, pass below the engine room floor to a chute in the wall separating the two sections of the building. The direct-current lines pass through tile conduits for a distance of 200 yds. away from the building, and are then carried up to the pole line. The high-tension lines are carried through the chute to the top of the building and are carried to the pole line from the rear. In this way no wires leave the building from the front or sides. The lightning arresters, of the Westinghouse low-equivalent type, are in marble barriers at the base of the chute, and are accessible from the boiler room.

The boilers installed are duplicates of those in the station at



SECTION OF C. & E. POWER HOUSE, SHOWING STEAM PIPING

first. There are now six boilers in use, arranged in three batteries. Each has 3000 ft. of heating surface provided by 144 4-in. tubes, 18 ft. long. They are hand-fired and have plain grates. They are designed for 125 lbs. steam pressure.

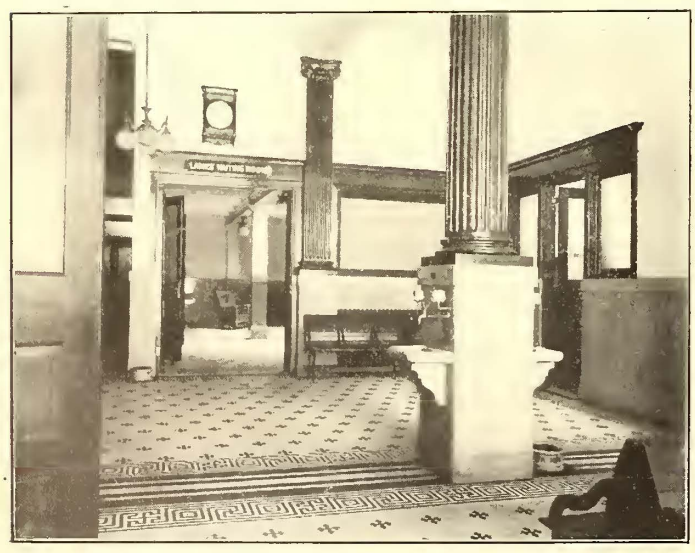
LADIES' WAITING-ROOM—INTERURBAN TERMINAL STATION

FREIGHT TRACKS—INTERURBAN TERMINAL STATION

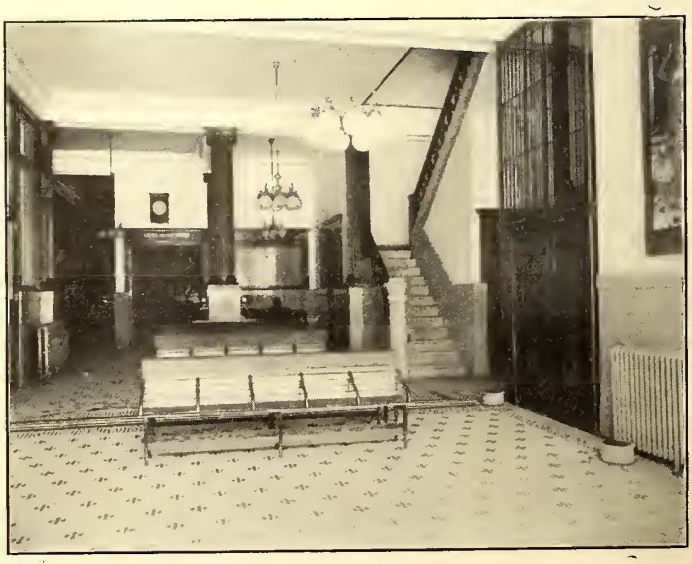
The original station piping and auxiliaries were all designed for increased equipment and few alterations were necessary. The boiler feed pumps, two in number, are of the Stillwell-Bierce & Smith-Vaile outside-packed plunger type, 10 ins. x 6 ins. x 10 ins. They are arranged to pump either way. The piping, both steam and water, is in duplicate. A Cochrane heater of 4000-hp rating adjoins the two feed-water pumps in the boiler room, and this heats the feed-water to 190 degs. The main steam header is 14-in. wrought-iron pipe, and it has two Fairbanks gate valves. It is connected to the boilers by 8-in. lines, having 8-in. gate valves at both ends.

DANCING HALL AT CONEY ISLAND—C. & E. DIVISION

The lines to the engines are 7-in. wrought-iron pipe, and are provided with fire bends. Other details of the steam piping are shown in the accompanying drawings. The condensers are located below the engines and adjoining the dividing wall. There are four installed, and they are of the Wheeler admiralty surface type. Those installed for the Cincinnati & Eastern have 1070 sq. ft. of cooling surface, and those for the latter engines have 1410 sq. ft. of cooling surface. The nominal vacuum is 26 ins. The condensers are provided with Cochrane oil separators. All exhaust is piped to a 24-in. pipe leading up through the roof in the

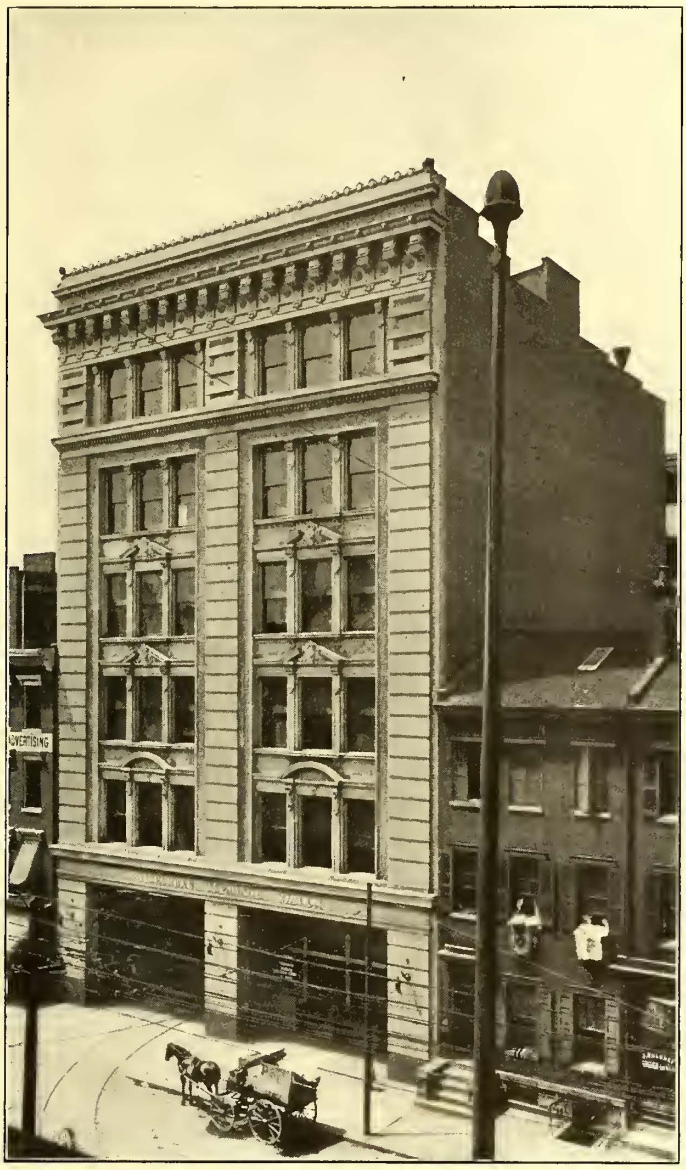


REAR OF GENERAL WAITING-ROOM, SHOWING DRINKING FOUNTAIN



GENERAL WAITING-ROOM—INTERURBAN TERMINAL STATION

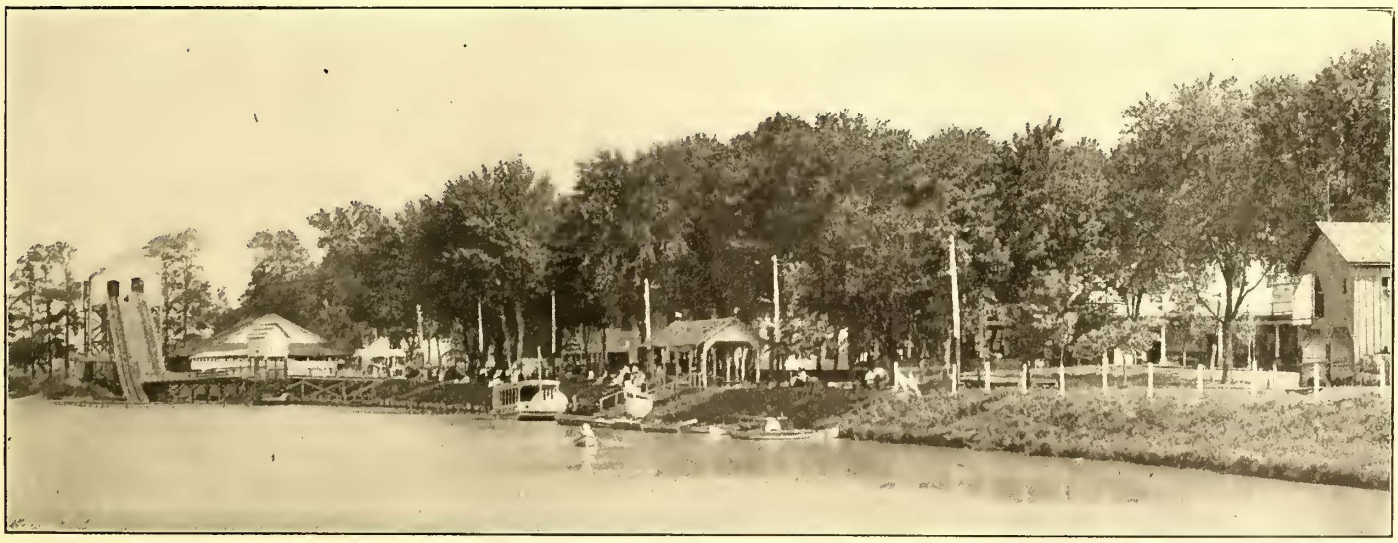
boiler room to a 6-ft. steel tank on the boiler room roof. From this the water is drained through a 2-in. pipe to a hot well. Or, if desired, the condensers may exhaust through 12-in. pipes



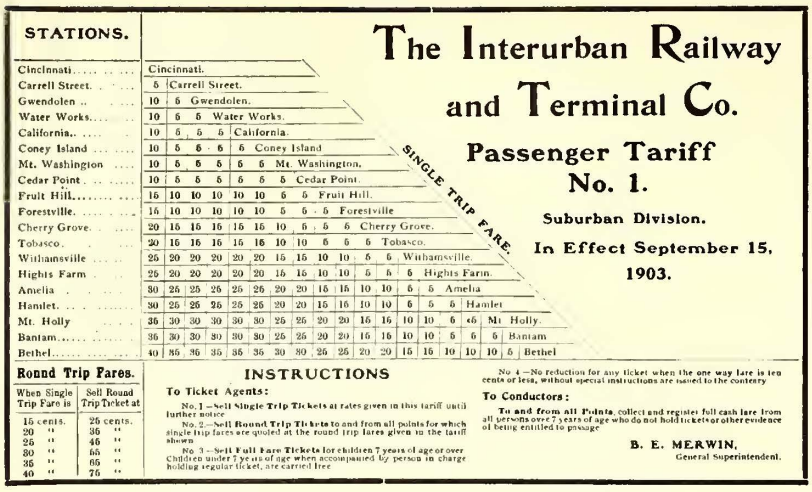
INTERURBAN TERMINAL STATION

leading up through the roof. Water for condensing and feed-water is taken through lines to Coney Island and Lake, a body of water 35 acres in extent, supplied by a never-failing stream. All drains lead to the far end of this lake. For emergency water supply there are two deep wells adjoining the house, fitted with steam deep-well pumps. All piping for the house was designed and installed by the John H. McGowan Company, of Cincinnati. All electrical equipment was designed and installed by the Westinghouse Company. The stack is outside the building, and is supported on a concrete foundation, 20 ft. x 20 ft. x 23 ft. It is 153 ft. tall and 10 ft. in diameter, and is lined with firebrick, the outside being of steel. Second Poole Pittsburg run of mine coal is used, and it is brought down the Ohio River in boats and unloaded by an elevator into cars a short distance from the station. The coal storage in the rear of the station has a capacity of over 1000 tons.

Power station No. 2 is of attractive design, measuring 120 ft. x 130 ft. Two generating units are installed, and they are exact duplicates of the 10,000-volt machines in No. 1. Steam is furnished by four boilers, duplicates of those in the other house. The feed-water pumps are of the McGowan duplex type, measuring 10 ins. x 6 ins. x 10 ins., while the condensers are 1000 hp, of the jet type, and were also furnished by the J. H. McGowan Company, of Cincinnati. The arrangement of piping is practically the same as that in the other house. The house is located adjoining an old bed of the Little Miami River. There is a dam 3 miles down the river which creates a back water in this channel, and in order to prevent refuse from floating in, the company built a dam a short distance from the house. A 15-ft. cistern has been built adjoining the river, and the river level is maintained in this. Adjoining the cistern is a pump house and tank with a capacity of 21,000 gals. Water is pumped to the tank by a 7½-in. x 5-in. x 7-in. McGowan pump. The bottom of the tank is 4 ft. above the level of the boilers. Condenser water is taken through a 10-in. suction to the cistern. The condenser discharge and all blow-offs are taken through a 12-in. wrought-iron pipe to a point below the dam. The drainage from the building and all drains from traps are carried to the same point through a 12-in. vitrified clay sewer pipe. The house has two 125-ft. x 5-ft. steel stacks, supported on concrete foundations. The fuel supplied to this station is Kanawha West Virginia coal, which is unloaded from a siding to the Pennsylvania, which passes the building. Elevated tracks are being built to facilitate the work. In this house is a sub-station supplying about one-half of the Rapid Railway. There is one 400-kw rotary converter, taking current at 403 volts, 3000 alternations and delivering direct current at 650 volts. On the shaft of the rotary is an induction starting motor, which takes current from the transformers. Three 150-kw oil-cooled transformers are located in the basement directly below the switchboard. They take current at 10,000 volts and reduce it to 403 volts for the converter. They are connected in delta arrangement. Westinghouse low-equivalent lightning arresters



LAKE AT CONEY ISLAND



The Interurban Railway and Terminal Co.

Passenger Tariff No. 1.

Suburban Division.

In Effect September 15, 1903.

STATIONS.	Cincinnati.	Carrell Street.	Gwendolen.	Water Works.	California.	Coney Island	Mt. Washington.	Cedar Point.	Fruit Hill.	Forestville.	Cherry Grove.	Tobasco.	Withamsville	Hights Farm	Amelia	Hamlet.	Mt. Holly	Bantam	Bethel
Cincinnati																			
Carrell Street	5																		
Gwendolen	10	5																	
Water Works	10	5	5																
California	10	5	5	5															
Coney Island	10	5	5	5	5														
Mt. Washington	10	5	5	5	5	5													
Cedar Point	10	5	5	5	5	5	5												
Fruit Hill	15	10	10	10	10	10	5	5											
Forestville	15	10	10	10	10	10	5	5	5										
Cherry Grove	20	15	15	15	15	15	10	5	5	5									
Tobasco	20	15	15	15	15	15	10	10	5	5	5								
Withamsville	25	20	20	20	20	20	15	15	10	10	5	5							
Hights Farm	25	20	20	20	20	20	15	15	10	10	5	5	5						
Amelia	30	25	25	25	25	25	20	20	15	15	10	10	5	5					
Hamlet	30	25	25	25	25	25	20	20	15	15	10	10	5	5	5				
Mt. Holly	35	30	30	30	30	30	25	25	20	20	15	15	10	10	5	5			
Bantam	35	30	30	30	30	30	25	25	20	20	15	15	10	10	5	5	5		
Bethel	40	35	35	35	35	35	30	30	25	25	20	20	15	15	10	10	10	5	

Round Trip Fares.

When Single Trip Fare is	Sell Round Trip Ticket at
15 cents.	25 cents.
20 "	35 "
25 "	45 "
30 "	55 "
35 "	65 "
40 "	75 "

INSTRUCTIONS

To Ticket Agents:

No. 1—Sell Single Trip Tickets at rates given in this tariff until further notice.

No. 2—Sell Round Trip Tickets to and from all points for which single trip fares are quoted at the round trip fares given in the tariff shown.

No. 3—Sell Full Fare Tickets for children 7 years of age or over. Children under 7 years of age when accompanied by person in charge holding regular ticket, are carried free.

No. 4—No reduction for any ticket when the one way fare is ten cents or less, without special instructions are issued to the contrary.

To Conductors:

To and from all Points, collect and register full cash fare from all persons over 7 years of age who do not hold tickets or other evidence of being entitled to passage.

B. E. MERWIN,
General Superintendent.

PASSENGER TARIFF—SUBURBAN DIVISION

The Interurban Railway & Terminal Co.
Cincinnati & Eastern Division.

COMMUTATION TICKETS.

In Effect September 15, 1903.

STATIONS	Single Trip	Round Trip	10 Ride	20 Ride	50 Ride	Monthly Tickets	School 46 trips
Cincinnati							
Carrell Street	05	10	50	1 00	2 50	2 50	
Gwendolen	10	20	1 00	2 00	4 50	4 50	3 00
Water Works	10	20	1 00	2 00	4 50	4 50	3 00
California	10	20	1 00	2 00	4 50	4 50	3 00
Coney Island	10	20	1 00	2 00	4 50	4 50	3 00
Sweet Wine	15	25	1 25	2 50	6 25	5 50	4 00
Eight Mile	20	35	1 75	3 50	8 25	7 00	5 00
Nine Mile	25	45	2 25	4 00	10 00	8 00	5 50
New Palestine	25	45	2 25	4 30	10 75	8 50	8 00
Blairville	30	55	2 75	4 80	11 50	9 00	6 50
New Richmond	30	55	2 75	5 00	12 00	10 00	7 00

COMMUTATION TARIFF—CINCINNATI & EASTERN DIVISION

and Westinghouse long-arm circuit breakers are located above the switchboard, the latter separated by marble barriers. The instruments on the board control the sub-station equipment as well as the operation of the main generators.

The sub-station at Deer Park car house contains two 300-kw rotaries and six 125-kw oil-cooled transformers. The sub-station at Forestville, on the Suburban Railway, contains a similar layout, while the Amelia sub-station has one 400-kw rotary and three 150-kw transformers.

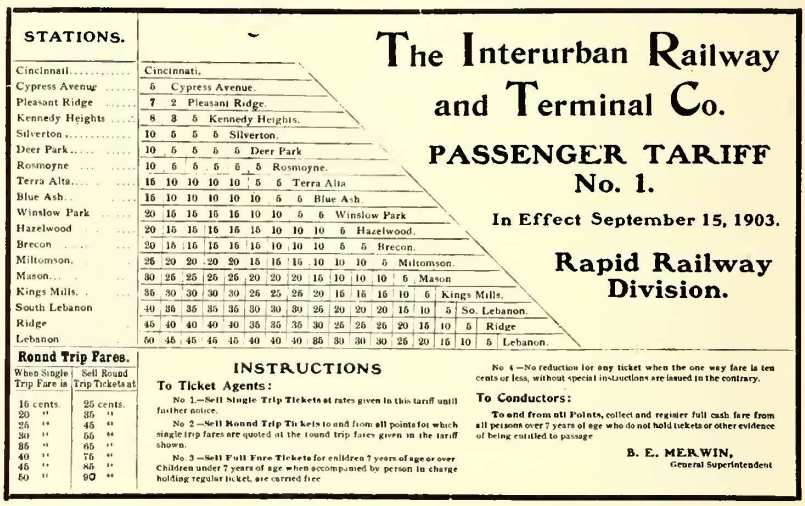
The Interurban Railway & Terminal Co.
RAPID RAILWAY DIVISION.

COMMUTATION TICKETS.

In Effect September 15, 1903.

STATIONS	Single Trip	Round Trip	10 Ride	20 Ride	50 Ride	Monthly Tickets	Monthly School 46 trips
Cincinnati							
Cypress Avenue	05	10					
Pleasant Ridge	07	14		1 20	3 00	3 00	2 00
Kennedy	08	16		1 25	3 10	3 10	2 10
Silverton	10	20	1 00	2 00	4 00	4 00	2 50
Deer Park	10	20	1 00	2 00	4 00	4 00	2 50
Rosmoyne	10	20	1 00	2 00	4 00	4 00	2 50
Terra Alta	15	30	1 50	3 00	4 50	4 50	2 75
Blue Ash	15	30	1 50	3 00	1 50	4 50	2 75
Winslow Park	20	35	1 75	3 50	5 00	5 00	3 00
Hazelwood	20	35	1 75	3 50	5 50	5 25	3 00
Brecon	20	35	1 75	3 50	5 75	5 50	3 25
Miltomson	25	45	2 25	4 50	8 25	7 00	3 75
Mason	30	55	2 75	5 50	11 75	8 00	4 00
Kings Mills	35	65	3 25	6 50	14 00	9 00	4 50
South Lebanon	10	75	3 75	7 50	16 25	10 00	5 00
Ridge	45	85	4 25	8 25	18 25	11 00	5 50
Lebanon	50	90	4 50	8 75	20 00	12 00	6 00

COMMUTATION TARIFF—RAPID RAILWAY DIVISION



The Interurban Railway and Terminal Co.

PASSENGER TARIFF No. 1.

In Effect September 15, 1903.

Rapid Railway Division.

STATIONS.	Cincinnati.	Cypress Avenue.	Pleasant Ridge.	Kennedy Heights.	Silverton.	Deer Park.	Rosmoyne.	Terra Alta.	Blue Ash.	Winslow Park	Hazelwood.	Brecon.	Miltomson.	Mason.	Kings Mills.	So. Lebanon.	Ridge	Lebanon.
Cincinnati																		
Cypress Avenue	5																	
Pleasant Ridge	7	2																
Kennedy Heights	8	3	5															
Silverton	10	5	5	5														
Deer Park	10	5	5	5	5													
Rosmoyne	10	5	5	5	5	5												
Terra Alta	15	10	10	10	5	5	5											
Blue Ash	15	10	10	10	10	5	5	5										
Winslow Park	20	15	15	15	15	10	10	5	5									
Hazelwood	20	15	15	15	15	10	10	10	5	5								
Brecon	20	15	15	15	15	15	10	10	10	5	5							
Miltomson	25	20	20	20	20	15	15	10	10	10	5	5						
Mason	30	25	25	25	25	20	20	20	15	10	10	10	5					
Kings Mills	35	30	30	30	30	25	25	20	15	15	15	10	5	5				
South Lebanon	40	35	35	35	35	30	30	30	25	20	20	20	15	10	5			
Ridge	45	40	40	40	40	35	35	35	30	25	25	25	20	15	10	5		
Lebanon	50	45	45	45	45	40	40	40	35	30	30	30	25	20	15	10	5	

Round Trip Fares.

When Single Trip Fare is	Sell Round Trip Ticket at
15 cents.	25 cents.
20 "	35 "
25 "	45 "
30 "	55 "
35 "	65 "
40 "	75 "
45 "	85 "
50 "	90 "

INSTRUCTIONS

To Ticket Agents:

No. 1—Sell Single Trip Tickets at rates given in this tariff until further notice.

No. 2—Sell Round Trip Tickets to and from all points for which single trip fares are quoted at the round trip fares given in the tariff shown.

No. 3—Sell Full Fare Tickets for children 7 years of age or over. Children under 7 years of age when accompanied by person in charge holding regular ticket, are carried free.

No. 4—No reduction for any ticket when the one way fare is ten cents or less, without special instructions are issued to the contrary.

To Conductors:

To and from all Points, collect and register full cash fare from all persons over 7 years of age who do not hold tickets or other evidence of being entitled to passage.

B. E. MERWIN,
General Superintendent.

PASSENGER TARIFF—RAPID RAILWAY DIVISION

The Interurban Railway & Terminal Company.

Traffic Department.

FREIGHT TARIFF

NAMING CLASSIFICATION RATES

BETWEEN ALL STATIONS ON

THE SUBURBAN RAILWAY.

In Effect September 12, 1903.

BETWEEN TERMINAL STATION CINCINNATI AND	MILES	RATES NAMED IN CENTS PER HUNDRED POUNDS. CLASSES. First	Second	Third	Fourth	Fifth	Sixth
WATER WORKS	7	10½	10½	9	9	7½	5
CALIFORNIA	7½	10½	10½	9	9	7½	5
CONEY ISLAND	9	10½	10½	9	9	7½	5
MT. WASHINGTON	12	11	10½	9½	9	8	6
CEDAR POINT	13	11	10½	9½	9	8	6
FRUIT HILL	14	11	10½	9½	9	8	6
FORESTVILLE	15	11	10½	9⅝	9	8	6
TOBASCO	17	12	11	10	9½	8½	6½
WITHAMSVILLE	19	12	11	10	9½	8½	6½
AMELIA	21	14	11½	10½	10	9	7
HAMLET	21½	14	11½	10½	10	9	7
MT. HOLLY	22½	14	11½	10½	10	9	9
BANTAM	25	14	11½	10½	10	9	9
BETHEL	29½	15	12½	11	10	9	9

No shipment less than 25 cents.

To find rate between stations take number of miles between stations, then follow down the column and take rate opposite.

Above rates subject to change without notice.

B. E. MERWIN,
General Superintendent,

S. S. MORRIS,
General Freight Agent.

CINCINNATI, OHIO.

FREIGHT TARIFF—SUBURBAN RAILWAY

PASSENGER FARES, FREIGHT AND EXPRESS

Passenger rates on the system are substantially 1½ cents per mile. Multiples of 5 cents are used except in the case of two towns near Cincinnati, where the company was obliged to give 7-cent and 8-cent fares to the city to secure the franchise. Commutation tickets include ten-ride, twenty-ride, fifty-ride monthly tickets and forty-six trip school tickets, good between certain points. The fare includes the city fare, which is rung up on an International register. The Ohmer fare register is used for all interurban fares. No cash fare receipts are given.

It early became apparent that to handle successfully the freight and express business, agencies would have to be established in each of the towns and villages. In carrying out this policy, where the business warrants it, buildings have been erected or rented and a special agent placed in charge, and in the smaller towns space has been secured in a prominent store for a waiting room for patrons and an express room and ticket office. This has proven very satisfactory, both to the company and the proprietors of these small stores, as it gives their places of business much more prominence and makes them headquarters for their communities.

A rental is paid for the space so occupied, varying according to the amount of business done at each point, the competition for these agencies among the local stores being such as to make this rental merely nominal. Each agency is provided with a cabinet containing the different forms of tickets used, ticket dating stamp, forms for freight and express business and stationery. These cabinets are divided to fit the forms used, and are so arranged that forms and stationery cannot be wasted. On the sides of these cabinets, in frames, are the freight and express tariff sheets, passenger rates and commuter rates, to which the general public have access.

Each of the agencies is provided with a bulletin board, on

The Interurban Railway & Terminal Co.

W. B. No. _____

Car No. _____

Freight Way-Bill from _____ *to* _____ *190*

_____ DIV.

SHIPPER	CONSIGNEE	No. PKGS	DESCRIPTION OF ARTICLES	WEIGHT	RATE	FREIGHT	BACK CHARGES	PREPAID	UNPAID

FREIGHT WAY-BILL

_____ Division

THE INTERURBAN RAILWAY & TERMINAL CO.

DAILY ABSTRACT OF EXPRESS / FREIGHT BUSINESS AT _____ 190

	W.-B.	BILLED FROM	BILLED TO	CONSIGNOR	CONSIGNEE	No. Pkgs.	DESCRIPTION OF ARTICLES	WEIGHT	Rate	FREIGHT	CHARGES	PREPAID	COLLECT	

DAILY ABSTRACT OF FREIGHT AND EXPRESS BUSINESS

EXPRESS. DUPLICATE.

THE INTERURBAN RAILWAY & TERMINAL CO.

DIV.

_____ Date _____ W. B. No. _____

From _____ to _____

SHIPPER	CONSIGNEE	ARTICLES	WEIGHT	RATE	FREIGHT	CHARGES	PREPAID

EXPRESS BLANK

Form 3. ORIGINAL.

FREIGHT BILL

_____ 190

TO The Interurban Railway & Terminal Company,

_____ Division, Dr.

WAY-BILL No.	No. Packages	ARTICLES	Weight	Rate per	FREIGHT	Advanced Charges
DATE						
CONSIGNOR						
POINT OF SHIPMENT						
CONNECTING LINE						

Received Payment, _____ Agent. 19—

Total to Collect

Drayage

Original Freight Bill must accompany all claims for Overcharge, Loss or Damage.

FREIGHT BILL

EXPRESS RECEIPT.

THE INTERURBAN RAILWAY & TERMINAL CO.

_____ 190

Received from _____

_____

Marked _____

Value _____

Weight _____

Charges _____ *Agent.*

THIS COMPANY IS NOT RESPONSIBLE FOR DAMAGED CAUSED BY POOR PACKING. GOODS DELIVERED AT POINTS WHERE THERE ARE NO AGENTS ENDS THIS CO.'S RESPONSIBILITY

EXPRESS RECEIPT

FORM

The Interurban Railway and Terminal Company.

ABSTRACT OF WAY-BILLS FORWARDED.

_____ Station _____ Division.

Enter Way-Bills alphabetically according to stations. _____ to _____ 19__ Inc.

No	Date	TO	Advances	Freight	Collect	Prepaid	REMARKS

ABSTRACT OF WAY BILL

EXPRESS. (ORIGINAL) SHIPPER RECEIPT No. 1901

_____ Div.

THE INTERURBAN RAILWAY & TERMINAL CO.

Conductor _____ Date _____

From _____ to _____

SHIPPER	CONSIGNEE	ARTICLES	WEIGHT	RATE	FREIGHT	CHARGES	PREPAID

RECEIPT FOR EXPRESS ORIGINATING AT POINT WHERE COMPANY HAS NO AGENCY

which are posted the schedule, the location of all stops, signs and special notices, rates, etc.

At numerous cross-roads small platforms have been erected, on which are placed sheds, 8 ft. x 12 ft., closed on three sides with windows. These sheds have proven quite a convenience in bad weather, and are appreciated by the communities, who see to it that they are kept clean and in repair.

Small packages, perishable goods, baggage, etc., that require quick and careful delivery, are handled by combination cars, which alternately operate with the passenger cars. All express matter is received and delivered at the company's depot, and the rate charged does not include collection or delivery. This is found very satisfactory, as the company's depot is located in the heart of Cincinnati, and in all the towns and villages the depots are located in the business centers. An arrangement is made, however, to receive and deliver baggage with the local omnibus company.

An express receipt is given for all shipments, and goods are shipped either prepaid or collect to points having agencies, and prepaid only to points having no agency.

THE INTERURBAN RAILWAY & TERMINAL COMPANY.

Traffic Department.

FREIGHT TARIFF.—Naming Classification Rates Between All Stations On The Rapid Railway. In Effect September 12, 1903.

Between Terminal Station Cincinnati and	Miles	Rates Named in Cents Per Hundred Pounds — Classes					
		First	Second	Third	Fourth	Fifth	Sixth
Cypress Avenue (Norwood)	6		10½	9	9	7½	5
Pleasant Ridge	6½		10½	9	9	7½	5
Kennedy	7½		10½	9	9	7½	5
Silverton	8		10½	9	9	7½	5
Deer Park	9		10½	9	9	7½	5
Rossmoyne	10		10½	9	9	7½	5
Terre Alta	10½	15	10½		9	8	6
Blue Ash	11½		10½		9	8	6
Winslow Park (Meyers Grove)	13		10	10	9	8	6
Hazelwood	14		10		9	8	6
Brecon	15		10		9	8	6
Miltomson	18		11	10	9½	8½	6½
Mason	21½		11½	10½	10	9	8½
Kings Mills	25		11½	10½	10	9	8½
South Lebanon	28	15	12½	11	10½	9½	9
Lebanon	32	17	13	9	8	6	5

No shipment less than 25 cents.
To find rate between stations, take number of miles between stations, then follow down the column and take rate opposite.
Above rates subject to change without notice.

B. E. MERWIN, General Superintendent. S. S. MORRIS, General Freight Agent.
CINCINNATI, OHIO.

THE INTERURBAN RAILWAY & TERMINAL COMPANY.

Rapid Railway Division.

EXPRESS TARIFF.—In Effect September 10, 1903.

Stations	Miles	Package Rates — 5 Pounds and under	10 Pounds and not under 5 Pounds	15 Pounds and not under 10 Pounds	20 Pounds and not under 15 Pounds	30 Pounds and not under 20 Pounds	50 Pounds and not under 30 Pounds	100 Pounds and not under 50 Pounds	Per 100 Lbs. Produce and Dressed Poultry
Terminal Sta., Cin'ti, O	0								
Cypress Ave., Norwood	6			20	20	20	25	25	20
Pleasant Ridge	6½			20	20	20	25	25	20
Kennedy	7½			20	20	20	25	25	20
Silverton	8			20	20	20	25	25	20
Deer Park	9			20	20	20	25	25	20
Rossmoyne	10			20	25	25	30	35	20
Terre Alta	10½	10	15	20	25	25	30	35	20
Blue Ash	11½			20	25	25	30	35	20
Winslow P'k (Meyers Gr.)	13			20	25	25	30	35	20
Hazlewood	14			20	25		30		25
Brecon	15			20	25		30		25
Miltomson	18			20		25	30	35	25
Mason	21½			20	25		30		25
Kings Mills	25½		15	20			30		25
South Lebanon	28	15	20	25	30	35	40	40	25
Lebanon	32		20		30	35	40	40	25

To find any rate between stations, take the number of miles between stations, then follow down the column, and take rate opposite.
Ice, packed, to any point, 10c. per 100 pounds.
Bread, in baskets, 25c.
Live Poultry, per coop, 30c.
Fresh Meat, in sacking, 25c. per 100 pounds.
Milk, 2c. per gallon, but no shipment less than 10c.
Berries, per crate, 15c. Per 2-bushel stands, 25c.
Ice Cream, per can, 2 gallons or less, 25c., each additional gallon, 10c.
Eggs, per case, 15 miles or under, 20c., over 15 miles, 25c. per case.
Bicycles or Baby Carriages, 25c. each.
Tomatoes and Peaches, bushel boxes, 10c. each.
Bananas, Tariff rates.
Sugar, to all points under 15 miles, 35c. per barrel, over 15 miles, 40c. per barrel.
Flour, to all points under 15 miles, 25c. per barrel, over 15 miles, 30c. per barrel.
Beer, 1 to 2 quarters, 25c. each; 1 to 2 half-barrels, 30c. each.
Beer, 3 to 10 quarters, 20c. each., 3 to 10 half-barrels, 25c. each.
Beer, above 10 quarters, 15c. each, above 10 half-barrels, 20c. each.
Beer, if packed in ice in barrels, add 5c. additional to rate.
Beer, in cases, 1 dozen bottles, same as quarters, 2 dozen bottles, same as half-barrels.
Dogs, when with passengers, 25c. each.
Dogs, when for shipment (must be securely crated), double Tariff rates.
Calves, in crates (not otherwise taken) to Cincinnati, 60c. each.
Laundry, in baskets, 25c. each.
Trunks (not exceeding 150 pounds), each 25c.
Corpse, $2.00.
Apples and Pears, 15c. per barrel.
Corn, 10c. per sack.
Sewing machines, crated, 40c. each.
Hand Baggage, when carried by passenger, is taken without charge.
No charge made for return of empties to point of shipment except empty Beer Kegs, Barrels and Cases, which must be returned by freight at freight rates.
Goods are received at regular stopping places and delivered at terminals or crossings nearest consignee.
Delivery of goods at points where there are no agents ends this company's responsibility.
Agents and Conductors must use judgment when billing bulky or light shipments to double the weight in order to secure correct charge for space occupied.
This Company reserves the right to change above rates without notice.

B. E. MERWIN, General Superintendent. S. S. MORRIS, General Freight Agent.

THE INTERURBAN RAILWAY & TERMINAL COMPANY.

Traffic Department.

FREIGHT TARIFF.—Naming Classification Rates Between All Stations on The Cincinnati & Eastern Railway. In Effect September 12, 1903.

Between Terminal Station Cincinnati and	Miles	Rates Named in Cents Per Hundred Pounds — Classes					
		First	Second	Third	Fourth	Fifth	Sixth
Water Works	7	10½	9	9	9	7½	5
California	7½	10½	9	9	9	7½	5
Coney Island	9	10½	9	9	9	7½	5
Sweet Wine	11		10	10	9	8	6
Eight Mile	14½		10		9	8	6
Nine Mile	15	15	10		9	8	6
Ten Mile	16		11	10	9½	8½	6½
New Palestine	16½		11	10	9½	8½	6½
Blairville	18		11½	10½	10	9	7
New Richmond	21	12	12	10	8½	8	7

No shipment less than 25 cents. Stoves, 15c. per 100 pounds.
To find rate between stations, take number of miles between stations, then follow down the column and take rate opposite.
Above rates subject to change without notice.

B. E. MERWIN, General Superintendent. S. S. MORRIS, General Freight Agent.
CINCINNATI, OHIO.

Each conductor is provided with a numbered receipt book, 8 ins. x 3½ ins., for express originating at points having no agency. These receipt books are numbered and are in triplicate, No. 1, white, being the shipper's receipt, and marked "original;" No. 2, the way bill, yellow, and marked "duplicate," to accompany the shipment, and No. 3, the auditor's copy, is on pink paper, and marked "triplicate." The "original" form is reproduced on page 945.

The handling of heavy and slow shipments, such as groceries, farm produce, etc., is done in special cars, which are similar in general design to baggage cars used on steam railroads. These cars are 48 ft. long inside, and equipped with four No. 56 motors, each side being provided with two large sliding doors. These cars are operated at present during the night only, but arrangements are being made to operate during the day also, as the business has increased so rapidly.

Freight is collected at points along the line on a regular schedule, and delivered in the city at 12:00 midnight, and freight collected in the city during the day leaves at 4:00 the next morning for points along the line.

The freight tariff sheet shows the rate and classification. All freight is receipted for and billed out on regular freight way-bills, showing way-bill and car number, and the agents make a daily report on a daily abstract form.

In addition to the general express and freight business, a number of special cars are operated, handling milk. The hospitals of Cincinnati are supplied by a special dairy operated by French Brothers, located at Lebanon, on the line of the Rapid division, 32 miles from Cincinnati. Milk, cream, etc., that is used during the day leaves Lebanon at 6:00 a. m., and is delivered at the hospitals in Cincinnati at 8:00 a. m., and that used during the night leaves Lebanon at 5:00 p. m., and is delivered at 7:00 p. m. At present 150 10-gal. cans are handled on each trip.

Although the freight and express business has been in operation by the company only about six months its increase has been wonderful, and the proportion of profit is in excess of the passenger business.

The company's independent telephone system is at the disposal of its customers through the country free of cost, and goods may be ordered from the city by 'phone direct, and delivered to the customers' depot, saving time and expense. This feature has materially increased the company's business.

The accompany illustrations include samples of forms used in the express and freight service, and also the passenger, freight and express tariffs. An examination of these will prove convincing that a very simple and comprehensive plan of handling this business has been developed.

PLEASURE TRAFFIC

The management of this system does not believe it good policy for an electric railway to operate parks. It is believed that it will prove more satisfactory in the long run to have pleasure resorts operated independently.

Coney Island, which is reached by the cars of both the Cincinnati & Eastern and the Suburban roads, is owned by interests closely allied with the railway syndicate, but there is no connection between the two. There is a spur running directly to the pavilion, and the railway gives frequent service to this point during the summer months. The park embraces 122 acres facing the river. The buildings include a club house, 200 ft. x 100 ft.; dance hall, 300 ft. x 130 ft.; open-air theater seating 2000 people, and a grand-stand. Among other attractions are "shoot-the-chute" into the river, roller coaster, bowling alley, rifle range, merry-go-round, baseball park, tennis courts, naphtha launches on the lake, pony track, etc. Admission to the grounds is 25 cents, and all attractions are free.

ORGANIZATION AND MANAGEMENT

The three railway properties and the terminal station were built by separate companies with organizations almost identical. On Nov. 4, 1902, the Cincinati & Eastern Railway Company, the Suburban Traction Company, the Rapid Railway Company and the Interurban Terminal Company were consolidated into the Interurban Railway & Terminal Company. The capital stock is $2,500,000, and the authorized bond issue is for the same amount. Of this amount $2,250,000 is to be issued, the remaining $250,000 to be held in the treasury for extensions. With 101.24 miles of track the bonded indebtedness is on a basis of $24,750 per mile, including the terminal station. The securities of the company have never been floated on the open market. The bonds of the original propositions were subscribed by the members of the syndicate, and the money was paid in from time to time as it was required. The securities are still carried by the members of the syndicate, by whom they are regarded as promising permanent investments. No engineering companies were formed to build the roads, and all work, including planning and erecting buildings and installing equipment, was done by the company's own engineering departments, under the direct supervision of George R. Scrugham, president of the system. Mr. Scrugham personally designed the terminal station, the power stations and the car houses, and he was in active charge of the construction work. Werner & Adkins, Cincinnati, were the architects for the several buildings.

The officers of the Interurban Railway & Terminal Company are: George R. Scrugham, president and general manager; Lee H. Brooks, first vice-president; Ellis Kinkead, second vice-president; W. E. Hutton, secretary; J. M. Kennedy, treasurer; B. E. Merwin, operating superintendent; F. H. Talbot, construction superintendent; C. J. Williams, auditor; J. M. Kennedy, Jr., purchasing agent; W. L. Hallpike, cashier. Directors, G. R. Scrugham, L. H. Brooks, Ellis Kinkead, W. E. Hutton, J. M. Kennedy, Charles H. Davis, George H. Worthington and Guy W. Mallon.

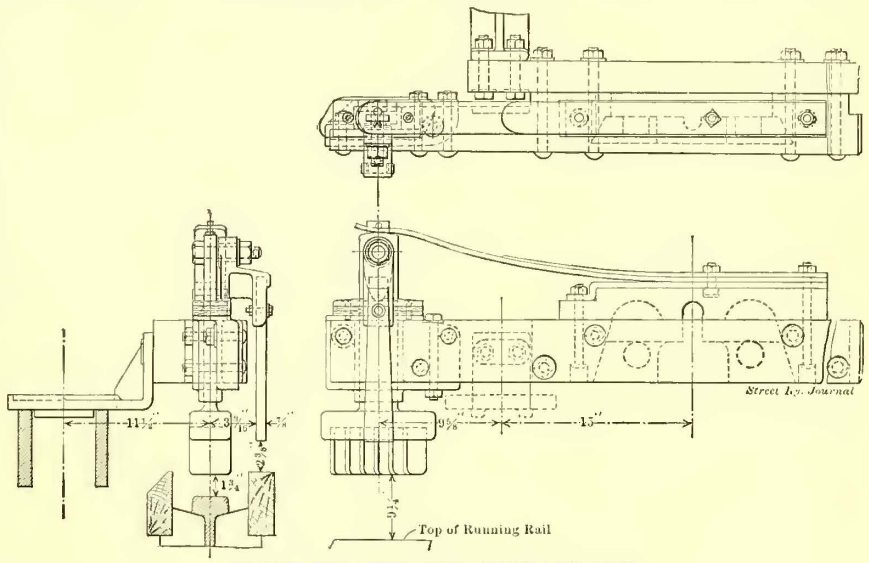
The Toledo, Bowling Green & Southern Traction Company has arranged with the Toledo Terminal & Belt Railway (steam) to haul its freight cars into the center of the city and will utilize the Terminal Company's freight station of Cherry Street. The former company is interested in the Toledo Urban & Interurban Railway, which is building a new line into Toledo from Maumee, and the tracks of this line will be used in bringing the Toledo, Bowling Green & Southern cars from Maumee.

SLEET-CUTTING MACHINES ADOPTED FOR MANHATTAN

The Interborough Rapid Transit Company has decided to make a radical departure this winter in the method adopted for keeping the elevated system open during the season when snow and sleet might interfere with the operation of the electric trains. It will be remembered that the old Manhattan management had considerable trouble last year, but this was due partly to the fact that early storms found the company unprepared, and largely to inexperience in handling the new equipment made necessary by the recent change in motive power, and by the fact that only a part of the cars was electrically operated.

The brushes which were used last year have been abolished entirely, and a sleet cutter has been substituted. The accompanying illustration shows the design of this machine and also its application. It is the invention of Frank Hedley, general superintendent of the Interborough Rapid Transit Company, and is a modification of a form of sleet cutter originally designed by him for the Lake Street and Northwestern Elevated Railroad systems in Chicago.

The cutting machine itself consists of thin sections or sheets



SLEET SCRAPER FOR CONTACT-RAIL

of steel cast into a block which is suspended from the car truck, and may be lowered or raised at will by the motorman, or automatically by a special tripping device operated from a central office. The scraping plates are arranged in an inclined relation to the block, and are oblique to the length of the rail, riding in such a manner as to scrape from the rail any obstruction of ice, sleet or snow and carry it to one side of the contact rail, where it is dropped to the surface below. The scraping plates, as already mentioned, are inclined, and this permits the device to glide over the intersections of rails without obstruction. The scraping block, as will be noticed by a reference to the cut, is pressed against the contact-rail by a spring, and the pressure exerted upon it may be adjusted by the mechanical department when the equipment is originally introduced to suit the requirements of the service. It is proposed to attach one of these scraping devices to the motor truck just ahead of each contact-shoe, so that the third rail may always be kept clear of sleet, snow and ice, and perfect contact be thus ensured. It will necessitate the use of four scrapers on each truck of a motor car, or eight altogether for each motor car, as there will be as many scrapers as there are contact shoes.

The mechanical department of the Interborough Company is rapidly equipping all motor cars for operation on the elevated system with these scrapers, and it is confidently expected that the discomforts and delays experienced last winter will be averted.

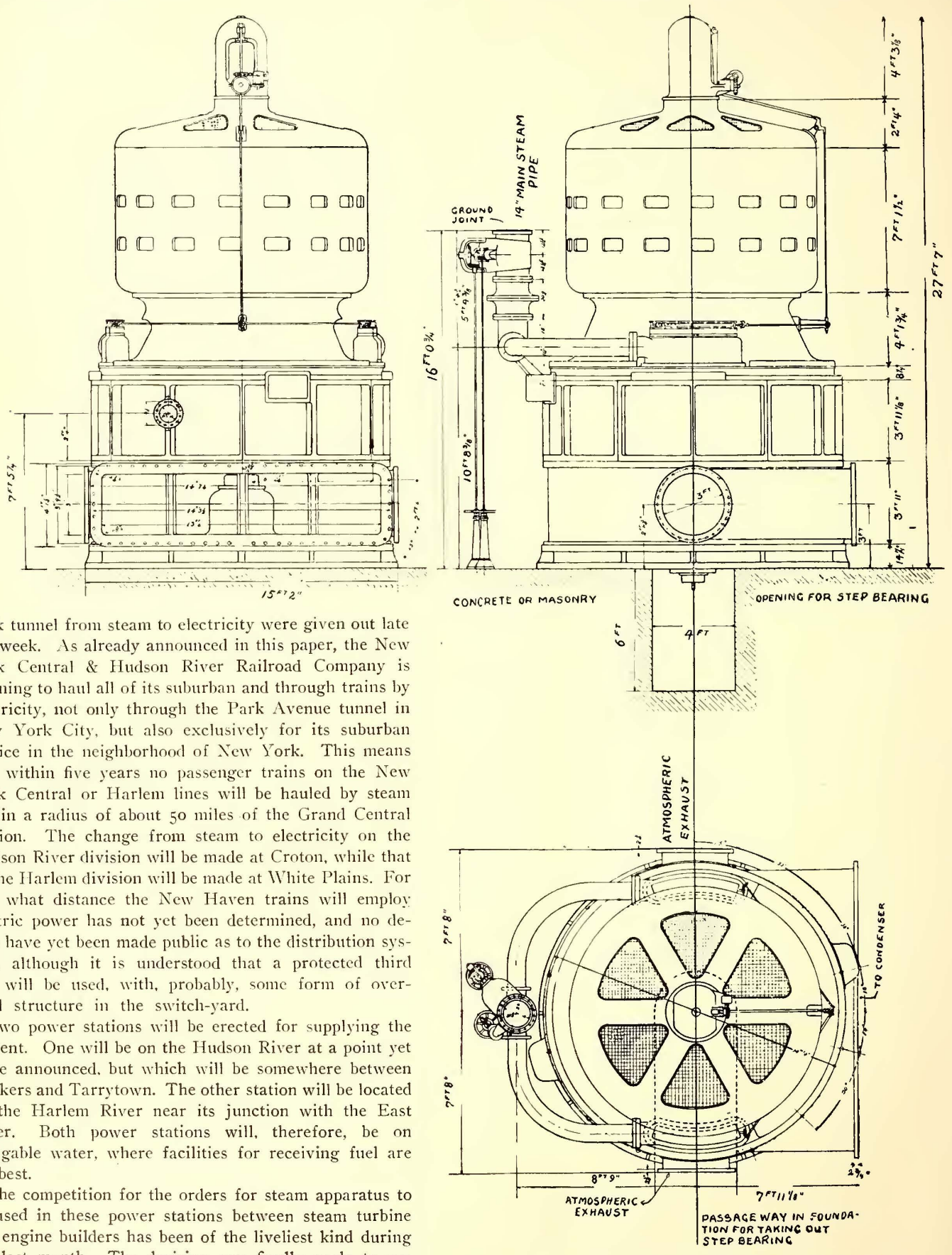
ELECTRICITY FOR THE NEW YORK CENTRAL RAILROAD

The first large contracts for electrical apparatus to be used in the conversion of the New York Central Railroad's New York tunnel from steam to electricity were given out late last week. As already announced in this paper, the New York Central & Hudson River Railroad Company is planning to haul all of its suburban and through trains by electricity, not only through the Park Avenue tunnel in New York City, but also exclusively for its suburban service in the neighborhood of New York. This means that within five years no passenger trains on the New York Central or Harlem lines will be hauled by steam within a radius of about 50 miles of the Grand Central Station. The change from steam to electricity on the Hudson River division will be made at Croton, while that on the Harlem division will be made at White Plains. For just what distance the New Haven trains will employ electric power has not yet been determined, and no details have yet been made public as to the distribution system, although it is understood that a protected third rail will be used, with, probably, some form of overhead structure in the switch-yard.

Two power stations will be erected for supplying the current. One will be on the Hudson River at a point yet to be announced, but which will be somewhere between Yonkers and Tarrytown. The other station will be located on the Harlem River near its junction with the East River. Both power stations will, therefore, be on navigable water, where facilities for receiving fuel are the best.

The competition for the orders for steam apparatus to be used in these power stations between steam turbine and engine builders has been of the liveliest kind during the last month. The decision was finally made to use steam turbines, and the contract was awarded last week to the General Electric Company for eight turbo-generators of a capacity of 5000 kw each. The turbines are of the four-stage vertical type, and side elevation and plan of the turbine to be used is presented herewith. The generators are 25-cycle, three-phase, and will generate current at 11,000 volts. This order is said to be the largest order for steam turbines ever placed in this country or abroad.

The electric locomotives to be used will differ in general construction from those used in the Baltimore & Ohio Belt Line, as the latter are designed to develop a speed of only 10 miles an hour, while the New York Central locomotives will

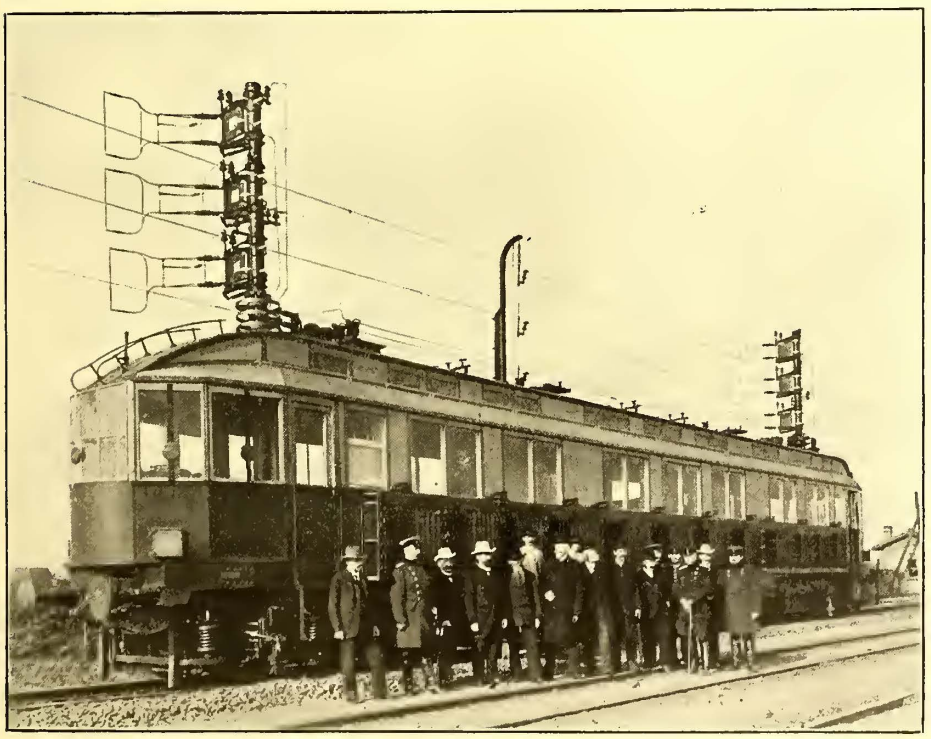


5000-KW STEAM TURBO-GENERATOR FOR POWER STATION OF NEW YORY CENTRAL RAILROAD

be designed for a speed of 60 miles an hour. The number of trains now passing in and out of the Grand Central Station every day is between 600 and 700, and some 300 electric locomotives will be required to handle this traffic. The order placed by the New York Central Railroad Company last week was for thirty locomotives, and was given to the General Electric Company. These locomotives will have a capacity of 2200-hp each, or between 700-hp and 800-hp more than the steam locomotives of the New York Central Type "999," or those used on the Empire State Express. They will be equipped with the Sprague-General Electric multiple unit-control system, so that two or more locomotives if necessary can be coupled together. Each locomotive will weigh 85 tons, and will have an adhesive weight on its drivers of 67 tons. The specifications provide that each single locomotive will be capable of hauling a 500-ton train at a speed of 60 miles an hour. The motors will be of the gearless type. The Schenectady works of the American Locomotive Company is associated with the General Electric Company in this order, and will, it is understood, supply a considerable part of the locomotive outside of the electrical apparatus.

The contracts mentioned above were awarded upon the recommendations of the engineering commission of the New York Central Railroad, consisting of W. J. Wilgus, fifth vice-president, chairman; J. F. Deems, superintendent of motive power; B. J. Arnold, F. J. Sprague and George S. Gibbs. The commission has also recently secured the services, in an advisory capacity for its power station plans, of Frederick Sargent, of Sargent & Lundy, of Chicago.

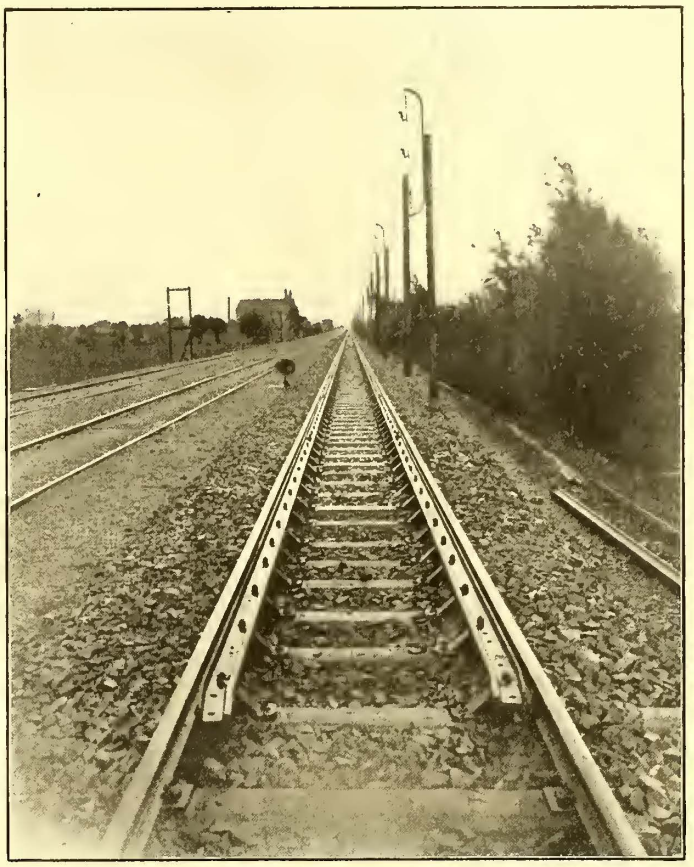
One of the conditions in the agreement between the Auckland Electric Tramway Company, Ltd., of Auckland, New Zealand, and the city, was that cars should not be operated within the city limits on Sunday until a poll of the citizens had been taken and their wishes expressed on the subject. On Wednesday, Sept. 20, the question was submitted to the people. Out of about 12,300 persons on the electoral roll, 8024 voted on the question. The division was 3933 against the measure, 3955 for the measure, and 136 informal. The Sunday city service was, therefore, begun Oct. 4, and 12,528 passengers were carried, a very satisfactory result.



THE SIEMENS & HALSKE CAR USED DURING THE HIGH-SPEED TESTS

A REVIEW OF THE MARIENFELDE-ZOSSEN HIGH-SPEED TESTS

As the high-speed traction tests on the military railway between Marienfelde and Zossen have been temporarily closed, it may be of interest to review the progress made since the tests were begun in 1899 by the "Studiengesellschaft für Elektrische Schnellbahnen." This society was formed by the following banks and firms: Deutsche Bank, Delbrück, Leo & Company, National Bank, Allgemeine Elektricitäts Gesellschaft, Siemens & Halske, Friedr. Krupp, v. d. Zypen & Charlier. The technical committee drew up the plans for the proposed tests and ordered each of the two electrical companies to furnish one complete operating equipment. The order for car bodies and trucks was given to v. d. Zypen & Charlier. The overhead work was undertaken by Siemens & Halske, and the 12,000-volt to 15,000-volt alternating-current used was transmitted from the Oberspree works of the Allgemeine Company.



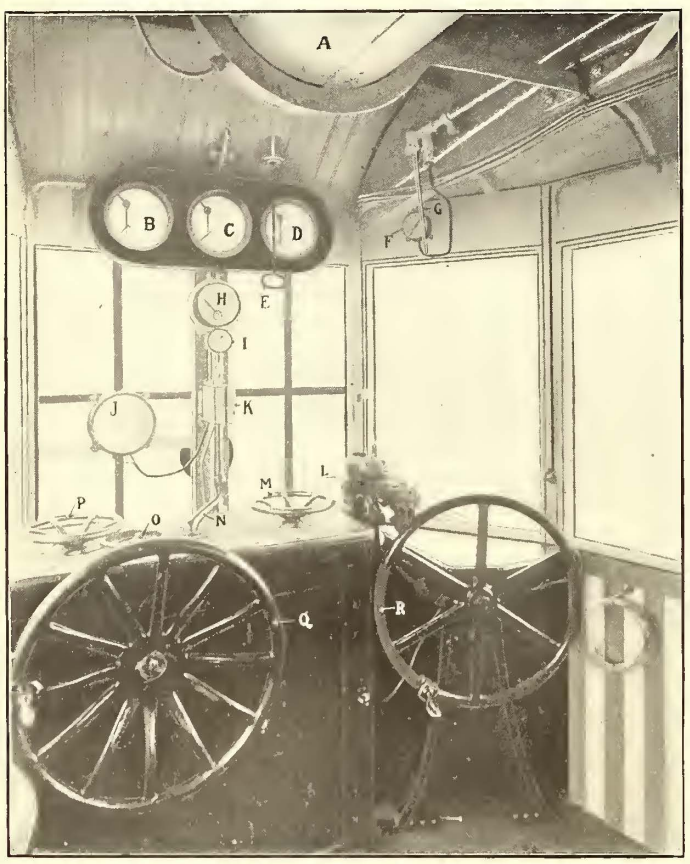
RECONSTRUCTED ROADBED BETWEEN MARIENFELDE AND ZOSSEN, SHOWING GUARD-RAILS

The first trials were made late in 1901, but were discontinued because the roadbed weakened after 130 km an hour had been attained. A new roadbed was built up as follows: The foundations consisted of broken basalt. Upon this sixteen heavy wooden ties were laid every 12 m (2 ft. 5½ ins. apart). The new track weighed 41 kg, instead of 34.4 kg (82 lbs. per yard instead of 69 lbs.) per running meter, and was securely fastened to the ties by wooden dowels and screws. To minimize truck swaying, guard rails were laid very close to the running rails and 5 cm (2 ins.) above the latter. One of the illustrations shows the

reconstructed roadbed. The car trucks, which were six-wheeled, were also rebuilt, the wheel base being lengthened from 3.8 m (12 ft. 5½ ins.) to 5 m (16 ft. 5 ins.).

Experiments were renewed in September, 1903, and both the roadbed and apparatus gave satisfaction, particularly the guard rails and longer trucks, which did much to prevent swaying. The Siemens & Halske car was the first to pass the 200-km mark, attaining 201 km (125½ miles) an hour. This speed was later exceeded by the Allgemeine car, which reached 210.2 km (131.4 miles) an hour on Oct. 27. The Siemens & Halske car traveled 206.7 km (130.7 miles) an hour on Oct. 23, the difference in speed of the two cars being solely accounted for by the fact that during the Allgemeine test on Oct. 27 the frequency of the current was somewhat higher.

Certain changes were also made in the motor wiring on the



VIEW OF CAB OF HIGH-SPEED ZOSSEN CAR

Allgemeine car. At first all the motors were started simultaneously, but later the stator windings of the four motors were placed in circuit one after the other, the motors being started by gradually short-circuiting the rotor windings. This arrangement avoided an unnecessarily heavy current intake at starting, and also permitted the cutting out of the stators of one or more motors after normal speed had been attained, and only two or three motors were required to continue running the car at the same speed. Although these motors were rated at 250 hp they carried 750 hp each at starting without rising more than 20 degs. C., because the motors were cooled by air blast.

The apparatus used during the trial runs is shown in the general view of the cab, and consists of the following: A is the principal compressed air reservoir for operating all of the apparatus; B and C are ammeters for truck No. 1 and truck No. 2, respectively, D is the line voltmeter, E is the handle for the air whistle, F is the pressure gage, G is the acceleration indicator, H is the pressure gage for the brake cylinder, I is the pressure gage for the train line pipe, J is the speed indicator, K is the switch for connecting up the speed indicator, according to the direction of running, L is the Westinghouse air-brake valve, M is the motor switch, N is the controller switch, O is the rheostat indicator, P is the air compressor switch, Q is the starting rheostat and R the hand-brake wheel.

To enable all readings to be taken simultaneously a clock was used which rang a bell twice every 10 seconds, the instruments being read immediately after the second ringing.

The speed was measured in several ways. One of the methods included the use of a precision voltmeter, which indicated the voltage of a small direct-current generator coupled to a car axle, and which also had a scale divided into kilometer-hours. Besides a number of mechanical speed indicators, the Siemens & Halske Company used a graphical recording instrument which made three different records. Each marker was operated by an electromagnet, and the recording paper strip by clockwork. One of the markers punched a hole along one part of the strip every second; the second marker was actuated by a current flowing through a battery and a contact device on the free middle axle of one of the trucks, one perforation being made for every revolution of the axle; the third marker perforated the paper every time a kilometer was passed, this being accomplished electrically by having a small contact brush strike iron projections placed near the track and spaced 1 km apart.

To determine the air pressure several openings were made in the walls of each car, each opening being connected with a U-shaped glass tube partly filled with water and graduated to millimeters. The pressure was, therefore, measured by noting the change in the height of the water columns in the branches of each tube.

The acceleration was determined according to the method suggested by Kapp. A vertical glass tube was placed at each motorman's stand, both tubes being connected by a pipe running through the car floor parallel to the rails. The tubes were filled to a certain height with colored water. When the car started the liquid in the front tube fell, while that in the rear tube rose. The acceleration was determined by measuring the distance between the tubes and the difference in height of the water columns.

Another interesting device used was an automatic brake pressure regulator, combined with a speed indicator, which served to keep the brake pressure proportional to the retardation desired. Several instruments were also used for measuring the torque of the motors and the swaying of the car.

No further attempts are to be made to exceed the speeds already attained, but it is expected to renew the experiments to determine more accurately the amount of power consumed, air resistance, etc., at speeds from 140 km per hour to 180 km per hour. In this connection the Siemens & Halske Company states that all reports regarding contracts with the German Government for high-speed electric railways are premature.

"HAVE YOUR BAGGAGE CHECKED"

In Detroit new arrangements have been made by the Detroit United Railway for handling baggage in connection with the Detroit Omnibus Company, so that trunks can be handled without inconvenience to passengers to or from any station reached by the interurban lines centering at Detroit. Under the head of "Have Your Baggage Checked" the Detroit United "Weekly" makes announcement of the new arrangement in the following words:

This is a matter of business information, not a vaunting of the fact that electric railway systems are receiving recognition from all the agencies that facilitate public travel. Hereafter the Detroit Omnibus Company will take all baggage checks on incoming trains and boats, inquiring or accepting the information as to whether you want it transferred to the steam or electric cars. If you are destined to a point reached by both, you hold the option, but the new arrangement is that your trunk from now on can be sent, without any care on your part, to any station reached by the interurban lines centering at Detroit. You have only to name your point and the well-known omnibus company will do the rest.

CORRESPONDENCE

INTERURBAN DESPATCHING AND EMERGENCY STOPS

Indianapolis, Nov. 20, 1903.

EDITORS STREET RAILWAY JOURNAL:

I notice in the STREET RAILWAY JOURNAL of Oct. 31, 1903, a communication, by A. P. Johnson, on "Interurban Train Despatching," which refers to the discussion on that subject at the New York State Street Railway Association convention, published in the issue of Oct. 17. The two principal questions brought up by this discussion are: First, is the plan of cutting current off from a section of line upon which a collision is imminent worth consideration in connection with electric railway train despatching; and, secondly, how does cutting off the current supply affect the ability of cars to stop?

First, as to the advisability of giving despatchers standing orders to cut off current from any section of the line upon which, through the giving of wrong orders, the despatcher knows a collision is imminent, it seems as if there could be no question. While it may not be an absolute safeguard against head-on collisions, it would certainly be valuable in preventing them in certain cases, and it is wrong to condemn this practice as worthless because it is not infallible. If it would only prevent one collision in a hundred it is worth using. It does not require any very radical changes in the operating methods of any road to make it possible for the despatcher, either by telephonic communication with sub-stations or otherwise, to have the current cut off of any section of the line where two cars may be approaching each other with danger of a head-on collision. In the discussion a case was cited where, it was said, the despatcher had the current cut off of a section, but two cars happened to be approaching each other on opposite sides of a valley, and having no power with which to stop on the downgrade, came together in collision. Without knowing anything about the circumstances of this particular case, it seems very strange that a collision of this kind should be blamed to an absence of current supply. I say this because I do not believe that in ordinary high-speed interurban service much reliance can be placed upon reversing the motors with the aid of trolley current as a method of stopping. For an emergency stop I believe that either the air brake or the use of the motors as generators will give far better results than reversing with the aid of the trolley current. This should be apparent, both from theoretical and practical considerations. Practically, the motorman is more than likely to open the circuit breaker on an interurban car if he tries to stop by reversing when going at a high speed, but even leaving this aside the possibilities of making a quick stop by reversing with the aid of trolley current are nowhere near as good as by an intelligent application of the air brake. Both experience and braking tests teach us that the maximum braking effect is secured just before the wheels are retarded to a point where they begin to slide. In other words, the greatest braking effect is secured by keeping a rolling contact between the wheel and rail rather than a sliding contact. When motors are reversed with the use of trolley current, the wheels are soon spinning in a reverse direction, and it does not stand to reason that as great a braking effect and as quick an emergency stop can be made with the wheels spinning as could be made with the brake-shoes applied nearly but not quite to the point of sliding the wheels. Of course, if the motorman is so excited that he applies the air brakes hard enough to slide the wheels, he would be no better off than if they were spinning, due to a reversal of the motors; but I am assuming that the motorman is educated in the art of making emergency stops with the air brake, as every motorman should be before he is allowed to take out a fast interurban car. But even assuming the air brake out of order and the trolley current cut off, there is still left the chance to stop by reversing the motors and throwing them in multiple so that they act as generators. This is commonly called "plugging" or "bucking" the motors. This method of stopping is entirely independent of the trolley current supply, and, further than this, since the motors only act as generators when the wheels driving them are turning them, the wheels are automatically released by the motors as soon as they begin to slide. With some controllers wired to four-motor equipments it is only necessary to throw the controller handle to "off" and pull the reverse handle to secure this braking effect. With two motor equipments it is necessary to turn the controller handle into a multiple position after having reversed in order to secure this effect.

It is undoubtedly true that but little is known regarding the value of reversing without the use of trolley current in making an emergency stop, and it would not be amiss for interurban companies to make tests as to the practical difference between the stops which can be made by "plugging" the motors and stops that can be made with the air brake.

There is no doubt that reversing by the use of trolley current is a valuable emergency measure for use in city service, where cars are equipped with hand brakes and where reversal can be accomplished much quicker than full application of the brakes. But I do not think it should in any way be relied on in fast interurban service.

M. C. RICHARDS.

PARK AT SACRAMENTO

SACRAMENTO ELECTRIC, GAS & RAILWAY COMPANY.

Sacramento, Cal., Nov. 12, 1903.

EDITORS STREET RAILWAY JOURNAL:

Gentlemen:—Our company has been maintaining a public park at the end of our street railway line, and during the past season has made an extra effort to establish a line of amusements that will attract attendance and add largely to the street railway traffic. We have maintained baseball grounds for a number of years, and this season have tried a new venture in the line of free open-air theatricals. These performances were of a vaudeville character, and included a complete change of actors and performances every week.

We are now considering the construction of some kind of a theater that will afford shelter from the sun, so that matinee performances can be given in the day time, and that may be enclosed during cool and stormy weather. It will be comparatively inexpensive, with a concrete floor, on such a grade as will enable those sitting in the rear to see the stage. Instead of having the entire performance entirely free, as we have done this season, we are planning to charge an admission of 10 cents to about one-half or one-fifth of the seating space nearest the stage. This would add something to the revenue and keep a certain class of people from monopolizing the best seats.

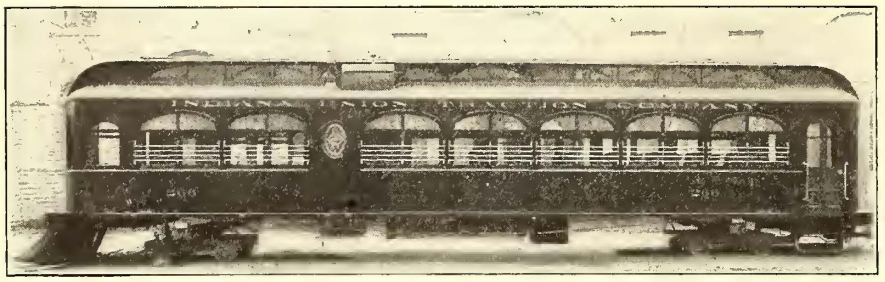
Knowing that your paper reaches all of the street railway companies in the country, reaching resorts of this kind, we have thought best to send this inquiry to you, hoping that you will publish it, and that we may get the benefit of the experience of other companies in regard to theaters and attractions of this kind in a terminal park, such as I have described. We have recently leased the right to put up in our park a scenic or toboggan railway, in the form of a double figure eight, which we think will add largely to the attractions of the park. In addition, the same persons are constructing a laughing gallery. Other persons have asked for concessions for bowling alleys, for shooting galleries, and for a swimming bath. This latter, we think, can be made a very desirable feature.

ALBERT GALLATIN, Manager.

It is reported that the Boston & Worcester Street Railway Company, of Boston, Mass., will begin immediately the construction of 3 miles of snow shields at several places along its line.

A NEW ELECTRIC BUFFET CAR

Quite a departure from the usual design of an electric interurban car is being made by the Cincinnati Car Company, of Cincinnati, Ohio, in its construction of twenty new cars for the Indiana Union Traction Company. These are probably the first electric buffet cars ever put in service on regular runs, and are intended for service on the "limited" runs on the Indiana Union Traction Company's lines. The cars now being used on

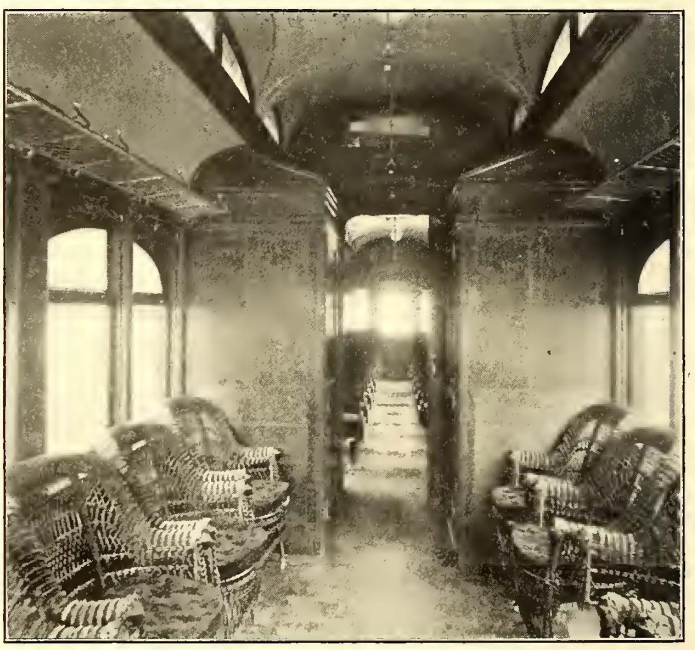


BUFFET CAR FOR INDIANA UNION TRACTION COMPANY

that company's limited runs will be employed in the local service. At the present time limited service to the extent of four cars per day each way is being given between Indianapolis and Muncie. Some of the cars on the latter division connect with limited cars at Anderson for Marion. The company is now completing a line from Indianapolis north through Tipton and Kokomo to Logansport, 80 miles from Indianapolis, and it is probable that the run from Logansport to Indianapolis will be made in about 2 hours and 45 minutes.

The general dimensions of the car are: Length of body, 41 ft. 6½ ins.; length over bumpers, 53 ft. 5½ ins.; width over side sills, 8 ft. 6 ins.; height of rail to top of roof sheathing, 13 ft. 6 ins.; truck centers, 29 ft. 6½ ins.

PASSENGER COMPARTMENT OF BUFFET CAR



SMOKING COMPARTMENT OF BUFFET CAR

Experience with similar cars in high-speed service having shown the need of a strong bottom framing, these cars were constructed with a framing which it is believed will withstand all strains to which it may be subjected. The center sills consist of two 4-in. x 6-in. steel I-beams, placed 13 ins. apart. The intermediate timbers are composed of yellow pine, 4 ins. x 7⅛ ins. The side sills are made in three parts; one piece yellow pine, 5½ ins. x 8 ins., and one piece 2 ins. x 7⅛ ins., with a ¾-in. x 7-in. steel plate bolted between and running full length of sill. Tie-rods, ¾ ins. in diameter, are placed along the side of each bridging. The single side posts are of ash, measuring 2 ins. x 4 ins. Every other post is a pier post, consisting of two 1¾-in. x 4-in. posts, placed 3½ ins. apart.

In the construction of these cars special endeavor has been made to overcome the tendency to give down in the center and for the platforms to drop, in that, in addition to the steel plate alongside of sills, I-beams of bottom framing and the customary plank, measuring 1¾ ins. x 10½ ins., the center of the car is supported by two trusses. One consists of ⅜-in. x 2½-in. flat refined iron, gained into inside of posts under belt rail, running to steel strut immediately over bolsters, and from this point sloping downward to enter side sills, terminating in 1-in. round refined iron, anchored in suitable casting. The other body truss consists of 1¼-in. x 8-in. ash, gained ¼ in. into outside of posts and running for a distance under belt rail, then descending and mortised into side sill over bolster. From the latter point braces of the same size ascend and are gained into corner posts under belt rail.

Each platform timber is supported by steel plates, ⅝ in. x 6 ins., bolted securely to timbers and to center and intermediate sills. In addition to these there are bolted to the outside platform timbers 4-in. x 6-in. angle-irons, which, upon passing under end sills, bend out and upwardly to run along side sills to a point beyond bolsters.

The interior of the cars is of Honduras mahogany, with dull finish, and consists of a large rear compartment, smoking compartment, buffet, heater room and toilet room. The rear compartment is provided with Hale & Kilburn reversible seats, upholstered with deep blue plush; the front or smoking compartment contains ten comfortable wicker chairs. The cars are carpeted throughout with Wilton carpet.

The buffet is located directly across the aisle from the hot-water heater. It is ample in size for the purpose intended, and contains an Adams & Westlake buffet urn, ice box, cupboards and drawers for silverware, dishes, etc.

A colored attendant will be placed in charge of the buffet of each car when the buffet service is inaugurated. While the management of the traction company does not expect that the buffet service will in itself be profitable, it is hoped that enough traffic will be attracted to justify its maintenance.

The heater, which is a Baker No. 8, is enclosed in a neat compartment adjacent to the toilet room. This heater closet

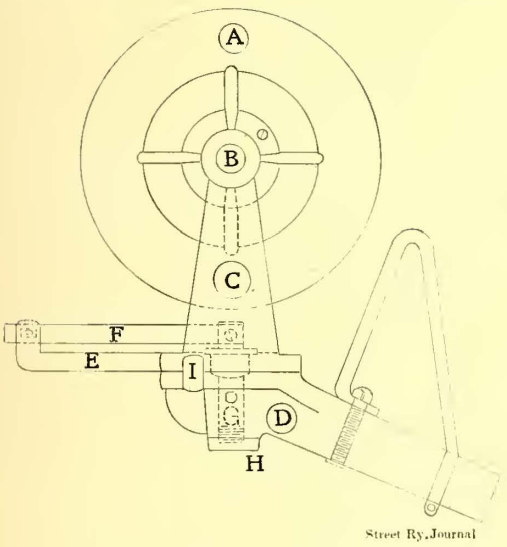
is lined with asbestos, covered with sheet iron, and finished in imitation mahogany to correspond with the interior car finish. A coal box was provided for by raising the heater 12 ins. from the floor, thereby allowing space for placing a large coal box underneath.

The upper deck, finished in light blue, is of the Pullman style, and its vaulted appearance adds greatly to the lofty effect desired. The upper deck sash, as well as the upper sash, are glazed with opalescent glass, presenting a pleasing exterior appearance and harmonizing well with the interior finish.

The car is mounted on Baldwin locomotive trucks, with steel-tired wheels. The operating equipment consists of four Westinghouse No. 85 motors with L-4 controllers, which have proven amply sufficient to give the car a speed of 60 m. p. h. The auxiliary equipment consists of Christensen air brakes, Nichols-Lintern sanders, Van Dorn draw-bars and Mosher automatic headlights. Total weight of car, as estimated by J. L. Matson, master mechanic, is about 72,000 lbs.

TROLLEY HARP AND WHEEL

The accompanying cut is an illustration of a trolley harp and wheel invented by R. I. E. Dunn, of Dallas, Tex. The harp is made of malleable iron, and has a connecting bolt (G) to hold together the top and bottom. Ball bearings are employed between the top (C) and the bottom (D). The spring (F) is used to keep the wheel exactly under the wire at all times, whether the wheel is in use or not. The bottom of the connecting pin is square in the bottom of the harp and round at the top, so that the top may turn without turning the pin. The arm (E) is part of the top of the harp, and has fastened to it one end of the spring. The other end of the spring is not fastened but slips through the connecting pin, and when the wheel turns the spring rights it. The lug (I) on the base is used to keep the wheel from turning too far in either direction. There is a tap (H) on the bottom of the connecting pin, and also a set screw on the side of the base as a prccautionary measure should the tap come off. A guard is placed before the wheel to permit the latter to slip under obstructions.



TROLLEY HARP AND WHEEL

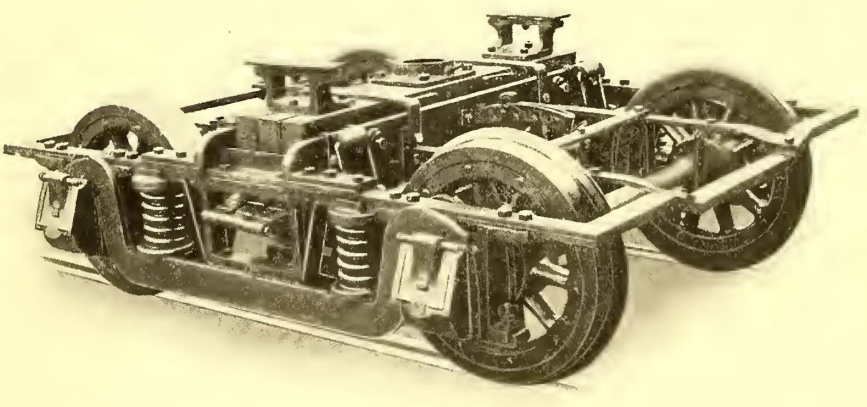
DESTRUCTION OF CLEVELAND CAR HOUSE

The accompany illustration shows the complete destruction wrought by the fire which destroyed the Holmden Avenue car house of the Cleveland Electric Railway, on Monday morning, Nov. 16, and which caused the death of several firemen. The details of this catastrophe were given in the STREET RAILWAY JOURNAL of Nov. 21.

RUINS OF HOLMDEN AVENUE CAR HOUSE

TRUCKS FOR THE NEW YORK SUBWAY CARS

The New York Subway cars were described in the STREET RAILWAY JOURNAL of Aug. 22, 1903. One of the trucks, as made by the St. Louis Car Company, to go under these cars is illustrated herewith. This truck was built according to specifications of the Interborough Rapid Transit Company, and is in general of the M. C. B. type. The top frame is forged and of but one piece. The equalizing springs are double spirals, located as closely as possible to the journal boxes. There are three elliptical springs under each bolster. The brake-shoes are inside hung. Transom plates are forged and machine fitted; several other parts of the truck are machine fitted. These trucks have a 5-ft. 6-in. wheel base, and weigh about 8800 lbs.

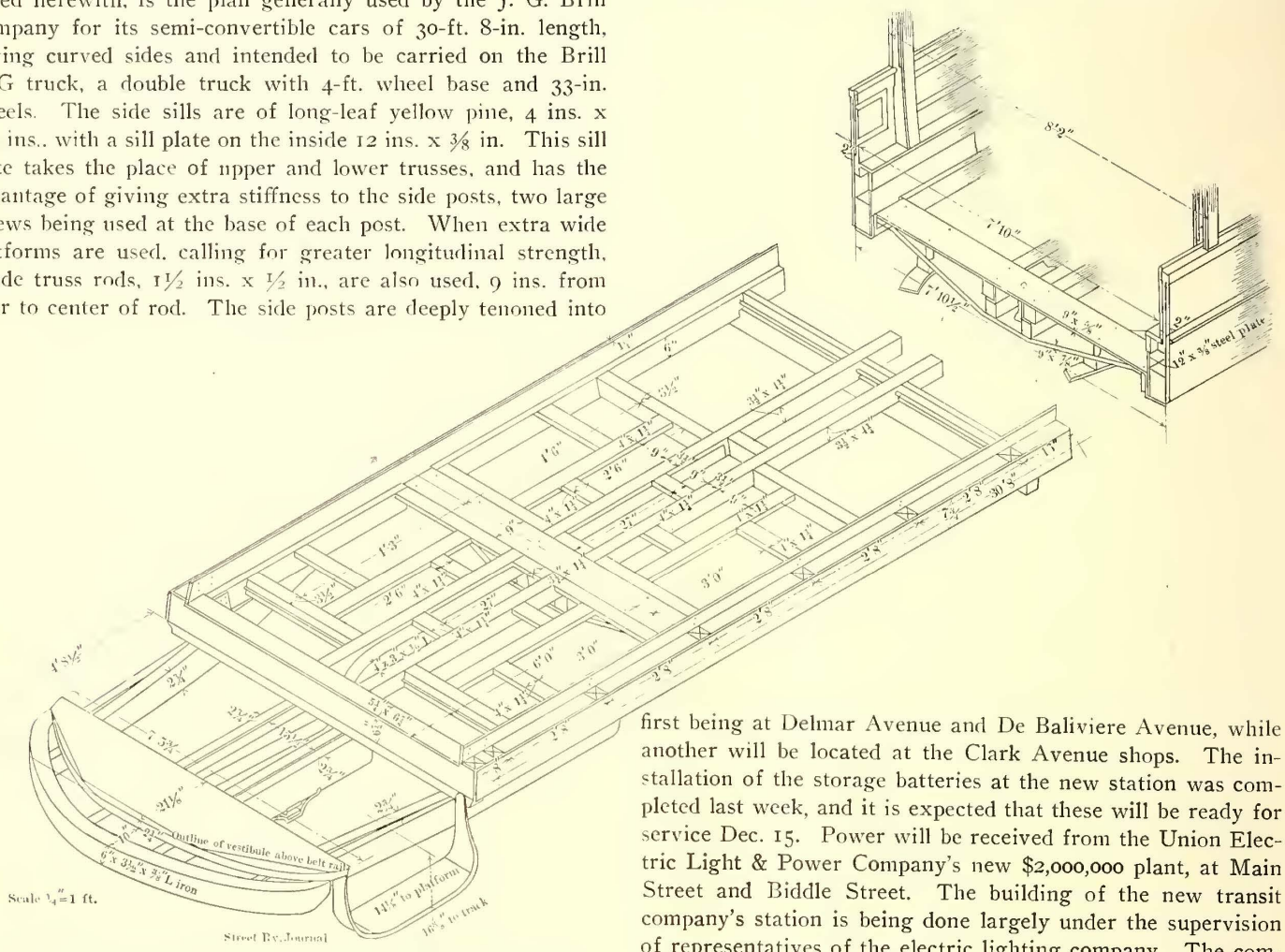


TRUCK FOR NEW YORK SUBWAY CARS

STANDARD BOTTOM FRAMING OF BRILL 30-FT. 8-IN. SEMI-CONVERTIBLE CAR

When it is realized that the bottom framing of a car has to bear the brunt of the weight and strains; that the upper structure depends entirely upon it for stiffness and support; that the platforms frequently carry several tons and are a long way from the points of support, the need of large experience and greatest care in planning this part of the car will be appreciated. The fundamental principle of bottom framing is, of course, to bring the load to the body bolsters as directly as possible through members which are given the greatest amount of strength possible within the limitations of size and weight.

The bottom framing shown in the isometric drawing, reproduced herewith, is the plan generally used by the J. G. Brill Company for its semi-convertible cars of 30-ft. 8-in. length, having curved sides and intended to be carried on the Brill 27-G truck, a double truck with 4-ft. wheel base and 33-in. wheels. The side sills are of long-leaf yellow pine, 4 ins. x 7¾ ins., with a sill plate on the inside 12 ins. x ⅜ in. This sill plate takes the place of upper and lower trusses, and has the advantage of giving extra stiffness to the side posts, two large screws being used at the base of each post. When extra wide platforms are used, calling for greater longitudinal strength, inside truss rods, 1½ ins. x ½ in., are also used, 9 ins. from floor to center of rod. The side posts are deeply tenoned into



ISOMETRIC VIEW, SHOWING THE BOTTOM FRAMING OF 30-FT. 8-IN. SEMI-CONVERTIBLE CAR

the side sill, and are also heavily strap-bolted through the sills. In the straight-sided semi-convertibles a round steel bar is wrought through each post and through the top rail and the sill.

The perspective view of the cross section of the car shows why wide sill plates are used, namely, by not having high inside truss rods the side linings are permitted to be set in between the posts against the backing of the panels. The walls between the posts are but 2 ins. thick, and the ends of the seats are placed against the side lining, thus saving it part of the width of the posts on either side, adding, it is claimed, 6 ins. to 7½ ins. to the width of the car. The window system of this car, as is well known, includes roof pockets for the sashes. The center sills are 3½ ins. x 4¼ ins.; end sills, 5¼ ins. x 6⅞ ins.; 5-ft. 8-in. tie-rods pass through the sills and along the sides of each of the crossings. Open steel body bolsters are used, which, besides having great strength, leave space for brake rods, etc. The center platform timbers are reinforced by 4-in. x 3-in. x ½-in. angle-iron. The angle-irons extend back along the center sills to a distance of 4 ft. 5 ins. back of the center of the body bolster, thus bringing a large part of the platform load directly to the bolster. For protecting and strengthening the platform timbers 6-in. x 3½-in. x ⅜-in. angle-iron bumpers (Brill patented) are used. The platform steps are 16⅜ ins. from rail-head; from step to platform, 14½ ins., and from platform to car floor, 8 ins.

THE NEW SUB-STATION OF THE ST. LOUIS TRANSIT COMPANY

Work is almost completed on the new sub-station of the St. Louis Transit Company, at Eighteenth Street and Locust Street. It is the second of three stations of the company, the first being at Delmar Avenue and De Baliviere Avenue, while another will be located at the Clark Avenue shops. The installation of the storage batteries at the new station was completed last week, and it is expected that these will be ready for service Dec. 15. Power will be received from the Union Electric Light & Power Company's new $2,000,000 plant, at Main Street and Biddle Street. The building of the new transit company's station is being done largely under the supervision of representatives of the electric lighting company. The complete operation of the station will not be begun until the inception of the World's Fair traffic, however. By that time the Union Company's power house will be finished. The capacity of the new plant will be about 10,000-kw-hours, which is the same as the capacity of the Delmar De Bolieviere station.

FROM ERIE, PA., TO CLEVELAND OHIO

President R. L. Forest, of the Conneaut & Eastern Traction Company, and Vice-President Stanley, of the Pennsylvania & Ohio Railway Company, are working on a plan for traffic arrangements between these two companies and the Cleveland, Painesville & Ashtabula Railway and the Cleveland, Painesville & Eastern Railway, whereby a certain number of cars may be operated daily from Erie, Pa., to Cleveland. The lines are now all connected up, and if fast through cars could be operated the line would prove a strong competitor for the Lake Shore & Michigan Southern Railway (steam). The distance from Erie to Cleveland is 101 miles. Through connection is now possible from Erie to Toledo.

FINANCIAL INTELLIGENCE

WALL STREET, NOV. 25, 1903.

The Money Market

Further shrinkage in bank reserves has caused a rise in call money rates, and increased firmness in time money, during the past week. Cash holdings in last Saturday's local bank statement were reported $3,700,000 lower, and surplus reserve was thereby brought down $2,227,000. The latter item stands now at $3,910,000, which is the lowest reached since last April. A year ago the surplus was $19,500,000, and two years ago $14,500,000; so it will be seen that, judging by these comparisons alone, the market's available capital is unusually small. Other matters, however, of larger significance, must be taken into account, before passing judgment on the present situation. Neither in 1902 or in 1901 did we have the hold we now enjoy upon the foreign exchanges. Europe, in both these years, was a heavy creditor in this market, and rates for sterling exchange, so far from favoring gold imports, verged closely on the export point. It is very different now. We have liquidated the greater part of the foreign obligations, and our cotton exports have reached an unprecedented value. The $8,000,000 gold engaged in London since Nov. 1, was arranged without raising demand sterling a cent in the pound. What this means, plainly enough, is that, should more gold be actually needed, it will be brought in here with very little difficulty. Two other great facts in which our money position makes favorable contrast with the previous years are these: The higher surplus reserves of last autumn, and the autumn before, were made possible only by the most vigorous efforts of the government to put idle Treasury money into circulation. Bank resources were, therefore, artificially sustained, whereas now they are moving under natural influences. Secondly, the great decline of the last twelve months in the security market has made the ordinary run of banking collateral much safer, and consequently much more attractive. It is feasible for the banks to lend their funds out more freely, and to let their surplus fall much lower than it was a year ago. Fundamentally, therefore, the money conditions now are immensely stronger than they were last season, irrespective of the unfavorable comparison in surplus reserves. Call money has loaned as high as 8 per cent during the week, but the bulk of the business has been done between 5½ and 6. For sixty-day loans 6 per cent is the ruling rate, but for longer periods 5½ is still quoted.

The Stock Market

A professional trader's market, with some improvement in sentiment, covers in a word the story of the Wall Street week. Genuine operations, whether buying or selling, are an insignificant part of the present business. Whatever activity there is, is confined to the professional contingent, and the course of prices from day to day is governed very largely by their conflicting views of the situation. It seems to many unprejudiced observers as though the market were in a position to undergo a substantial improvement if the powerful financial interests would take the initiative. But this they seem unwilling to do. It is possible, therefore, for the strong bear party to keep a heavy hand on the general list pretty much all the time, and to make successful forays upon individual stocks whose position is particularly exposed. The United States Steel shares and Pennsylvania are the favorite objects of bearish operations, among the regularly active stocks, on account of their large market supply. The only declines of consequence during the past week, however, have occurred in various minor industrials like Republic Iron and Steel, Corn Products and Pressed Steel Car, where doubt as to the continuance of dividends has intimidated holders. Many of the railroad stocks, the Western shares in particular, have, on the other hand, exhibited decided strength. Southern Pacific has been heavily bought on the idea that the extraordinary outlays for improving and extending the system have been so far completed that within the next year the company will be ready to give its stockholders some of the benefit of the present abundant surplus earnings. The granger railroad issues have also held remarkably well, and the signs seem to point to real liquidation being pretty well over in this quarter. That the stiff call money rates have had something to do with holding operations for the rise in check, is probably true. But the main reasons for the market's inactivity remain as before, that the investment community is exceedingly cautious about buying into a period of declining trade. Until the limits of the industrial reaction are more definitely fixed than they are at present, this conservatism seems likely to continue.

The local street railway group have again given a good account of themselves this week. A spirited advance in Metropolitan Securities stock appears to reflect the growing appreciation that the company occupies a very strong financial condition. It is claimed that there is now $3,000,000 cash in the treasury, and that the securities held have a value of $20,000,000. Naturally, the old Metropolitan stock, as the guaranteed property, has sympathized with this advance. Profit-taking sales, some of them from rather influential sources, have checked the rise in Manhattan. The pool in Brooklyn Rapid Transit continues to give the stock strong support, and to talk higher prices for it in the near future. The prospect that the Brooklyn company may be given the privilege of a loop in Manhattan Borough, enabling it to run its cars on a continuous circuit over the new Williamsburg Bridge, as well as the Brooklyn Bridge, has occasioned considerable discussion.

Philadelphia

There has again been little change on the week among Philadelphia traction securities. Some activity appeared at times in Union Traction, but the price never went above 44 nor below 43⅞. It has looked for some time as though a steady investment demand was absorbing all offerings of the stock around these figures, and that a similar demand was taking all the Philadelphia Traction offered around 95. Philadelphia Company common sold down a point from 36¼ to 35⅛, but recovered the loss rather easily, closing yesterday at 36¼. The preferred sold at 43. Philadelphia Electric was strong, advancing from 5¾ to 6, then reacting to 5⅞. A single 100 shares of Fairmount Park Transportation was taken at 19, a point better than the last previous sale. One hundred New Jersey Consolidated sold at 61, also a gain of a point. American Railways, after advancing to 42⅝, fell back on fractional sales to 41¾. Other transactions of less note included United Traction of Pittsburg preferred at 50, Chicago Union Traction common at 6⅞ to 6⅜, and the preferred at 30¾.

Chicago

Traction sales in Chicago have scarcely amounted to anything on the week. Metropolitan Elevated sold at 17 for the common and 55 for the preferred, Northwestern common rose from 15¼ to 16, South Side sold at 94 to 96, and Lake Street first mortgage 5s at 99. All these transactions occurred on fractional lots. Among the surface line shares, Union Traction common sold at 5½, and 10 shares of North Chicago changed hands at 95, which is the lowest price of the season. One of the curious incidents was a sale of 60 shares of City Railway at 170, an advance of 6 points over the last previous sale, in face of the strike on the road. A member of the Lake Street reorganization committee says that the committee has been furnished with expert data as to the physical condition of the property, and that it has been found in far better shape than expected. It is figured that after the financial readjustment the company will be able to earn at least $100,000 a year over fixed charges, which is equivalent to about 3 per cent on the new preferred stock. Rigid economies are to be put into effect, and these, with the growth of traffic which is expected to come with the improved service, ought to place the stock on a permanent dividend basis at an early date.

Other Traction Securities

Massachusetts Electric issues have been somewhat depressed during the week by fears that the company's forthcoming annual report will make an unfavorable showing. One estimate places the extra cost of the year's fuel alone at $280,000. The common stock sold down from 18 to 17, but rallied later to 17½, while the preferred, after going as low as 76½, recovered to 77½. Boston Elevated was steady on light transactions between 140 and 141. West End common rose from 89 to 90, and the preferred from 109½ to 110. Some idea of the dullness on the Baltimore Exchange may be had when it is stated that not a single sale had occurred during the week in the usually active stock of the United Railways Company until yesterday, when 600 shares changed hands from 8¾ to 9. The income bonds of the com-

pany have been stronger, selling up to 59⅝, and the general 4s have been taken freely between 90¾ and 91¼. Other Baltimore sales for the week include Norfolk Street Railway 5s at 105¼, United Traction of Pittsburg 5s at 111, Baltimore Traction convertible 5s at 100½, City & Suburban (Washington) 5s at 92, and Charleston Railway 5s at 105. On the New York Curb the only feature in the traction group was the sharp recoil in Interborough Rapid Transit. The stock after selling as high as 99½, fell a sheer 10 points to 88½ on sales of 1500 shares. It recovered later to 90. No explanation was forthcoming other than a desire to market some of the syndicate stock. Brooklyn Rapid Transit bonds, when the accident on the system was announced last week, dropped to 74½, but quickly rallied in the course of the next day or two to 76¼. New Orleans Street Railway common was a trifle firmer, rising from 8 to 8¼, and the preferred gained a point to 28½. One hundred St. Louis Transit sold yesterday at 13¾ and 100 United Railways of St. Louis preferred at 61½.

Northern Ohio Traction was again the active issue in Cleveland, about 800 shares selling at 12½ to 13⅛, an advance from 11, the low record of the week previous. Cleveland Electric was up several points and ranged from 66¾ to 67⅜, the last sale at the top figure. Northern Texas Traction sold at 31, an advance of 1 point. None of this is now in sight at less than 33, and there are plenty of offers. A small lot of Western Ohio receipts sold at 11, a new low mark. Several lots of Miami & Canal 5s sold at 39⅝, the lowest ever touched. Two Northern Ohio 4s sold at 53, also a low mark. On Monday, three blocks of Northern Ohio Traction Consolidated 5s, among the best traction bonds on the market, sold at 95¼. A $5,000 lot of Northern Ohio Traction & Light 5s sold at 62½, an advance of 1 point over last previous. Later another lot sold at 62. A small lot of Cleveland & Southwestern preferred sold at 60, which is 4½ points below last sale made some time ago. Northern Texas Traction sold at 32, an advance of 1 point.

Cincinnati Street Railway was the strong feature on the Cincinnati Exchange. The stock opened the week at 130, the point at which it has been selling for some time, and advanced steadily to 133½. The asked price is now several points above the closing figure, and it is predicted the stock is good for a 10-point advance. About 700 shares were sold, all in small lots. Cincinnati, Covington & Newport preferred suffered a decline, opening at 83½ and falling during the week to 80½; the sales were very small, however. Detroit United opened at 64½ and after several sales advanced to 66, but fell back to the old figure at the close; sales, about 200 shares. A block of $22,000 worth of Miami & Erie Canal 5s sold at 50, but later in the week a small lot sold at 39¾.

Security Quotations.

The following table shows the present bid quotations for the leading traction stock, and the active bonds, as compared with last week:

	Closing Bid Nov. 17	Nov. 24
American Railways	42	41
Aurora, Elgin & Chicago (preferred)	a65	a68
Boston Elevated	140	140
Brooklyn Rapid Transit	38¼	38⅝
Chicago City	164	164
Chicago Union Traction (common)	5¼	5
Chicago Union Traction (preferred)	a35	27
Cleveland Electric	66⅝	67½
Consolidated Traction of New Jersey	60	60
Consolidated Traction of New Jersey 5s	105¾	106½
Detroit United	63¾	64
Elgin, Aurora & Southern	a45	—
Lake Shore Electric	a15	a14⅞
Lake Street Elevated	2½	1½
Manhattan Railway	139¼	138⅞
Massachusetts Electric Cos. (common)	18	17¼
Massachusetts Electric Cos. (preferred)	76	76
Metropolitan Elevated, Chicago (common)	17	17
Metropolitan Elevated, Chicago (preferred)	55	50
Metropolitan Street	114	115⅝
New Orleans Railways (common)	7¾	8¼
New Orleans Railways (preferred)	27	28¼
North American	70	71½
Northern Ohio Traction & Light	13	12⅛
Philadelphia Rapid Transit	11½	11½
Philadelphia Traction	95	95
St. Louis Transit (common)	13¼	13½
South Side Elevated (Chicago)	92	95
Third Avenue	108	107
Twin City, Minneapolis (common)	87¼	89¼
Union Traction (Philadelphia)	43⅞	43⅞
United Railways, St. Louis (preferred)	58	57½

a Asked.

Iron and Steel

There is a general feeling in the iron trade that the recent action of the steel billet pool in reducing prices to $23 a ton, and continuing the "gentlemen's agreement" in force, is by no means the end of the matter. Many well-informed observers expect that when the pool meets again next month, it will decide that a further cut will be necessary in order to meet outside competition. The active effort to stimulate the export trade continues, and as an indication of what concessions are being offered to get the foreign business, it is reported that the recent contract for 20,000 tons of steel rails for delivery at Beirut was made on a basis of less than $19 a ton. Dullness is very pronounced in structural material and in plates; the heavy cut in steel bars has so far met with no very satisfactory response on the part of buyers; and a readjustment of prices has been found necessary in the sheet trade. Quotations are as follows: Bessemer pig iron $18.10, steel billets $23, steel rails $28.

Metals

Quotations for the leading metals are as follows: Copper 12¾ cents, tin 25¼ cents, lead 4⅛ cents, and spelter 5½ cents.

BOSTON CAR TUNNEL ROUTE

The Massachusetts Railroad Commission has declared in favor of a Washington Street route for the tunnel to be constructed in Boston for the elevated trains of the Boston Elevated Railway Company. The Boston Rapid Transit Commission had proposed a route to Haymarket Square through Devonshire and Union Streets, and the railway company had appealed to the railroad commissioners from this finding. In thus fixing a route the commission deems it advisable to stop at the junction of Washington Street and Adams Square, instead of at the junction of Union Street and Haymarket Square, as fixed by the Boston Transit Commission, because further legislation may be desirable to permit such changes in the present subway and approaches as may be requisite to connect properly the tunnel with the rest of the railway system. In addition to this tunnel, which is to be used exclusively for elevated trains, a subway for surface cars is to be constructed under Devonshire Street, and the elevated trains are to be removed from the present Tremont Street subway.

CHANGE OF NAME IN NEW YORK

The Interurban Street Railway Company, of New York, has filed an application at Albany for a change of name to the New York City Railway Company. As some time is required for the approval of an application of this kind, the new name will probably not go into effect until during the early part of 1904. A change of name has been under consideration by the directors of the Interurban Street Railway Company for some time. This was partly because the old name did not properly represent the business done by the company, only a small proportion of which is interurban, and also because to those who are not acquainted with New York City conditions and companies there was a confusion between the name of the company and that of the Interborough Rapid Transit Company, which owns the subway and operates the elevated roads in the city. The new name will properly identify the enterprise with New York, and is interesting as being a return to the form of name which was generally in use some fifteen or twenty years ago.

"Electricity," of London, credits to a lady correspondent of the "Chicago Daily Tribune" the solution of the problem of women getting off street cars backwards. It seems that the method of operating cars is at fault, and not the ladies themselves. Cars in the United States, unlike those in England, run on the right, instead of the left, pair of rails, and here is where the secret is. As the lady in question points out, the left arm is essentially a carrying arm, for dealing with parcels, children and such like impediments, leaving the right arm and hand free for protection and for grasping any necessary support, such as the hand-rail of a car. This reversal of the natural order of things caused the accidents that are so frequent.

CHICAGO UNION TRACTION PROPOSED IMPROVEMENTS

Judge Grosscup addressed the Corporation Counsel of Chicago at his court, Nov. 21, regarding the improvements proposed by the receivers of the Chicago Union Traction Company. Judge Grosscup said:

"Along with the mayor, the members of the Council and the people of this city, the court is hopeful that an early solution of the whole street car problem, carrying with it complete rehabilitation, will be reached. The suggestion contained in the corporation counsel's letter to the transportation committee may have in it the basis for such a solution. If put into concrete form it will be carefully considered by the court and will be brought to the consideration of the several companies constituting the interests in the court's keeping. But pending any solution—especially if the questions underlying the problem should have to go to the Supreme Court of the United States—it is certainly desirable to make such immediate improvements as will give the public a better service while fitting in with the system when complete rehabilitation comes.

"The modified leases of last August and the action taken by the court at that time and since to keep control of that subject matter have made available to the receivers out of the resources of the company sufficient sums to enable them to make somewhat extended and systematic plans for the improvement of the service.

"These plans, which the receivers are now ready to enter into, contemplate the putting in of underground trolley loops in the business district; the hitching together of the outlying trolley lines where they are disconnected and the introduction into the service of 500 or 600 new, up-to-date electric cars. The underground trolley loops could be made substantially to conform to the plans which have heretofore met the approval of the city in connection with a complete new system of street car service.

"The permits asked for in the application before me would, of themselves, without the carrying out of the larger plan, greatly improve the service; but their chief value is in connection with, and as a part of, such plan. The plan as a whole would give to the people tributary to the Lincoln Avenue lines, the Clybourn Avenue lines, the Belmont Avenue line, the Wells Street line south of North Avenue, the Ogden Avenue lines, the Blue Island Avenue lines and the branches of these lines, continuous electric car service, without change, to the heart of the city, and around the loops contemplated.

"It would enable the people traveling on these lines to alight and get on at any place around the loops nearest their place of business or destination; to make the trips in a much shorter time than is now consumed; to avoid breaks in their journey by transferring from the electric to the cable lines; and it would relieve the lines not electrified of much of their present burdens.

"One hundred new cars have already been ordered and are to be delivered Jan. 1. The receivers, with the resources at their disposal, will be able to add to these from thirty to forty cars each month until the 500 or 600 contemplated are in use.

"Whether such plans shall be entered upon as a part of existing rights under the existing law and ordinances, even though no permits are granted, is one question; whether the improvement to the service contemplated shall by consent of all parties be entered upon is another question. The two questions must be kept distinct.

"The corporation counsel has advised the denial of the permits on purely legal grounds; but he has accompanied his opinion with the suggestion that the Council had full power in the premises. It has been stated that there is some fear on the part of the Council that the permits asked for might affect unfavorably to the city the legal questions involved. This need not, it seems to me, be the case. The improvements can be put in without adding to, subtracting from or in any way affecting the attitude of the parties to the street car situation or their legal rights. I take it that this is the view of the corporation counsel, and that he and Mr. Miller could readily draft a proviso that would permit the introduction of these improvements, leaving untouched the legal status.

"This being the case, it seems to me that we may expect that the City Council will, pending a final settlement of the street railway problem, permit the receivers to devote the resources at their command to the improvements suggested.

"I have been speaking, of course, only from the standpoint of the improvements as a business proposition. Whether the court would have power, apart from the granting of these permits, to go ahead and put in the improvements is another question upon which I have not formed an opinion. The question of the permits, I understand, is now before the Council. I will not, therefore, enter upon a hearing of the legal question at the present time, but will set it down for Dec. 3 next at 10 a. m."

Corporation Counsel Tolman agreed upon Dec. 3 as the time for presenting the views of the City Legal Department upon the matter. The mayor has expressed himself as favorable to whatever permits for improvements can be made without prejudicing the city's legal rights in the franchise controversy. The reason for the denial of these permits for temporary improvements heretofore has been mainly that it was feared such permits might be construed as an admission on the part of the city of some legal rights of the company under the ninety-nine-year act, which rights the city has denied. A proposition, somewhat indefinite in form, has been made by the committee on local transportation that one solution of the Chicago Union Traction franchise matter might be the purchase by the city of the various lines at an early date, but this has not assumed a definite form and no opinion has been expressed upon it by the receivers of the Chicago Union Traction Company.

Arguments before Judge Grosscup on the validity of the ninety-nine-year act as affecting the Chicago Union Traction franchise will be held Jan. 16, 1904. The city attorneys announce that the city will then be fully prepared to present its case. David T. Watson, of Pittsburg, has been engaged as special counsel for the city to argue this case. Mr. Watson is well known through several prominent cases in which he has recently figured. He represented the United States before the recent Alaskan boundary commission and was also connected with the Northern Securities case.

CHICAGO STRIKE SETTLEMENT

A settlement of the Chicago strike was effected at 1 a. m. November 25, when an agreement was entered into between the representatives of the company and the union, after a session lasting ten hours. To this compact the Council committee, the mayor and the company and union representatives were parties. The company secures practically all the important points for which it took a positive stand at the beginning. The right is reserved by the company to hire such men as it pleases, and to take back only those who have committed no violence during the strike. The question of wages may be arbitrated, the decision to be reached by a comparison with rates paid for similar service in other cities. The present scale of wages paid by the company is not to be considered in this connection. It is likely that this will result in a reduction of the wages of some of the men, while in other cases an increase will probably be paid. The company's power over the men is to be absolute. It is to have the right to hire, discharge and discipline men without union interference or arbitration. The strike has resulted in a big loss to the company, the citizens have been greatly inconvenienced, and the union has met with a crushing defeat.

In the last issue of the STREET RAILWAY JOURNAL an illustrated account of the first week of the great strike of the Chicago City Railway was given. The rioting which marked the first days of the strike greatly diminished as time went on, and a thorough police protection was maintained. The Wentworth Avenue electric line was the first one opened, and later, the Halsted Street electric line and the Cottage Grove Avenue and State Street cable lines were opened. Owing to the danger from mobs, however, cars were only operated during such hours as they would be least likely to disturbance from the hoodlum element.

An attempt was made on Monday to wreck the cable system at Sixty-third and State Streets, when steel rails slipped between the 4-ft. spokes of the big wheel on which the State Street cable revolves caused more trouble than any other barricade the strikers have yet constructed. The rails were not noticed when the cable was started, and as a result they twisted and bent the great spokes of the wheel all out of shape, stopping the wheel and threatening to put the line out of service for the day. The obstruction was found in time to save the cable, and men were set to work sawing the rails in two. They were so twisted by the spokes of the turnwheel that they could not be extricated. This caused a delay of a half hour in starting the State Street line.

Much indignation has been expressed over the action of the teamsters and firemen in repudiating their agreement not to indulge in a sympathetic strike. Some of the national labor leaders have expressed themselves very strongly on this subject, and have announced that the charter of the local teamsters union, which violated the agreement, would be taken away. A mass-meeting of labor unions was held at Tattersall's Sunday, Nov. 22. The resolutions passed at that meeting were about as nearly unadulterated rot as ever finds its way into print. The mayor and City Council were called upon to withdraw police protection from the company's cars. One resolution says that the company "has demanded and has received the protection and assistance of one-half or more of the entire police force of the city in the pursuance of its arbitrary and wicked course, in consequence of which one-half of the law-abiding citizens of the city are denied police pro-

teetion altogether." Another resolution sets forth that the company for more than ten days has "by its obstinacy and lawless conduct utterly neglected and refused to give the people of the south side of the eity any transportation whatever or to perform any of its duties, thus causing great hardship, annoyance and suffering."

Of course, the "law-abiding citizens" (?) who passed these resolutions and who demand that the city grant the company no more franchises have nothing whatever to do with the bricks that' have been thrown, or with the necessity for police protection on the cars, nor are they in any way responsible for the fact that the company has been unable to give the public regular service since the strike began. Oh, no! These resolutions, however, are somewhat in line with the regular attitude of labor leaders in every strike. They hold up their hands in horror at the mob violence which always occurs, but never fail to enter an emphatic protest against any display of police or military force to prevent riots and mob rule.

IMPROVEMENTS ON THE CHICAGO & MILWAUKEE ELECTRIC RAILWAY

The Chicago & Milwaukee Electric Railway, extending from Evanston to North Chicago, is making very extensive improvements on its line and in its power equipment. The road was built in 1899, and at that time there was installed a central power plant at Highwood, with two sub-stations, one at Winnetka and the other at North Chicago. The generator capacity of the central plant was 750-kw, with two engines oi 600 hp and 1200 hp respectively. In the sub-stations were installed rotary converters and storage batteries, together with the usual sub-station equipment. At present large additions are being made to all parts of the equipment. The transmission and feeder lines have been increased in capacity by about 100 per cent. The generator capacity in the power plant has been increased by 1500-kw, and the engine capacity by about 2300-hp. For the sub-stations, new buildings are being provided, together with entirely new equipment in the way of rotary converters, transformers, switchboard apparatus, etc., all of the latest pattern, and of sufficient capacity to provide for ihe present additions with liberal allowance for future increase in business. New track has been laid from Lake Forest to Libertyville, this being part of the proposed extension to connect the system with the Wisconsin Central, a steam road. Besides this, it is proposed to double-track the whole line from Highwood to North Chicago, thus giving double-track service over the total length of the original line. The Arnold Electric Power Station Company, which designed and constructed the original power station for the road, is consulting engineer for the betterments to power plant and distributing system now in progress, but the work is to be carried out by the railway company's force.

THE NEW WORTHINGTON PLANT

An extensive pump manufacturing plant, the largest in this country, and probably in the world, is now under construction at Harrison, N. J. It is to be occupied by the firm of Henry R. Worthington, who employ about 3,000 men in the present works at South Brooklyn, L. I., and Elizabethport, N. J. The new plant at Harrison will accommodate from 4000 to 5000 men, and will eost in the neighborhood of two million dollars. It consists of a main machine shop with side galleries over 1006 ft. long, an erecting shop 592 ft. long, and of the same section as the machine shop, and a high erecting shop 210 ft. in length, and four galleries in height in the side bays connecting the two shops. The main foundry is 600 ft. in length, and there is also a special foundry for small work, 410 ft. in length, with a building 200 x 60 ft. in size, for cleaning castings, connecting the two. The pattern building is four stories high and 550 ft. long, and is divided by fire walls into four sections. The north section will be used for offices and drafting rooms; the adjoining section for the pattern shop and the balance of the structure for pattern storage. The power-house, which will be equipped with the most modern boilers, engines and generators, is a building 172 x 102 ft. Electric power distribution is to be employed throughout, and the grounds will be illuminated by electric are lights. There are many other buildings which will be used for packing, storing and shipping goods, etc. The buildings are so arranged that additions can be built when the work demands it. All will be connected by a complete system of railroad tracks entering the ends of the buildings and placing the works in direct communication with the Delaware, Lackawanna & Western, The Erie and the Pennsylvania Railroad systems. The new plant will be devoted entirely to the manufacture of waterworks machinery, water meters, cooling towers, condensers, feed-water heaters, centrifugal pumps and steam pumps of all kinds.

SUBWAY IN MANHATTAN TO CONNECT BRIDGES

The committee on plans of the Rapid Transit Commission, of New York, composed of President Orr, John H. Starin and Comptroller Grout, held a conference last Saturday with representatives of the Brooklyn Rapid Transit Company, and discussed plans for railroad service across the Williamsburg Bridge. The conference was held behind closed doors, but after the meeting was over it was stated that the plan had been put forward to build a four-track subway running from the bridge to Delancey Street. Manhattan, to Centre Street, and thence down Centre Street to connect with the Brooklyn Bridge. It was also suggested that surface cars be run on Delancey Street as soon as that street is widened. These recommendations will be made to the Rapid Transit Commission at an early meeting. Comptroller Grout is reported to have said that President Winter, of the Brooklyn Rapid Transit Company, is well pleased with the subway idea. Mr. Grout said it is his intention to use all possible effort to have condemnation proceedings commenced at once on the Delancey Street property, and that he will see to it that there is no undue delay in carrying out this improvement to provide an approach to the bridge. A plan formerly advocated provided for the construction of an elevated structure to connect the bridges.

SERIOUS ACCIDENT ON THE BROOKLYN ELEVATED

An accident in which two men were killed, nine other persons injured and four cars practically destroyed by fire, occurred on the Fifth Avenue line of the Brooklyn Elevated Railroad at Thirtieth Street, on Thursday, Nov. 19. One train was run into in the rear by another train and the cars were telescoped. This caused the fire, which soon enveloped the trains in flames. A wild panic ensued among the passengers, who rushed madly to the doors and windows and made their way as best they could along the track to the nearest station.

The trains in collision were one bound to the Brooklyn Bridge from Sixty-fifth Street and a train that had just started from the station at Thirty-sixth Street for the same destination. It was rush hour, and exactly 5:05 p. m. when the Sixty-fifth Street train left its station; the train from Thirty-sixth Street followed five minutes later. The Thirty-sixth Street train came to a standstill at Twenty-ninth Street, because a fuse blew out, it is said. The conductor of this train says that he ran to the rear platform and held a red lantern as a signal to warn the approaching train. Despite this signal, the Sixty-fifth Street train bore down on the stalled one and crashed into it. As stated, fire followed the collision almost immediately and it was necessary to call on the fire department for assistance in extinguishing the flames.

It is hardly probable that the accident will ever be fully explained. The motorman of the Sixty-fifth Street train was found dead at his post, as was also the conductor of that train. The theories as to the cause of the accident differ, but the most likely one seems to be that the motorman of the second train fell dead at his post from heart disease a moment or two before the collision occurred.

Happening as it did at the rush hours, the accident caused a complete tie-up on the Bay Ridge and Bath Beach divisions of the line and led to a great jam of South Brooklyn and Suburban passengers at the Park Row end of the Bridge and also at the Bridge terminal of the elevated railway in Brooklyn.

An investigation of the aecident was begun at once by the railroad commissioners. About the only thing emphasized at the hearings was that the company had taken every possible precaution to prevent an accident by equipping cars and stations with proper signals and apparatus. It was also shown to the evident satisfaction of the State officials that all the signals and apparatus were in proper running order at the time of the collision of the trains.

THE LAMME SINGLE-PHASE ELECTRIC RAILWAY SYSTEM

A section of the track of the Westinghouse Interworks Railway, at Pittsburg, Pa., has been equipped with the Lamme single-phase motor system. This railway connects the different Westinghouse works at East Pittsburg, Wilmerding, and Trafford City, and has sufficient straight track so that a speed of 45 miles per hour can be attained. A single car equipped with four 125-hp single-phase motors has been in operation for some time on this line with very satisfactory results. The car accelerates quickly, and the sparking at the commutator is no more noticeable than with a direct-current equipment. The line yoltage used is 1200.

REPORT OF THE LONDON TRAFFIC COMMISSION

The members of the sub-committee of the London Traffic Commission, who were in America about a month ago, have just made a preliminary statement to the London press in regard to their visit to the United States. The trip was regarded as highly successful in accomplishing the objects sought, which were, "to inquire into the various means of transit and transport existing in the principal cities of the United States, with their relative efficiencies from the public point of view; to ascertain the respective authorities from which, and the procedure according to which, franchises and charters relative to rapid transit are granted in the principal States, and to investigate the extent and nature of the control exercised over the carrying into effect of the powers granted by such franchises or charters."

The committee visited New York, Boston, Washington and Philadelphia, where the method of handling the traffic in each city, especially at the congested points, was inspected. In addition to information on purely traffic matters the members investigated the nature of and procedure of granting franchises in New York State, under which railroads, elevated railways, and subways are constructed, and the character of the powers of control therein vested in or reserved to the State Board of Railroad Commissioners, the Rapid Transit Commission, or the City Council.

Very full statistical information as to the operation of the Boston subway and elevated railway system was secured from General Bancroft. In Massachusetts, also, the committee met the Massachusetts Board of Railroad Commissioners, from whom they obtained a comprehensive account of the system in Massachussetts of granting franchises for railroads and railways, and of the extent and character of the control exercised by the board over the subsequent working. In regard to the main line railroads entering Boston, the commission obtained much valuable data, particularly as to the attitude adopted by the trunk line companies in the matter of rapid transit.

In Washington, the committee was received by the President of the United States, who evinced great interest in the matter of the inquiry, and also visited the Inter-State Commerce Commission, from whose library a great deal of valuable information relating to the subject matter of inquiry was obtained.

In Philadelphia the committee reports that it was also given full facilities for inspecting the surface systems, and discussed their operation and the construction of the proposed subway with the street railway officials. The Western cities were not visited, but the testimony offered in New York by Mr. Vreeland and Mr. Arnold related to much of the work outside of New York City, and Mr. Arnold's testimony was particularly valuable in regard to Chicago. In addition to the regular investigation the secretary of the committee, Mr. Macassey, made a special trip of inquiry to Chicago, Detroit, Cleveland and Albany, as well as to certain other cities, and the information obtained by him was laid before the committee. The members of the committee concluded their preliminary statement by saying that they were highly gratified by their hospitable reception in the United States, and by the efforts of all connected with rapid transit in its various forms to give them such information as they required. Where such was not at the moment available, a special investigation was at once ordered, and no trouble was spared to make the visit as instructive and profitable as possible.

PROGRESS OF GERMAN ELECTRICAL CONSOLIDATIONS

The consolidation of the Siemens & Halske Company with the Schuckert Company of Vienna, which was carried out some time ago by the Austrian Landerbank, of Vienna, and the Deutsche Bank, of Berlin, is now so far advanced that the united working of the two companies will commence Jan. 1, 1904. This amalgamation includes the Siemens & Halske works at Vienna and Leopoldsan, the branches at Budapest, Graz, Larbech, Lemberg and Olmutz, the Vienna establishment of the Schuckert Company, and the entire plant of the Vienna Electric Tramway Company.

THE MOVING PLATFORM SCHEME AGAIN

It is said that Mayor Low is inclined to give favorable attention to the application of Schmidt & Gallatin, promoters of the moving platform scheme for carrying passengers across the Williamsburg Bridge and through Nassau Street to the Battery. Schmidt & Gallatin offer to pay the city $135,000 a year as a rental of the bridge for its moving platforms. This, they say, represents 4½ per cent on $3,000,000, which they estimate will have to be spent to build the system. They declare that they will put the moving platforms on the bridge and have them working properly inside of three months. They make as a condition of their rental proposition, however, that the city shall allow them to tunnel the necessary streets to the Battery. The promoters say that a system across the bridge proper would not pay, as it would leave people too far away from their destination. They are willing to put the new system on the bridge and stand the loss of operating it until the new tunnel can be built, which, it is thought, would take at least three years. Mayor Low has requested further data from Schmidt & Gallatin, and in the meantime a contract is being prepared for the consideration of the Rapid Transit Commission.

Corporation Counsel Rives sent the mayor an opinion that the franchise desired by the syndicate would have to be granted in the ordinary way. The Board of Aldermen would first have to grant the franchise, and then it would have to be approved by the Board of Estimate and Apportionment and the Rapid Transit Commission.

RAIL WELDING IN A LECTURE ROOM

A meeting of the American Society of Mechanical Engineers is to be held at Stevens Institute, Hoboken, on Dec. 3, at 2 p. m., at which Dr. Hans Goldschmidt, inventor of the thermit process, will present a paper on his process of welding. Dr. Goldschmidt will illustrate his lecture by producing several crucibles of molten iron by his method, and welding, in the lecture room, a 9-in. girder railway joint, a third-rail joint, joints in wrought-iron pipes, etc.

MORE FOREIGN PROJECTS

Construction work will begin shortly on an extensive electric traction system in Guadalajara, one of the principal cities in Mexico. A company called La Electra, S. A., was recently organized to take over the existing mule lines—aggregating about 30 miles—and to acquire the Compania de Luz Electrica de Guadalajara, which operates a 2500-hp steam plant and lights the city. The mule lines will be converted and extended. C. A. Malau is the chief engineer of La Electra. He is now engaged in drawing up plans for the new system. Power to operate the new electric lines will be generated by an hydraulic plant which will be built on the Rio Grande at a point about 2 miles distant from Guadalajara. The initial capacity of the plant will be 1500-hp.

The Compania Ferro Carril Villa Isabel, which operates a short horse road in Rio de Janeiro, Brazil, is to equip its system with electricity.

The Compania de S. Christovao, which controls a mule and electric traction system between Rio de Janeiro and Tijuca, a suburb of the Brazilian capital, located at an altitude of 1200 ft. above the sea level, is about to electrify its main line from the Usina to the Muda along the Rua Con de Bomfim. The portion of the system between the junction to the Alto da Boa Vista, which is now worked by mules, is also to be changed into electric traction. In all there will be about 3 miles of road to be electrified.

STREET RAILWAY PATENTS

[This department is conducted by W. A. Rosenbaum, patent attorney, Room No. 1203-7 Nassau-Beekman Building, New York.]

UNITED STATES PATENTS ISSUED NOV. 17, 1903

744,051. Time Limit Device for Motor Controllers; Fred B. Corey, Schenectady, N. Y. App. filed May 24, 1902. Comprises a dash pot and a step member constructed to prevent a too rapid movement of the controller while allowing a free movement from one contact point to the next.

744,055. Electric Railway System; William Embley and Abraham A. Shobe, Jerseyville, Ill. App. filed April 10, 1903. The hangers in which the conductor is mounted are free to slide in their supports to accommodate expansion and contraction of the conductor.

744,079. Brake for Cars; Sarah H. Kendall, Davenport, Ia. App. filed April 24, 1903. Details of construction of a handle for mechanical brakes.

744,125. Circuit Breaker; Samuel B. Stewart, Jr., Schenectady, N. Y. App. filed Jan. 23, 1901. Relates to improvements in an overhead switch for trolley cars.

744,159. Switch Turning Device; Lewis L. Biglow, Seattle, Wash. App. filed Jan. 31, 1903. Means for throwing the switch from a moving car.

744,168. Automatic Switch; Joseph M. Comer, Spokane, Wash.

App. filed March 30, 1903. A railway switch is thrown by a magnet operating through a pawl and ratchet and levers.

744,187. System of Electric Traction; Lucius T. Gibbs, New York, N. Y. App. filed April 13, 1903. The vehicles are provided with dynamos and motors and are connected with the line whereby any extensive power generated will be delivered to the line for use by other vehicles.

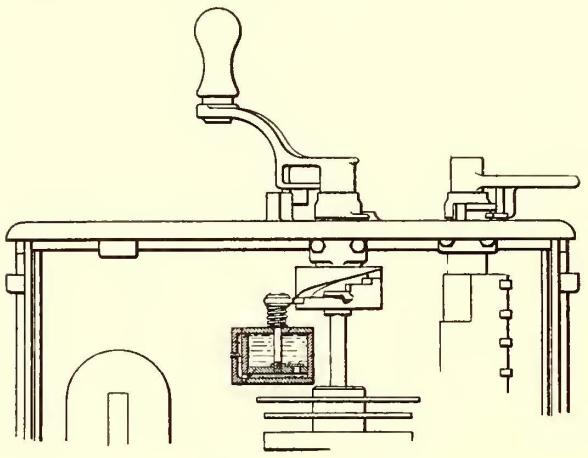
744,221. Car Wheel; David N. Nickerson, Detroit, Mich. App. filed Jan. 5, 1903. The hub of the wheel is allowed diametrical movement upon cushions of sufficient resiliency to largely overcome vibration.

744,246. Electric Railway System; Abraham A. Shobe and William Embley, Jerseyville, Ill. App. filed April 10, 1903. The conductor is so mounted as to permit of its expansion and contraction without injury to its support or insulation.

744,247. Electric Railway System; Abraham A. Shobe and William Embley, Jerseyville, Ill. App. filed April 10, 1903. An insulated conductor for the return current is mounted upon the traffic rail.

744,248. Railway Signaling System; Judson Shoecraft, Eskridge, Kan. App. filed Aug. 30, 1902. Details.

744,261. System of Electric Lighting for Cars; Charles P. Tolman, Boston, Mass. App. filed July 30, 1903. An arc and an incandescent lamp located in the same headlight and provided with automatic means for throwing the incandescent lamp into circuit in case the arc lamp fails.



PATENT NO. 744,051

744,446. Trolley Guide; Milton Walker, Cambridge, Mass. App. filed April 3, 1903. A guide rail located beneath the trolley frog and upon which the trolley wheel runs to properly guide the wheel across the frog.

744,463. Trolley Head; Joseph Bishop, Westbrook, Maine. App. filed March 26, 1903. A device for retaining the trolley wheel upon the wire.

744,513. Automatic Switch Operating Mechanism; Henry T. Dumas, South Hadley Falls, Mass. Details.

744,569. Car Brake; John B. Leu, Newark, N. J. App. filed June 13, 1903. The brake-shoe has a straight under side to engage the track, a concave upper side to receive the wheels and is loosely connected with the forward end of the brake lever, said lever being adapted to lower the shoe upon the track in advance of the wheel.

744,665.—Controller; Thorsten Von Zweigbergk, Preston, England. App. filed April 7, 1902. The combination of a pair of series-wound motors connected together in series independently of the controller, the fields and armatures being thus on a closed local circuit and a controller adapted to convert said local circuit into a derived circuit from the source of current, or form a bridge across it for braking action.

PERSONAL MENTION

MR. T. A. HENDERSON, general superintendent of the Chicago Union Traction Company, of Chicago, Ill., has resigned from the company.

MR. HOWARD S. KNOWLTON, formerly with Stone & Webster, of Boston, has joined the engineering department of the Colorado Telephone Company, at Denver.

CAPTAIN G. D. Howell has been made temporary superintendent of the Erie Rapid Transit Company and the Lake Erie Traction Company, of Erie, Pa., vice Mr. A. C. Harrington, resigned.

MR. M. B. HERLEY has been appointed general superintendent of the Chicago Union Traction Company in place of Mr. T. A. Henderson, resigned. Mr. Herley was formerly traffic manager of the company.

MR. JOHN J. MAHONEY has been appointed general superintendent of the Indianapolis Traction & Terminal Company, of Indianapolis, Ind., to fill the vacancy caused by the death of Mr. Miller Elliott. Mr. Mahoney has been in street railway service in Indianapolis for about twenty years, and was paymaster just before his appointment as superintendent.

MR. CHAS. V. WESTON, of Chicago, has severed his connection with the Chicago Engineering & Constructing Company, of which he was president. His duties as chief engineer of the South Side Elevated Railroad Company, which is about to build extensions, naturally call for much of his time along with other consulting practice which he enjoys.

MR. T. C. CHERRY, for some time manager of the Lorain Street Railway Company, of Lorain, Ohio, has resigned, to take effect Dec. 1, to become manager of the Saginaw Valley Traction Company, of Saginaw, Mich. The new position includes the management of the traction lines in Saginaw and Bay City, an interurban line and an electric light plant.

MR. CHARLES REMELIUS, chief engineer and master mechanic of the Indianapolis Traction & Terminal Company, of Indianapolis, Ind., has resigned. Part of his duties have been assumed by Mr. Charles Hogate, who will be chief engineer of power stations. The foremen of the various shop departments formerly reporting to Mr. Remelius, as master mechanic, now report directly to Mr. James M. Jones, vice-president and assistant general manager. It is understod that Mr. Remelius is considering several offers and is taking a brief rest before making a decision.

MR. E. J. WILCOXEN, superintendent of the Rochester & Sodus Bay Electric Railway Company, of Rochester, N. Y., was seriously injured in a collision between two cars on the Rochester & Sodus Bay line, on Wednesday, Nov. 18. Mr. Wilcoxen was acting as motorman of one of the cars in collision. The vestibule of his car was crushed in, and he was jammed against the front of the car proper. His right leg was broken, his left foot was badly crushed, and he sustained other injuries. After he had been removed to the hospital it was found necessary to amputate the foot that had been crushed.

MR. GEORGE W. SPINK, master mechanic of the San Francisco, Oakland & San Jose Railway Company, of San Francisco, Cal., who was injured Sunday, Nov. 15, while riding in a car on the new system, died Tuesday, Nov. 17, from concussion of the brain. The lamentable accident which caused Mr. Spink's death occurred near the Emeryville subway. Mr. Spink was riding with the motorman for the purpose of observing the working of the trolley, which had been giving trouble earlier in the day. He leaned too far out of the window and was struck by a trolley pole. At the time of his death Mr. Spink also was master mechanic of the Oakland Transit Company and was in charge of the shops of that company. He was a young man, being only thirty-five years of age. He is survived by a wife and two children.

MR. J. R. BEETEM has been elected first vice-president and general manager of the Peckham Manufacturing Company, of Kingston, N. Y., and New York City, and will make his headquarters at the works of the company, at Kingston, N. Y. Mr. Beetem brings with him to this position, an extended and valuable experience in both construction of cars and street railway work, which well qualifies him for the management of the company and the construction of the trucks. Mr. Beetem was born at Carlisle, Pa., and in 1872 entered the employ of F. Gardner & Company, builders of cars and engines at Carlisle, Pa., as an apprentice in the machine shop, and served his time of four years. Later, he became the confidential accountant of this firm, and after it was organized into a stock company, became its general manager and treasurer. In 1890 he became connected with the Jackson & Sharpe Company, of Wilmington, Del., being assistant to President Jackson, in the car department. In 1892 he resigned from this position and became connected with E. W. Clark & Company, bankers, of Philadelphia. Mr. Beetem's first work in street railways was the reconstruction of the Atlantic Avenue Railroad Company, in Brooklyn, N. Y. From there, in the interests of the Clark Company, he largely reconstructed the Scranton system, and made such an excellent record as operating manager that, in 1895, upon the consolidation of the Philadelphia lines, under the Union Traction Company, he was offered the position of general manager of that company. Mr. Beetem remained in Philadelphia for nearly two years, when he resigned and accept a position as vice-president and general manager of the New York & Queens County Railway, of Long Island City, which position he held until May of the present year. He is progressive, with a very wide acquaintance with street railway men and conditions, and has an intimate knowledge of the requirements of trucks in street railway service.