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NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office by 10 a. m. Monday preceding the date of publication, except the first issue of the month, for which changes of copy should be received two weeks prior to publication date. New advertisements for any issue will be accepted up to noon of Tuesday for the paper dated the following Saturday.

During 1906 the Street Railway Journal printed and circulated 426,950 copies, an average of 8210 copies per week. Of this issue 8000 copies are printed.

Stimulating Traffic by Electric Signs

Considering the profits which are being reaped in so many lines of business by the judicious use of electric signs, it is a bit odd that street railway companies have not as yet generally realized what might be done with the electric sign in the way of traffic stimulation. The matter is certainly worth a few moments' thought, as the plans for the coming open season are being carried into effect. Electric signs have, of course, been used extensively to indicate routes on cars and to direct passengers at station platforms, but little has been done as yet to make the fixed electric sign on the busy street effective in advertising the attractions of various pleasure rides on the local trolley cars.

The so-called talking sign has been brought to a high state of efficiency within the last year or two, and the cost of operating even a pretty elaborate affair with two or three hundred, perhaps more, 8-cp incandescents upon it, is a small matter if the street railway company supplies the current. Illuminated electric signs giving the time each minute and pointing out the appropriateness of celebrating the passing hours with a certain highball are frequently seen in our large cities. If the passer-by can be induced in this way to act on suggestions, why should not he be similarly reminded that it is "7.46 P. M.—TIME TO TAKE THE TROLLEY TO FOREST LAKE PARK!" by a talking sign set up in some busy street?

Fixed signs can be made up in a company's own shops at small expense, they cost practically nothing to operate, and there ought to be a profitable field for their use in the coming spring and summer. They will usually be found a cheaper method of advertising than by circulars; in addition, they attract the attention of the man in the street at a time when a car is close at hand and can be taken easily.

Cleaning the Trucks

From the standpoint of appearance there is no more reason for neglecting to clean and paint trucks of cars at regular intervals than there is for neglecting the appearance of any other part of the car, yet many railway companies which pay a great deal of attention to the paint and varnish of the car body seem to have the impression that mud and grease on trucks cannot be seen. At any rate, so far as cleaning is concerned, trucks very often do not get the attention that they deserve. It is safe to say that some trucks which have been in service several years received their last coat of paint in the factory, notwithstanding the fact that the body above them has had its yearly trip through the paint shop and has been subjected to a thorough washing at weekly intervals. An idea of the effect of well-painted trucks on the general appearance of a car can be obtained by placing together two cars of the same type, one of which has recently painted trucks while the other is mounted on trucks which have been neglected so far as appearance is concerned. Such a test, it is safe to say, will convince almost any person that it would be well to give the trucks their share of attention. The argument may be raised that the cleaning of trucks would require a great deal of time. On the first attempt it might be quite an undertaking to get off all the cement-like mixture of dry oil and dirt that has accumulated, but afterwards a reasonable amount of time spent upon them would keep them in good condition. They need not be rubbed and polished like the

body. All that is necessary is to get off the greater part of the dirt with water and then go over the trucks at intervals with oily waste. Aside from the improved appearance of the car, there is another reason why trucks should not be allowed to remain covered with dirt. When they are dirty, fractures of the frames, loose bolts, or other injuries cannot always be seen, or at any rate often are not seen, and a defective truck should be guarded against by every means possible.

Small Blue Prints in Construction Work

There seems to be a prevailing idea that tracings and the blue prints which are made from them should be drawn to a very large scale. The result is that often, no matter what may be the nature of the drawing, the prints are of awkward and unwieldy size. Of course, where there is a great number of small details and dimensions that must be brought out clearly it is necessary to have the tracings and prints of large dimensions. But simple drawings are often made to cover sheets several feet in each dimension when nothing would be sacrificed if the tracing were made even as small as letter size, say 8½ ins. x 11 ins. When drawings are to be used in field work, it is particularly advantageous to have them on small blue prints. It is most difficult to refer to large drawings when the wind is blowing, and at any time, in fact, it is rather troublesome either to unfold a large print or to go to some point where it has been spread out and weighted down every time a person desires to refer to it. On the other hand small prints may be carried in book form in the pocket and may be referred to with some degree of convenience. Where the blue print is used to a considerable extent in outside work it is often possible to make two tracings, one in complete detail for office use, and the other, with many of the minor details omitted, for the field man.

When tracings must be large and in detail for the convenience of construction men and for office use, it will often prove of great advantage at times to photograph them on, say, 8-in. x 10-in. plates and make prints on thin paper from the negatives. All the details would of course be preserved in the photographs. One who has never given the subject thought would be surprised to find how small a photographic reproduction of a tracing can be made without causing the details to become unintelligible. Reference to such reproductions as have appeared in the Street Railway Journal and other technical papers will give a practical example of this plan. With the free use of the camera office work could be greatly facilitated by photographing all of the standard blue prints and arranging the reproductions from them in book form for ready reference.

But it is the construction foreman who has the greatest difficulty in dealing with large prints, and whenever it is possible to do so small prints should be made for his convenience.

Supplying Power for Night Service

The problem of supplying power most economically to cars operating in an all-night service is one of increasing interest as the establishment of small-hour schedules becomes more extensive. The direct unprofitableness of owl car service depends chiefly upon the low density of traffic offered and the relatively high operating expenses per car-mile, taking into account the questions of wages and cost of running power plants at excessively poor load factors. On many roads there is no service of any kind over the tracks between 12:30 and 5:30 a. m.; power houses and sub-stations are shut down completely, and if inspection and light repairs are carried on at car houses, electricity for power and lighting is purchased from the local central station. This is the condition on a great majority of the electric roads in this country. As, however, the size of the system becomes greater, the more imperative becomes the need of providing for at least a limited night service, and the larger the importance of conducting this service economically.

Obviously, the main point to attain in operating a night service as inexpensively as possible is to eliminate the services of all but the most necessary employees. The force of street inspectors needed in the daytime can be practically cut out at night; conductors and motormen should be obliged to operate their own track switches, signal their own grade crossings, etc. As far as is feasible, sub-stations should be shut down and only such of the main power stations as are absolutely needed to provide proper voltage to move the cars on schedule should be kept alive. To facilitate the night service, switches should be closed around section insulators and the whole feeder system tied together. In this way a large area can be fed with the utmost ease from a power plant located perhaps three times as far away from the center of distribution on different routes as would be permissible for giving a decent voltage in the daytime. It is surprising how effective a few neighboring feeders on a city system become at night when they are temporarily tied together to supply a light traffic.

On purely suburban systems connecting with the ends of city lines night service is at present seldom given, and there is no doubt that in many cases there is practically no demand for owl cars. In other instances, however, the operation of a few night cars through the suburban territory would be regarded as a great boon by residents of the second 5-cent zone from the city, and as suburban populations grow the need of night cars running upon one or even two-hour intervals is sure to become more and more insistent. It is not realized by many managers of connecting companies how easily the power supply could be had from a single station, feeding 10 or 15 miles through temporarily connected feeders and trolley lines. Sectionalization of the overload circuits amounts to little or nothing in the face of a sparse night traffic, and if the power is to be metered at the junction points of connecting systems as a basis of monthly charges it is but a simple technical problem to accomplish.

Within the power station which operates all night the labor cost of each kilowatt-hour produced will naturally be high, but by using the lower capacity machines and running as few furnaces as possible, the fuel cost of the service need not be excessive. On all but the largest systems a single generator in a station will handle the night load of the plant with ease, and but one engineer and one fireman are needed to keep the equipment in motion. The load factor is bound to be poor, but if the fires are handled carefully and the feeders combined, the service can be given at reasonable cost, considering its value to the public.

Improvements in Electric Railway Motors

Nothing is more significant of the constant evolution of electrical equipment design than the progress evident in recent railway motor practice. Less than half a dozen years ago the idea was widely held that railway motors had reached a point in design and construction where little additional improvement could be expected, with the two exceptions of single-phase and heavy direct-current locomotive work. The vast majority of railway motors were thoroughly standardized, the capacity of each size and make was getting to be better understood every year, and the selection of motors for new and existing roads was largely a matter of placing an order untrammeled by detail specifications.

During the past three or four years, however, the problem of maintenance has been studied by progressive electric railways as perhaps never before, and every effort has been made by operating men to keep down the cost of repairs and to keep individual motors in regular and continuous service. The weak points of the older designs have become better appreciated as requirements have become more exacting, and it has been seen that there is still room for improvement in securing greater ease of repairs and increased reliability of service, though the actual commercial efficiency and the weight of motors for given outputs may not be susceptible of much improvement. Still, some gain in weight reduction has been made, notably in the new GE-90, which weighs but 2875 lbs, complete, in comparison with the familiar GE-57's weight of 2972 lbs. Both of these are so-called 50-hp motors, the GE-90 representing a design in advance of the 57. The armature weights are 677 and 704 lbs., respectively. These reductions are of course not much over 3 or 4 per cent of the weight of the earlier motor, and their actual decrease in the dead weight to be hauled is not a striking proportion of the total car weight, but when one considers that this dead weight excess is hauled about all day and month after month, up grades and around curves, it is clear enough that a saving in power is the result of adopting the newer equipment. Small though such a saving may be in the case of a single car, it becomes financially effective when multiplied by the equipment of even a single operating division. As for efficiency, it is evidently a very difficult matter to carry the ratio of output divided by input much above 75 or 80 per cent in the present direct-current railway motor, and it is this type which will doubtless handle the great bulk of trolley traffic in this country for not a few years to come.

For the conditions of heavy traffic and high speeds encountered in recent electric railway service the cast steel motor frame continues to meet the requirements, and the provision of hinges to enable the lower half of the motor to be swung down into the pit for inspection or repairs is as general among the later as with earlier motors. All later bearings are designed for oil and waste lubrication, and larger bearing surfaces are being provided to enable motors to make increased mileages without renewal of the linings. In some cases the armature shaft linings are finished bronze sleeves lined with a thin layer of babbitt metal, the babbitt being so thin that it will not allow the armature to rub on the poles in case it is melted out by overheating. In approved types of motors the oily waste used for lubrication is more or less completely packed in oil wells and arranged to bear upon the shaft through suitable holes in the low-pressure side of the bearings as in the lubrication of car journal boxes on steam roads. This reversion to established methods of oiling has already resulted in admirable records as to the life of bearings in heavy service under a wide variety of conditions. Great care is taken in all late motor designs to keep waste oil out of the interior of the motor.

The better mechanical protection of field and armature coils and the use of improved methods of insulation are objects constantly sought by the manufacturers of modern railway motors. Treatments vary with the different factories, but the increasing use of asbestos insulation is noteworthy. Form wound coils, either strap or wire, continue to be favored; commutators are largely built without necks, and are attached to the armature spiders more substantially than in the older types of motor, where vibration between the commutator and the armature core was not unknown, with resulting broken leads and short circuits. The reduction in the weight of brushes and the improvement of brush-holder designs to prevent irregular running and sparking on account of chattering; the deepening of commutator bars for increased capacity and the general use of laminated pole tips to reduce eddy current losses are characteristic features of later motor designs. In view of the fact that bad accidents have sometimes occurred from broken gear cases dropping upon the track at high speeds, special effort has been made to strengthen these parts by the use of malleable iron, three-point suspensions, strengthening ribs and divided supports with prevention of vibration between the upper and lower castings. Cast steel gears and forged steel pinions are now standard practice. In the matter of ventilation—and this is perhaps the most important point in the design of a motor of given efficiency and ability to withstand sudden overloads without sparking—special care is evident to secure a free circulation of air without sacrificing the mechanical protection of the windings. The tendency is to construct the armature so as to draw a large volume of air through the core when the motor is running, and to discharge the air through ducts opening along the exterior. The use of inner or commutating poles to prevent sparking and the further study of the cooling provided by air currents are both certain to be practiced in the near future with a view toward increasing the temporary and permanent overload capacity of the present machines. Of course, in the long run, no system of ventilation can take the place of plenty of iron and copper, and no magnetic means of preventing field distortion can entirely offset the use of faulty pole shapes and dimensions. The modern direct-current railway motor is a remarkably reliable and effective piece of machinery, and its ability to stand abuse is scarcely surpassed by even the induction motor. In these comments no special reference has been made to the recent progress in heavy motor designs for electric locomotive work, the object being to show that there has been no lack of advance in the equipment which bears the brunt of the load in urban and interurban service. There is no question that the future development of very high-powered railway motors depends not a little upon the results obtained in the electrified terminal service at New York, and until these results are made public little can be added to existing opinion as to the most enduring designs.

THE NEW SENECA STREET SUB-STATION OF THE INTERNATIONAL RAILWAY COMPANY, BUFFALO, N. Y.

The Seneca and Elk Streets sub-station of the International Railway Company, of Buffalo, N. Y., with an ultimate capacity of four 400-kw rotaries, became overloaded during the winter of 1905-1906. It could not conveniently be extended, and, as it was located in a section of the city which is flooded at least once each year by the overflowing of the Buffalo River, it was decided in building a new station to locate it outside the flooded district. The new Seneca and Imson Streets sub-station (just completed) is outside the area that is submerged at the times of highest water, and is as near the load-center of the southeastern section of the city as was the old station.

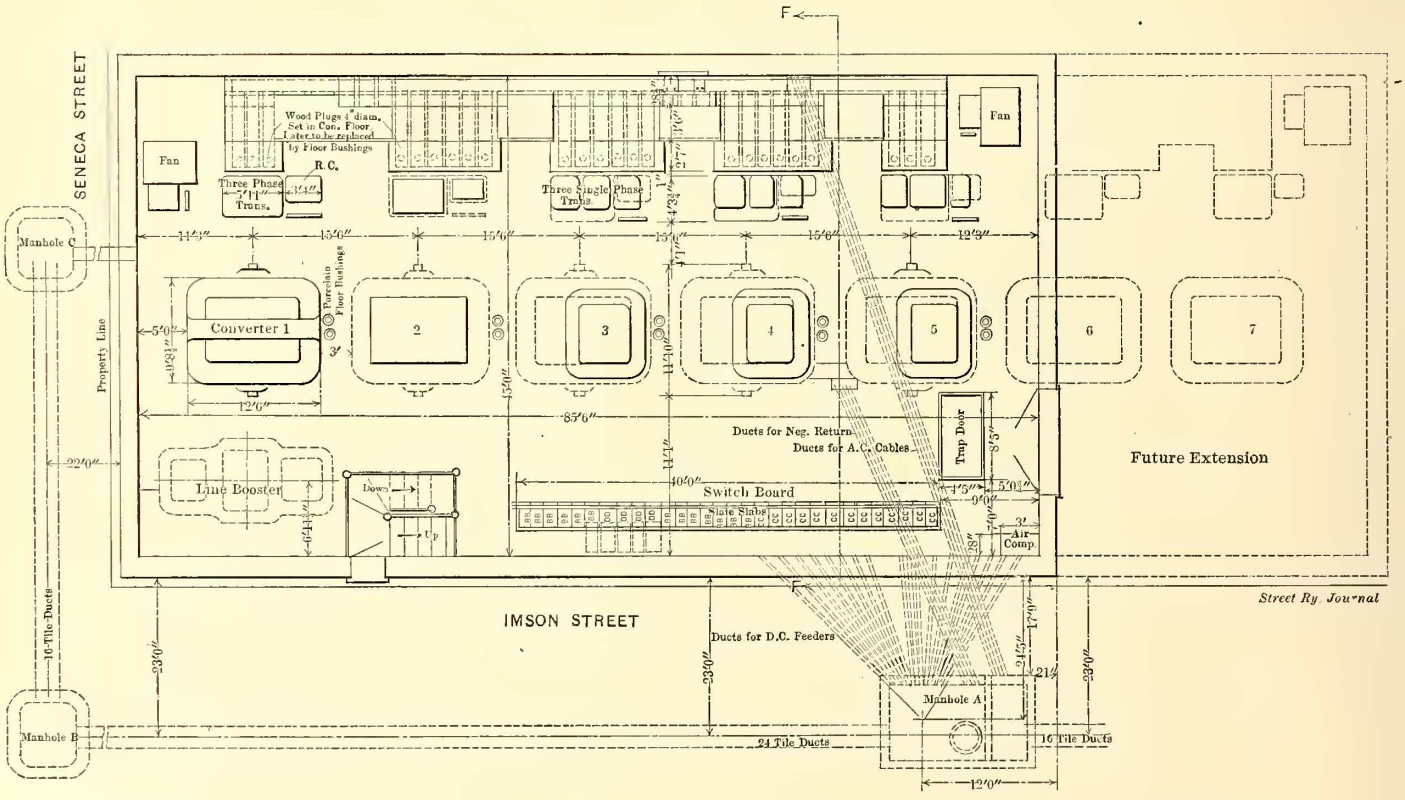
THE SENECA STREET EXCAVATION, WITH PORTION OF ROCK SWEPT CLEAN TO SHOW ITS SMOOTHNESS

THE BUILDING FEATURES

In excavating for the foundations, a solid, flat stratum of perfectly smooth rock was found within a few inches of the depth to which it had been planned to dig. The rock had a slight incline (less than 1 ft. in the length of the building) and it was only necessary to cut out a small channel in this to accommodate sewer pipes for drainage of the building. On this admirable foundation the walls were carried up to grade with concrete. The superstructure is of red shale brick with sandstone trimmings, and concrete floors and roof reinforced with expanded metal and ½-in. iron rods spaced 6 ins. apart.

On account of the proximity to the flooded district it was decided to place the high-tension bus-bar compartments, disconnecting switches, etc., on the main station floor, instead of in the basement as has been done in so many recent installations. This location also has the advantage of avoiding the dust that is always blown into the air chamber by the fans, and it brings the disconnecting switches where the operator does not have to leave the machinery to manipulate them.

In preparing the main floor the heavy I-beams were all arranged so that their tops are at the same level. The various floor openings were then framed in with 6-in. channels resting on top of the beams. The floor consists of 5½ ins. of concrete finished off with ½ in. of Monolith. The process of laying the floor was as follows: After placing the wood forms, the ½-in. round iron rods, spaced 6 ins.

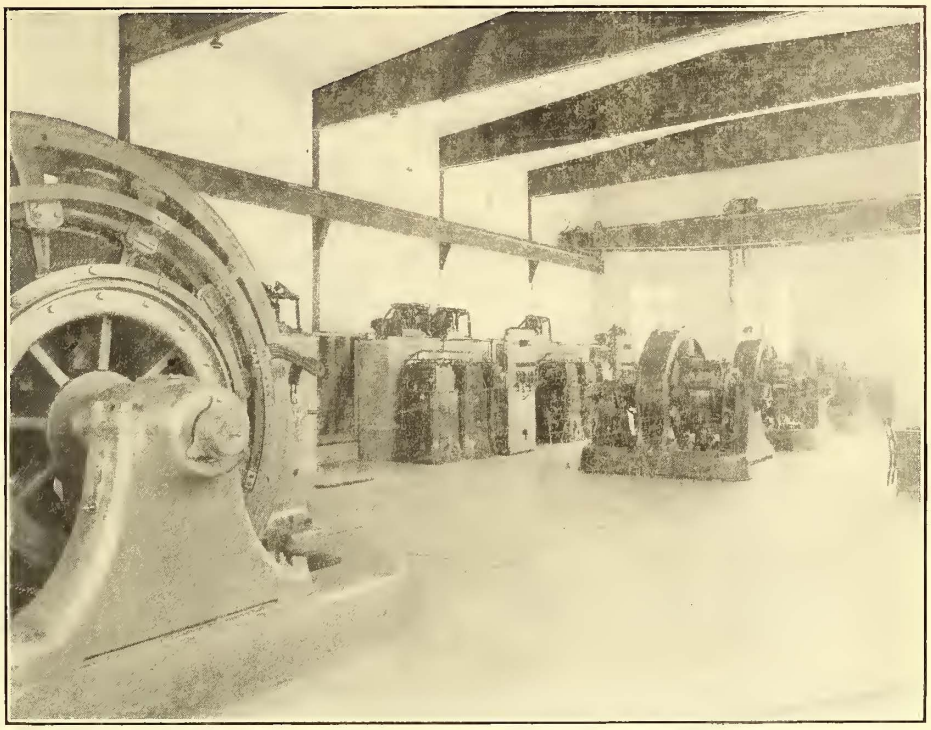


GENERAL PLAN OF THE SENECA STREET STATION, SHOWING THE LAYOUT OF ROTARY CONVERTERS, TRANSFORMERS AND SWITCHBOARD

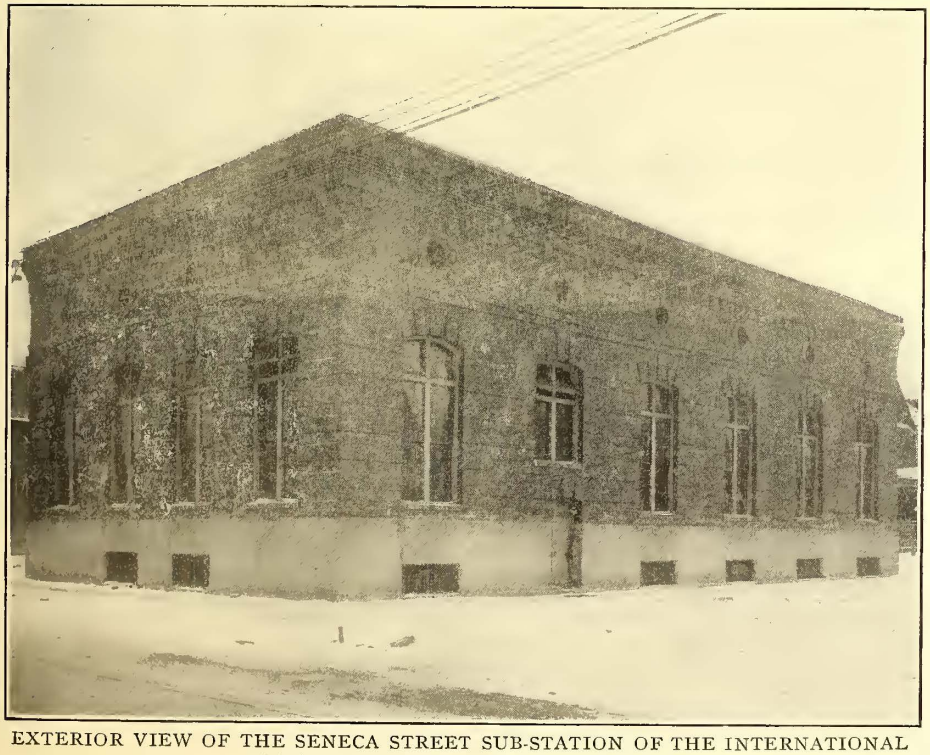
apart, were laid and covered over with expanded metal, the two being wired firmly together. The control-wiring conduit (flexible steel tubing) was then put in place and wired to the expanded metal. When the concrete was poured, the rods, expanded metal and conduit were all lifted together so that no portion of the metal was within ½ in. of the false work.

The result is a strong and most satisfactory floor, smooth on both sides. The Monolith has the advantages of not staining with oil, not cracking, not giving off dust and not being as hard under the feet as concrete. It is also easy to keep clean and can be readily patched.

The use of flexible steel conduit has the advantages of cheapness in laying, perfect symmetry of short bends and no difficulty about keeping the ducts down close to the expanded metal at all points, thus obtaining the maximum possible depth of concrete above the ducts to prevent fractures in the concrete. The flexible conduit comes nearly enough to being water-tight for practical purposes. Where the conduits come horizontally out of the floor they were led through holes of suitable size drilled in the channels and the ends were capped with rigid outlet bushings secured snugly against the channels. Where the ducts pass vertically upward or downward out of the floor a solid steel elbow was attached to the flexible duct, enough of the elbow being embedded in the concrete to render an unyielding outlet fixture. The method of leading the wires from the floor ducts to the back of the switchboard panels is rather unusual and has many advantages over the individual junction boxes, bent tubing in wood sills, etc., that have often been employed. The switchboard panels stand on a wood sill, which in turn rests on two channel irons on edge, with ample space between them for handling and spacing the wires. The conduit projects just through the channels and is capped off snug. Vertical bushings in the wood sill lead the wires from the ducts to the back of the panels. The under side of this opening between the channels can easily be covered with steel plate to prevent injury to the wires from below.

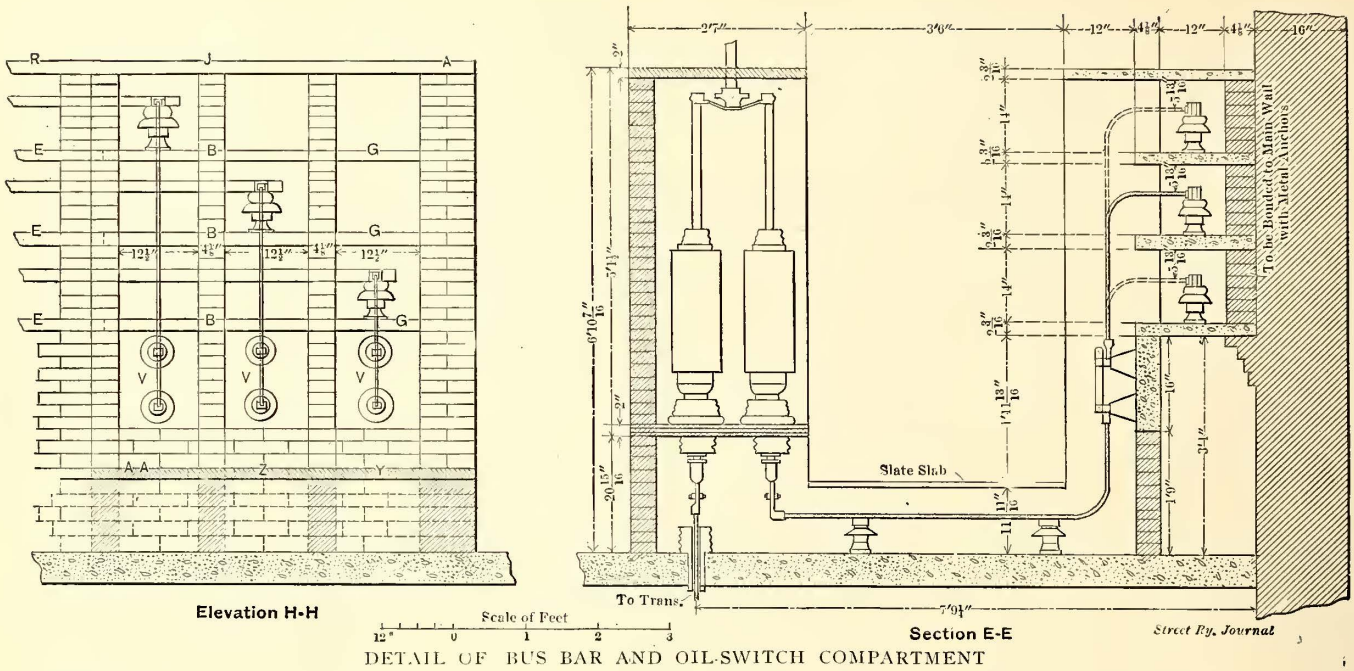


INTERIOR VIEW, SHOWING A 1000-KW ROTARY IN THE FOREGROUND AND THREE 400-KW ROTARIES AT THE RIGHT

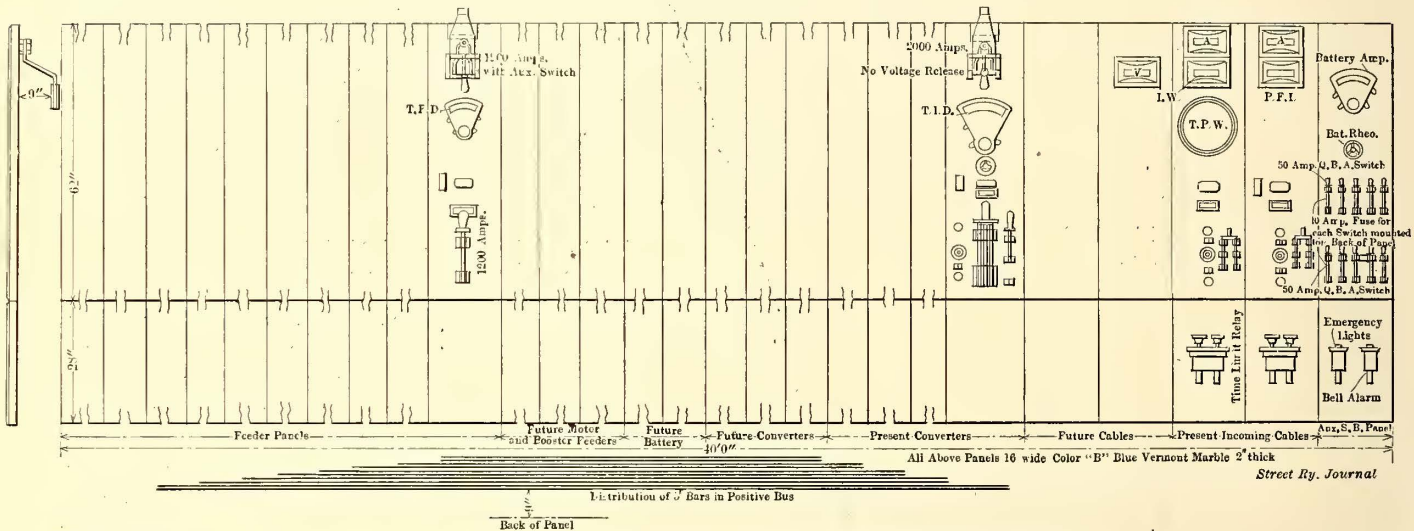


EXTERIOR VIEW OF THE SENECA STREET SUB-STATION OF THE INTERNATIONAL RAILWAY COMPANY, BUFFALO, N. Y.

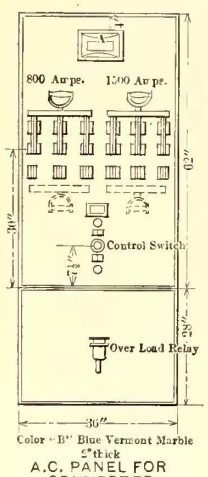
The sill of the large door is at the level of the main station floor and a little above the platform height of a heavy truck, so that apparatus can be conveniently unloaded. To facilitate unloading machinery and bringing it into the station an arrangement is provided by means of which the crane can be used to great advantage. Directly in front of the door and about 15 ft. from the sill, there is a heavy cast-iron plate secured to the floor framing. This plate has a thick portion which comes flush with the top of the finished floor, and through the thick part there is a vertical hole, or circular eye, 3 ins. in diameter, which passes all the way through the floor. Directly under this eye in the main floor is a ring-bolt anchored securely in the rock beneath the basement floor. By fastening a chain in the ring-bolt and



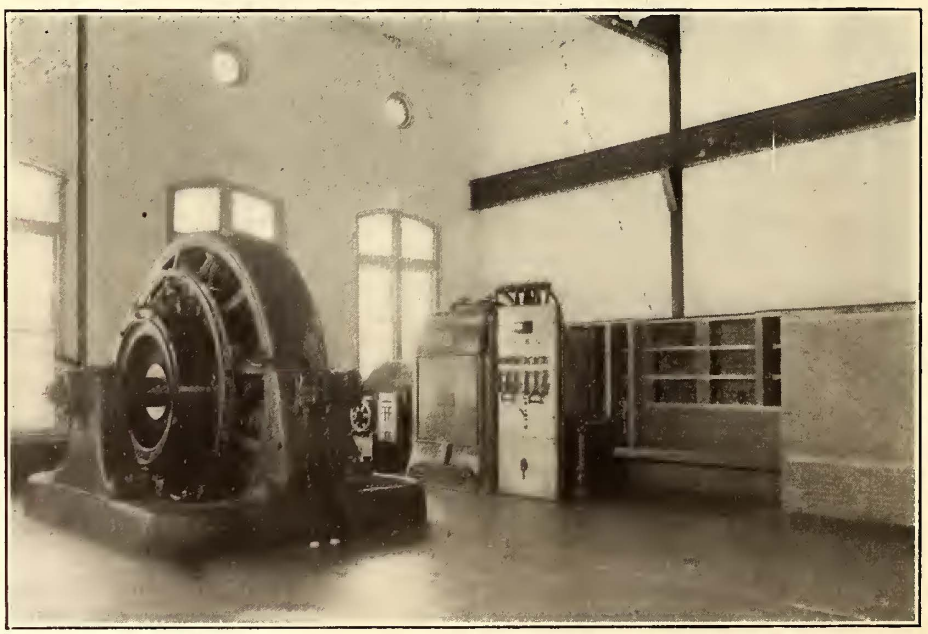
DETAIL OF BUS BAR AND OIL-SWITCH COMPARTMENT



THE SWITCHBOARD IN THE SENECA STREET STATION



A.C. PANEL FOR CONVERTER



1000-KW ROTARY AND BUS-BAR COMPARTMENTS WITH DOORS REMOVED

passing it up through the eye, a snatch-block can be secured at any desired height above the station floor. A cable around the snatch-block with one end attached to the load and the other to the crane hook can be used to haul the load off the truck and onto the station floor, where it can then be picked up by the crane in the usual way. The ring-bolt is set low enough in the basement floor so it can be covered with a checkered plate flush with the floor.

THE ELECTRICAL FEATURES OF THE SENECA STREET SUB-STATION

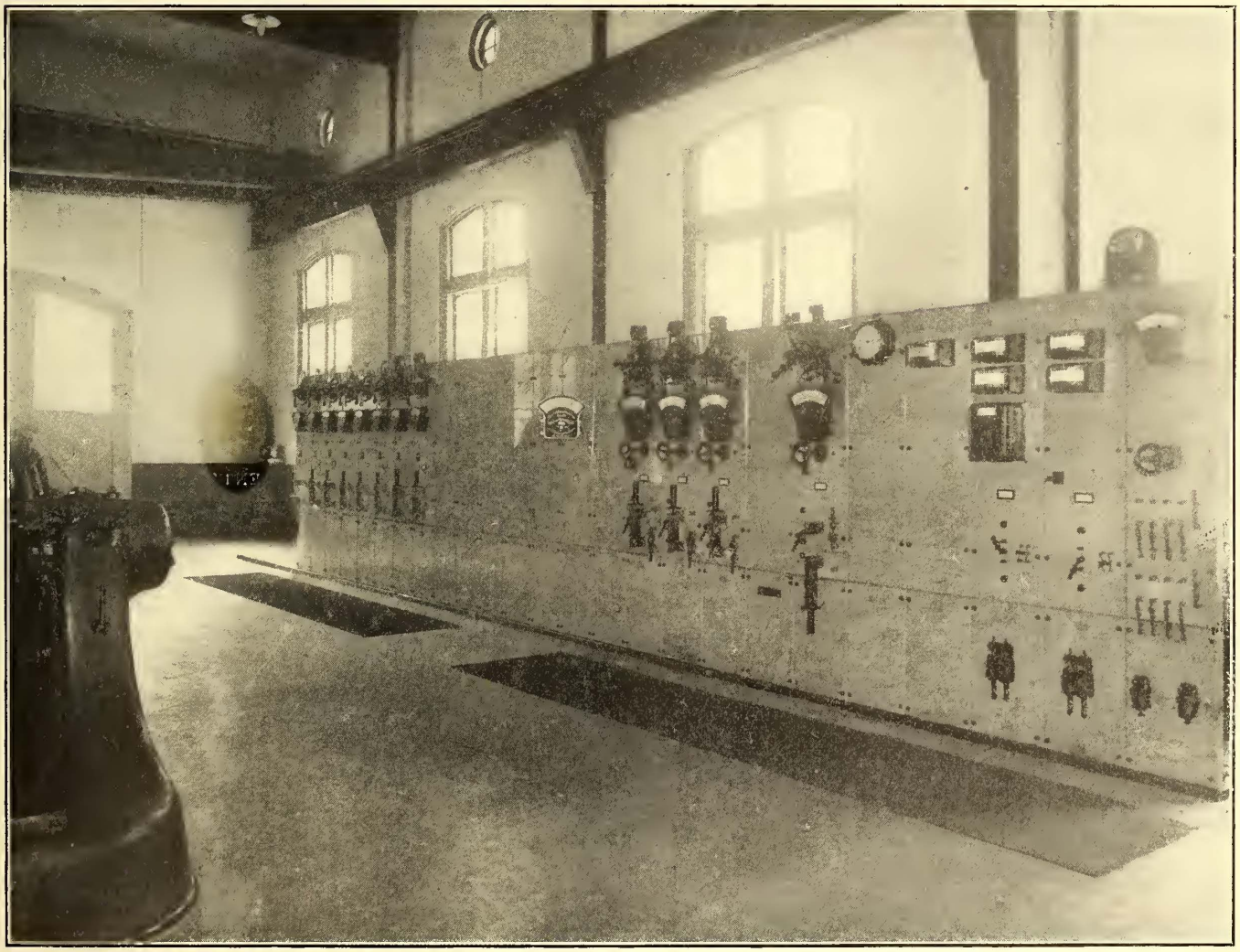
Power at 25 cycles, three-phase, 11,000 volts, enters the bus-bars at one side of the building and passes straight across through the successive switches and apparatus to the point where it leaves on the d. c. feeders at the opposite side of the house. All connections are thus simplified and minimum lengths of cable are required.

The incoming power is measured on a single meter regardless of the number of incoming cables in service. This is accomplished by paralleling the secondaries of the current transformers. Double-throw switches are provided for cutting out and short-circuiting the secondaries of the current transformers on the dead cables.

The d. c. feeders each leave the building through underground ducts directly in line with the centers of their respective panels. This separates the exposed lengths of cable and gets the feeders into the ducts by the shortest possible route. The ducts converge into one large vault under the street.

The placing of apparatus is so arranged that there is ample room around each element to perform usual operations, and the aisles are wide enough so that large, heavy pieces do not have to be raised high with the crane when installing or removing. This crane is of 15 tons capacity and runs the entire length of the building. It is also used in connection with the snatch-block device previously mentioned.

The fans for cooling transformers are located close to windows so that outdoor air may be had when necessary. The ventilation of the whole station has been well taken care of by providing on three sides large windows cut close to the floor and surmounted by transoms, smaller windows near the roof on all four sides, and six 36-in. ventilators in the roof.

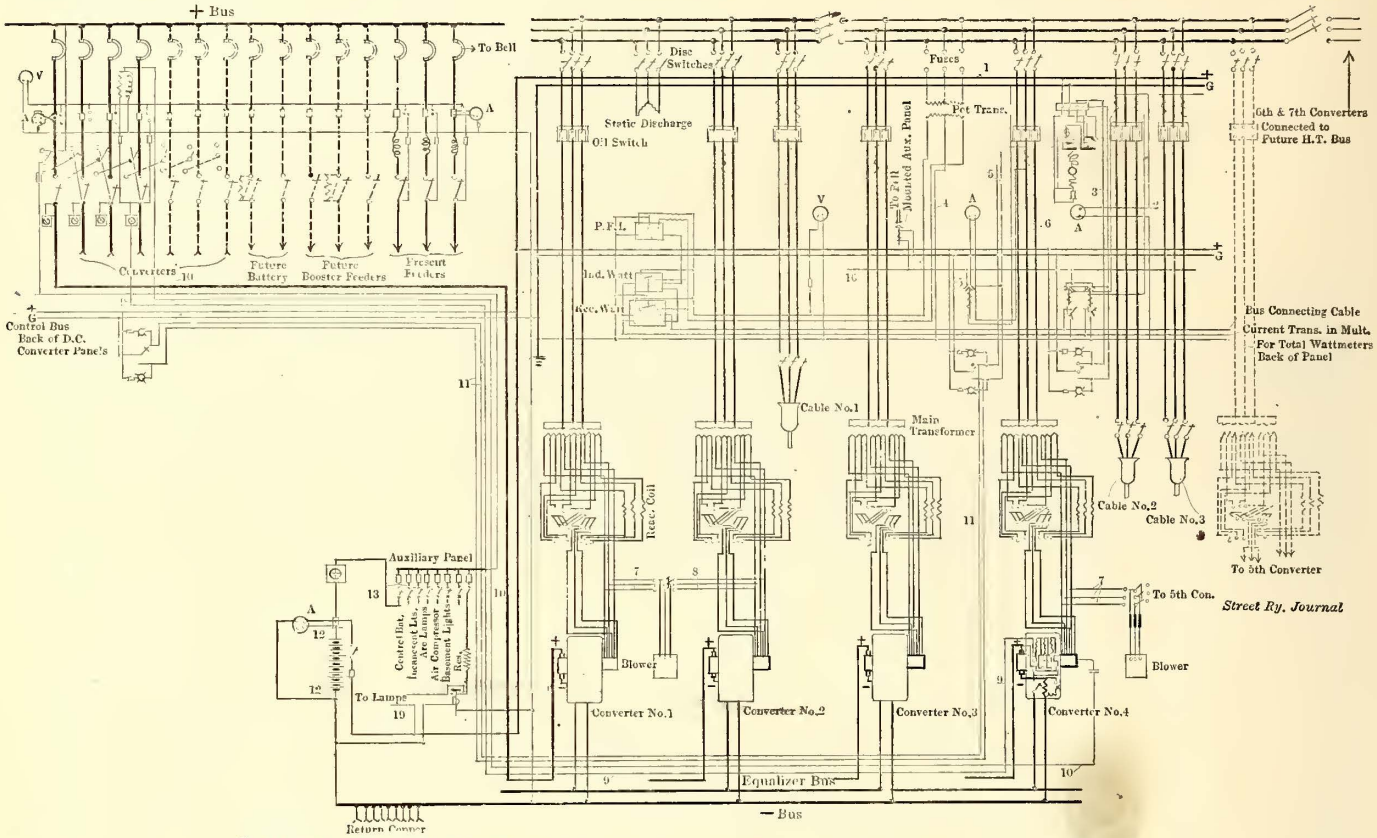


VIEW OF THE SWITCHBOARD IN THE SENECA STREET SUB-STATION OF THE INTERNATIONAL RAILWAY COMPANY, BUFFALO, N. Y. THE PRESENT BLANK PANELS ARE ALSO SHOWN

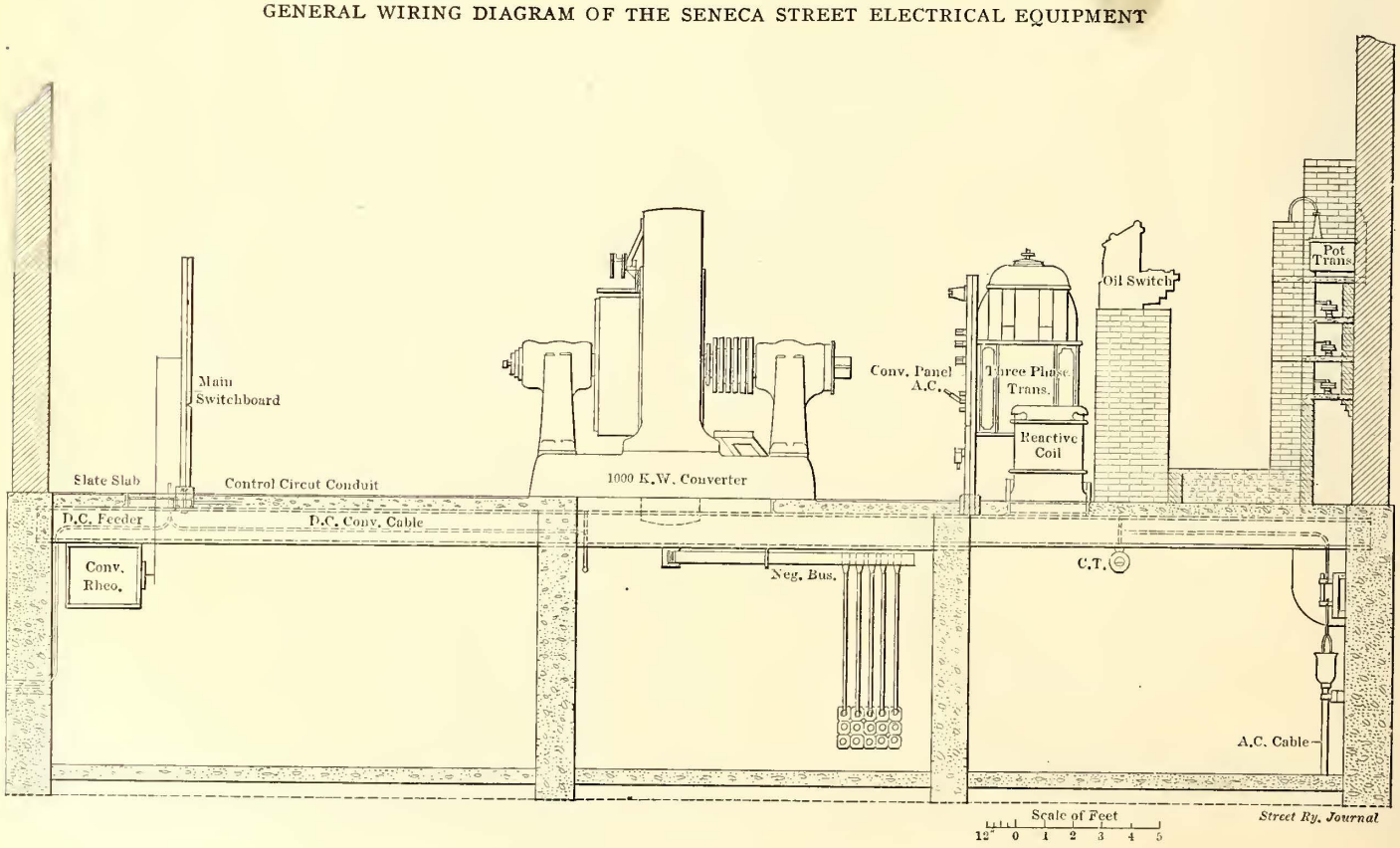
The a. c. rotary panels contain all the switches to be operated in starting a machine, except the field break-up switch. The overload relay and a. c. ammeter are also on this panel, thus simplifying the wiring. These panels are located close to the static transformers and rotaries instead of in the main switchboard. The advantages are that the attendant has fewer steps to take in starting a machine, cannot mistake the panel controlling any particular machine in case of trouble, and the main switchboard is re-

duced in length, thereby bringing the panels the attendant is constantly concerned with nearer together. There are control switches and indicating bull's eyes for the converter

A utility panel is provided in the main switchboard, containing the ammeter and rheostat controlling the storage battery for operating the oil switches; also switches and



GENERAL WIRING DIAGRAM OF THE SENECA STREET ELECTRICAL EQUIPMENT



CROSS-SECTION F-F, TAKEN THROUGH THE SENECA STREET STATION

oil switches on the d. c. rotary panels as well as on the a. c. panels. These switches on the d. c. panels are for use in emergency and are arranged so that they will only open the oil switches.

fuses for lighting circuits and motor-driven air compressor. On the lower section of this panel is a relay which sounds a gong in case any oil switch opens automatically, and another relay which causes six incandescent lamps on the

bottom of the middle roof truss to be instantly illuminated from the oil switch control battery in case of a general power interruption which puts out the regular station lights.

The d. c. feeder panels are equipped with potential receptacles connected to the station voltmeter, so that the attendant can determine, if he drops a feeder, whether or not it is alive from another station and what voltage it carries. The circuit-breakers are all wired to sound a gong when they open automatically.

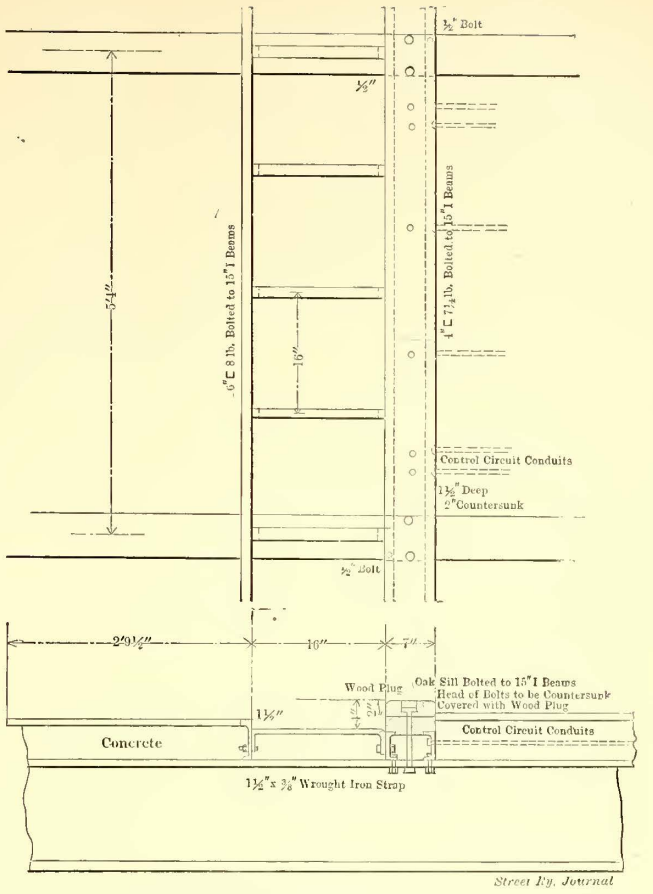
The 1000-kw rotary is started on low voltage taps in the secondary winding of the three-phase transformer, and the 400-kw rotaries are similarly started but are supplied with power through three single-phase transformers.

The oil switch control battery is placed in a separate room in the basement. This room is connected, by means of a pipe laid in the floor, with the air chamber under the transformers, and, as there are windows in the battery room, the air can be changed at any rate desired. Next to the battery room is the store room and station attendant's locker room, and opposite these is the toilet room. The whole basement is ventilated by windows protected by screens and bars.

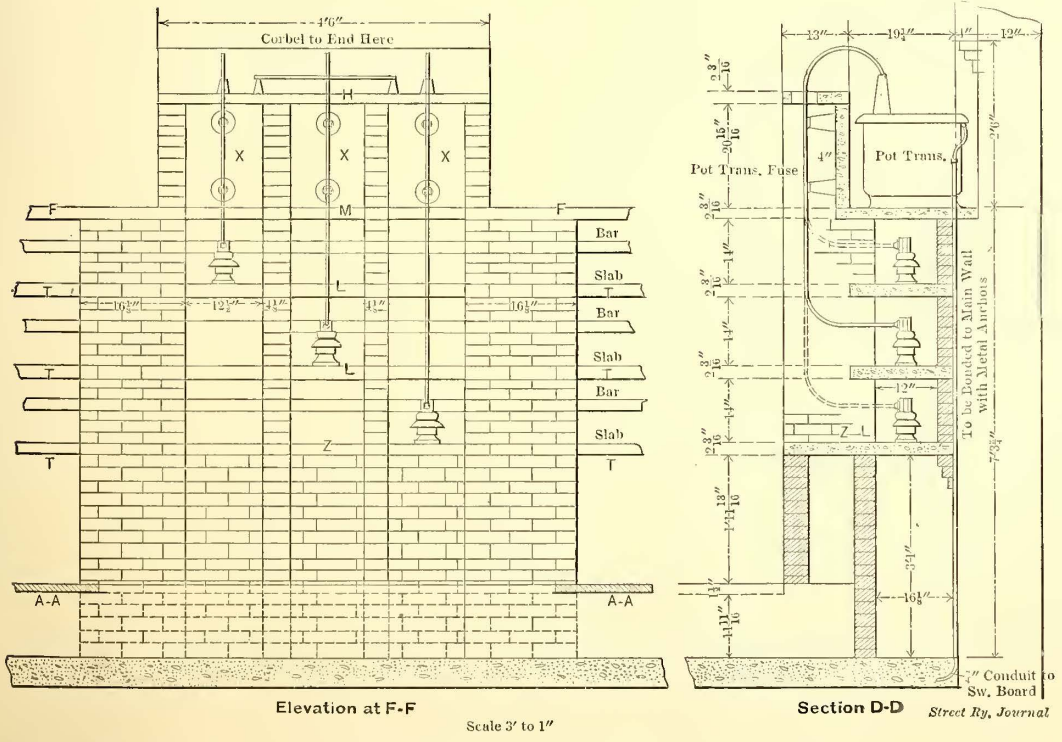
The high-tension bus-bar structure is built up of Kittanning repressed buff brick, laid with ⅛-in. joints in cement tempered mortar. The disconnecting switch slabs and bus-bar barriers are of concrete. The bus-bars are supported on iron-capped, porcelain insulators of the pole-line type. The insulators are on iron pins set in the horizontal barriers. The hanging barriers for the cable disconnecting switches in the basement are built up of transite board glued to wood frames and painted. The bus-bar compartments and switch cells are completely covered with doors of transite board.

The electrical apparatus was furnished and installed by the General Electric Company, the station arrangement and design having been worked out by the engineers of the International Railway Company.

Sufficient land was purchased to accommodate an extension of the converter station, a storage battery house, and leave a driveway all around the property. The present station is complete with room for switchboards, bus compartments and switch cells for five 1000-kw rotaries and a double feeder booster. It now contains one 1000-kw and three 400-kw machines, which latter will be replaced by larger ones as the service requires. Blank panels are provided in the switchboard, and all conduit is in the floor for a station containing seven 1000-kw rotaries, a storage battery with its booster set, and a two-feeder booster set.



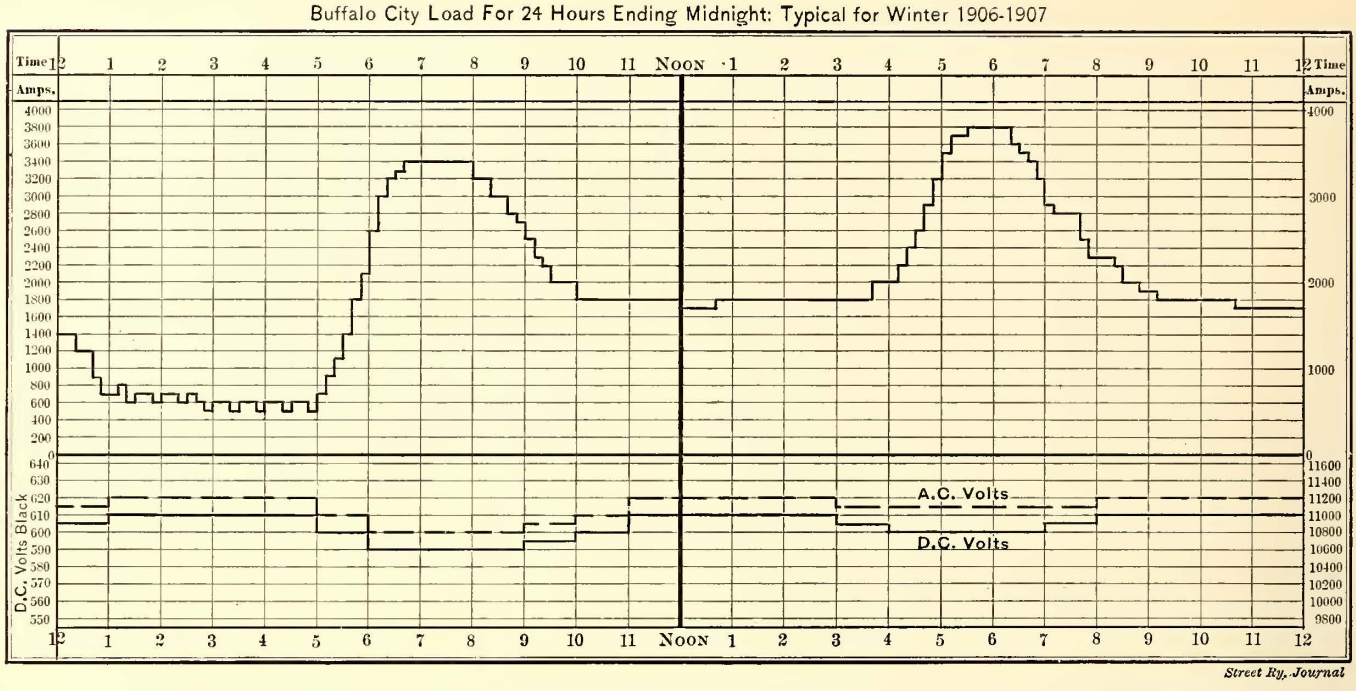
DETAIL OF SWITCHBOARD SLOT



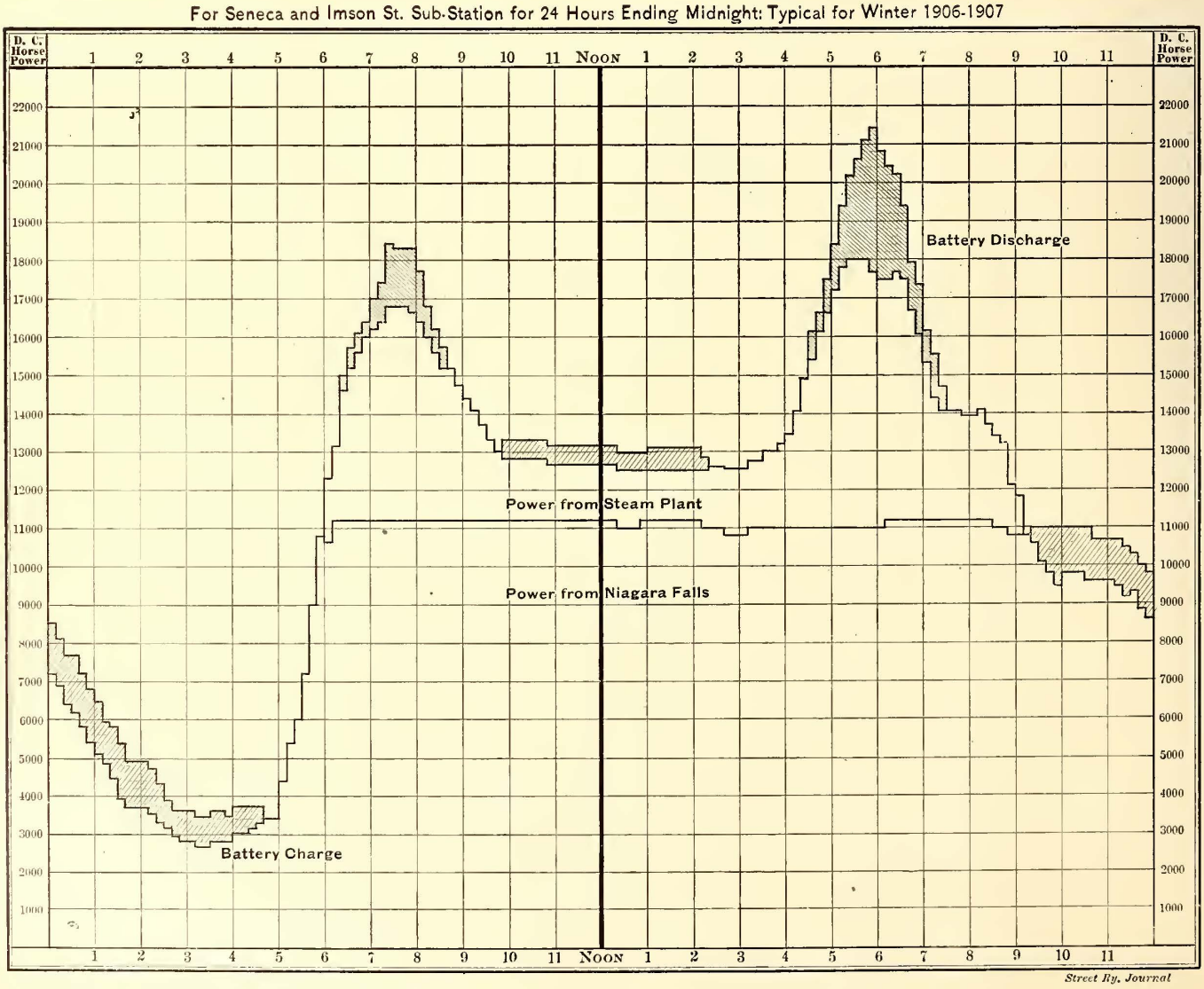
DETAIL OF BUS-BAR COMPARTMENT, SHOWING THE LOCATION OF THE POTENTIAL TRANSFORMERS AND FUSES

BUFFALO POWER CONDITIONS AND SUPPLY

The southeast section of Buffalo is growing rapidly, and with the mustering into service of the heavy, electrically-heated "5000-type" cars it is expected that the new sub-station will soon carry a load that will show no too great margin of reserve capacity. It is not to be expected, however, that the section which can be economically fed from this station will ever produce a load beyond the capacity to which the station can conveniently be expanded.

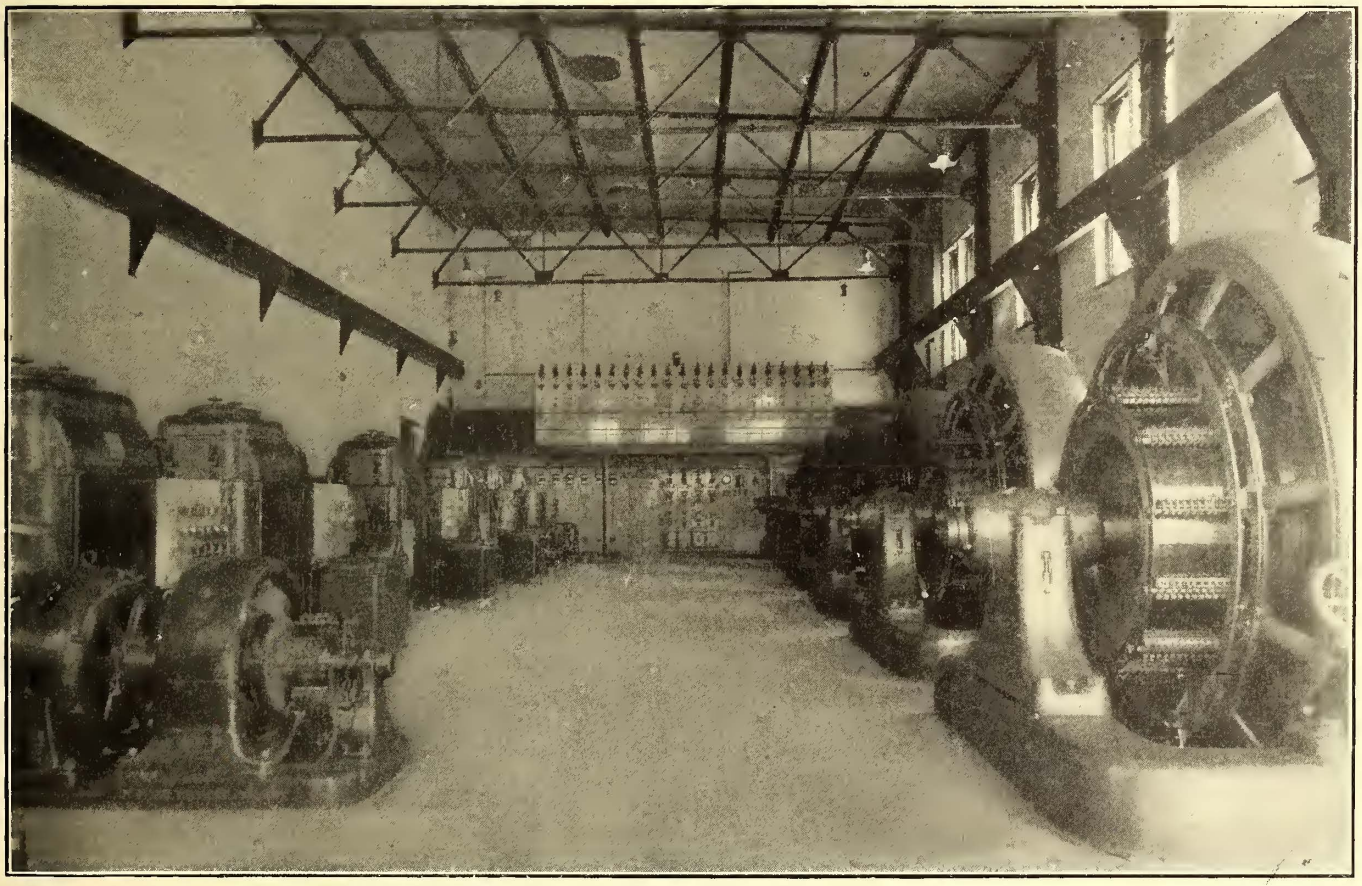


TYPICAL DAILY WINTER LOAD DURING 1906-1907 COVERING THE BUFFALO CITY LINES OF THE INTERNATIONAL RAILWAY COMPANY



TYPICAL LOAD CURVES OF THE SENECA AND IMSON STREET STATION, STEAM-ELECTRIC AND HYDRO-ELECTRIC POWER WITH BATTERIES

The new Seneca and Imson Streets sub-station is supplied with power by means of underground cables of the Cataract Power & Conduit Company, Buffalo distributors of power from the Niagara Falls Power Company and Canadian Niagara Power Company. The International Railway Company has a steam plant in Buffalo which supplies a. c. power in parallel with the Niagara Falls power to some of its other sub-stations, but the cables to this particular sub-station are not connected with the steam plant. The largest Buffalo sub-station is that at Virginia and Washington Streets, containing six 1000-kw rotaries, a motor-generator lighting set and two 1500-hp (one hour rating) storage batteries and boosters. Other city sub-stations are at Walden Avenue and the Belt Line, and in the Niagara Street steam plant. The interior of the Virginia Street plant is shown in the accompanying cut.



GENERAL INTERIOR VIEW OF THE VIRGINIA STREET STATION, WHICH CONTAINS SIX 1000-KW ROTARIES

The interurban, and other divisions of the system outside of the city of Buffalo, are supplied with power from sub-stations located at North Tonawanda, Lockport, Olcott and in power house No. 1 of the Niagara Falls Power Company. All of these stations operate on power from the Niagara Falls Power Company, and the ones at North Tonawanda and Lockport have storage batteries. The International Railway Company supplies power to its Canadian division from its own hydro-electric plant situated at Table Rock, Niagara Falls, Ont.

UNIVERSAL SOLDERING FLUID

A soldering fluid which has proved very useful in the Willoughby shops of the Cleveland, Painesville & Eastern Railway is made by killing two quarts of muriatic acid with all the zinc it will take up. Then to the acid a quart of water is added, or it may have to be added before the zinc will fully dissolve. A quart of glycerine which has previously been mixed with a quart of alcohol is then added to the solution. This fluid is used for all kinds of soldering and has been found especially desirable with greasy or dirty connections as well as for soldering to iron. It is claimed that the glycerine prevents all rust, which plays havoc with many soldering fluids which contain muriatic acid.

FOLDING STEP FOR VESTIBULED CARS

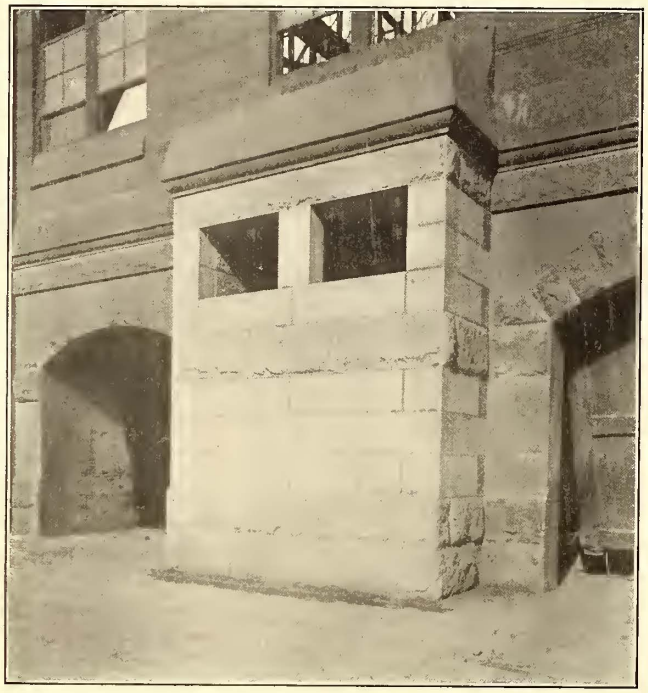
W. R. W. Griffin, superintendent of the Rochester & Eastern Rapid Railway, has invented a combined folding door and car step which is now being tried on one of that company's cars. Three steps are used, of which two are permanent and one is a folding step which opens when the vestibule doors are opened outward. The door and step are controlled from the front platform.

SMITH SHOP FACE PLATE

Among the tools used in the Willoughby smith shops of the Cleveland, Painesville & Eastern Railway is a portable face plate which has proved very convenient. It consists of an iron plate, about 30 ins. x 30 ins. x 3 ins., mounted on top of a heavy wooden frame of 6-in. x 6-in. stuff, and furnished with large casters that it might be easily moved from one forge to the other, as desired. This plate is fitted with a clamping device with which, on a recent visit of a representative of this paper, a smith was bending 6-in. x 1¼-in. iron into all manner of shapes for hanging up sets of 50-hp motors underneath the new cars received by the company. As a handy device the plate was certainly a success.

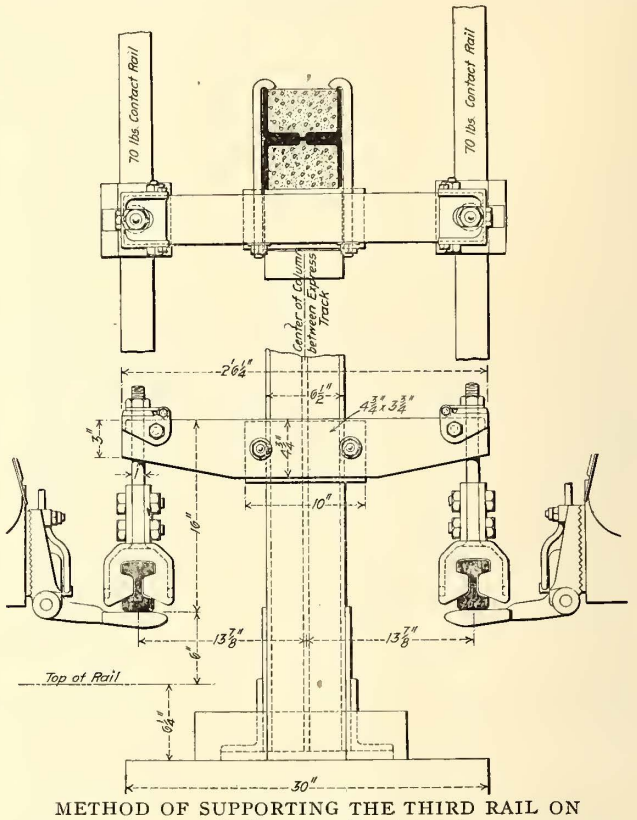
RECENT PROGRESS IN HEAVY ELECTRIC RAILWAY WORK AT PHILADELPHIA

The early opening of the regular subway and elevated service on the Market Street line of the Philadelphia Rapid Transit Company makes it appear desirable to publish a summary of the work to date. It will be recalled that the Sept. 23, 1905, souvenir issue of the Street Railway Journal dealt very fully with this subject, but it was then in its early construction stages and several important points such as the class of rolling stock and the location and type of contact rail were still undecided.



SIDE VENTILATOR AT BROAD STREET STATION

By the end of 1905 the company had determined to adopt an all-steel car, and about the same time the third-rail question was also settled along the lines described and illustrated later in this article. The principal constructional features of this car were described in the Oct. 13, 1906, issue, but full details of the equipment are now available.



METHOD OF SUPPORTING THE THIRD RAIL ON COLUMNS IN THE SUBWAY

LAYING THE BALLAST AND TRACK ON THE CONCRETE FLOOR

In addition to this the Philadelphia Rapid Transit Company has permitted the publication of illustrated data covering the construction and track features of the proposed Frankford line of the elevated railway system.

MARKET STREET ROUTE

The Market Street line primarily was built to relieve the surface congestion in the business district of Philadelphia.

Owing to the opposition manifested toward the erection of an elevated railway in crowded streets, the company built the first section as a subway, commencing at the west side of the City Hall, in front of the Broad Street Station of the Pennsylvania Railroad, at Sixteenth Street, then running west under Market Street to the Schuylkill River and Twenty-Third Street, over which it is continued on a bridge to run as an elevated structure to Market and Sixty-Third Streets. At the latter point the line descends to grade and terminates at Sixty-Ninth Street, where connections are made with several electric lines entering the city.

THE SUBWAY

The subway is about 4100 ft. long and contains four tracks, of which the two outer ones have been in use since Dec. 1, 1905, for standard surface cars running on the street after crossing the Schuylkill Bridge, where the elevated structure begins. The inner, or express tracks, will be used for the all-steel cars running over the entire route.

The subway has an inside width of 48 ft. 6 ins. and a height of 14 ft. 6 ins. The roof, which rests on three intermediate columns, is formed of concrete arches supported on I-beams, 5 ft. apart, placed across the subway. The side walls are of reinforced concrete, and the floor is built up of concrete alone. The use of a concrete floor adds to the cleanliness of the structure besides improving the drainage. The roof is waterproofed by a 1-in. coat of asphaltic mastic, and the walls, where necessary, by burlap layers soaked in the residium from petroleum after refining.

In view of subway experiences in other cities, the precautions taken for ventilation are of interest. In addition to the ventilation resulting from the stair passages to the street from stations, there are special chambers which connect to outside stacks to use either natural draft or artificial draft as conditions may require. One of the accompanying illustrations is a view of the ventilation tower at Twenty-Second Street, and is typical of the company's efforts to combine utility and art. Another illustration shows the side ventilator which has been installed at the Broad Street station.

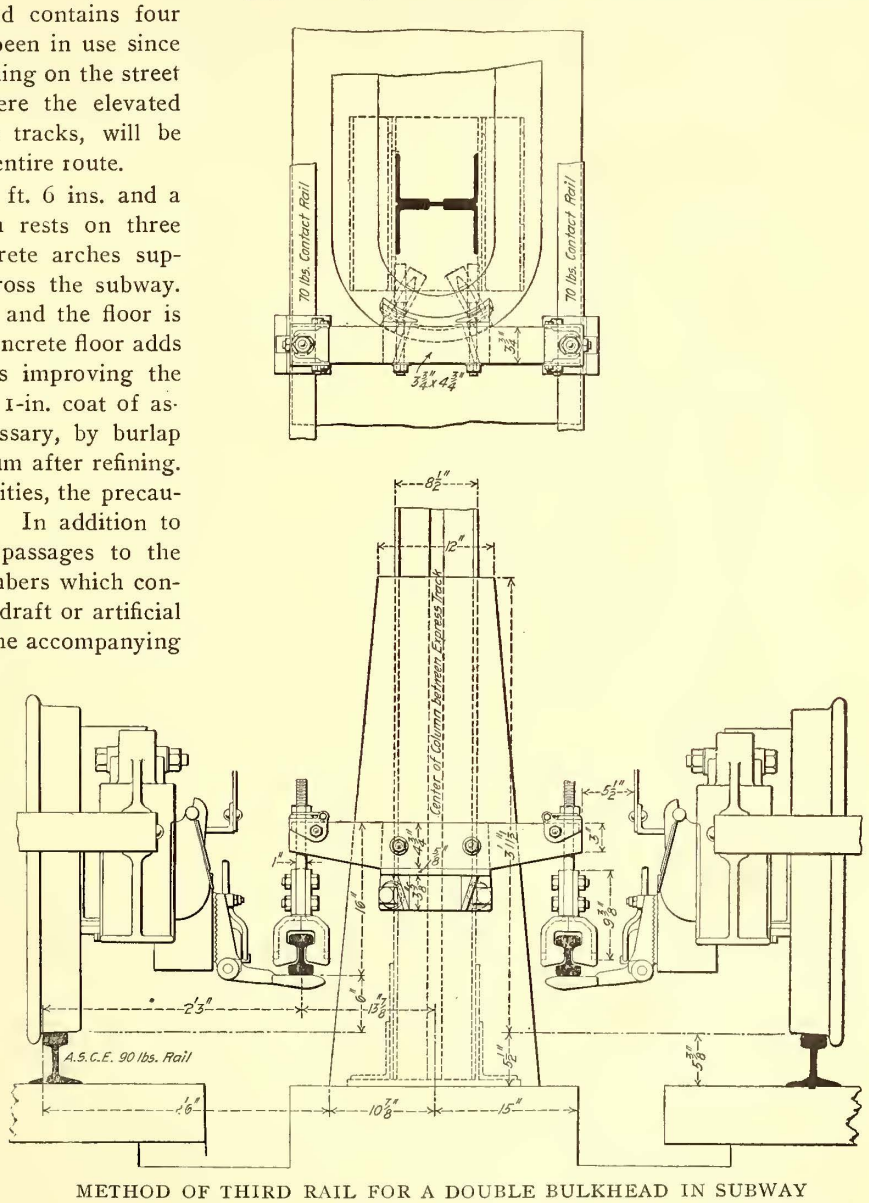
With regard to the illumination in the subway, it is hardly necessary to state that the lighting circuits are independent of the power circuits. The system is divided into sections about one-half mile in length. The lamps at each station and for a distance about half way to the next station are supplied on a 110-volt circuit from the station transformer. A throw-over switch permits the lamps to operate five in series on the railway circuit if necessary.

The track construction in the subway is of two types corresponding to the different kinds of service required. On the street car or local tracks, the rails are mounted on cast-iron chairs, which, with the rails, are completely embedded in concrete. The chairs or yokes are spaced 5 ft. apart and are provided at the top with adjusting screws. These rails are laid with the company's standard zinc joint. The cars over these tracks take power from an overhead wire flexibly supported from hangers placed in the roof as described in the STREET RAILWAY JOURNAL for Dec. 23 and Dec. 30, 1905.

On express tracks the rails are mounted directly on yellow pine blocks, to which they are attached by clips and screw spikes. These blocks are bolted to 12-in. channels. The longitudinal channels are set in concrete. One rail of each express track is reserved for block signaling and the other has Mayer & Englund "Protected" bonds. Power for elevated and subway cars operating over these tracks will be transmitted through a 70-lb. under-running contact rail hung from brackets bolted to the inner columns. The cut on page 276 shows the standard clearance between the contact rail and column, and that on page 277 the minimum clearance as obtained at a double bulkhead.

THE MARKET STREET ELEVATED LINE

The bridge connecting the subway and elevated sections is 563 ft. long. It carries four tracks across the river at

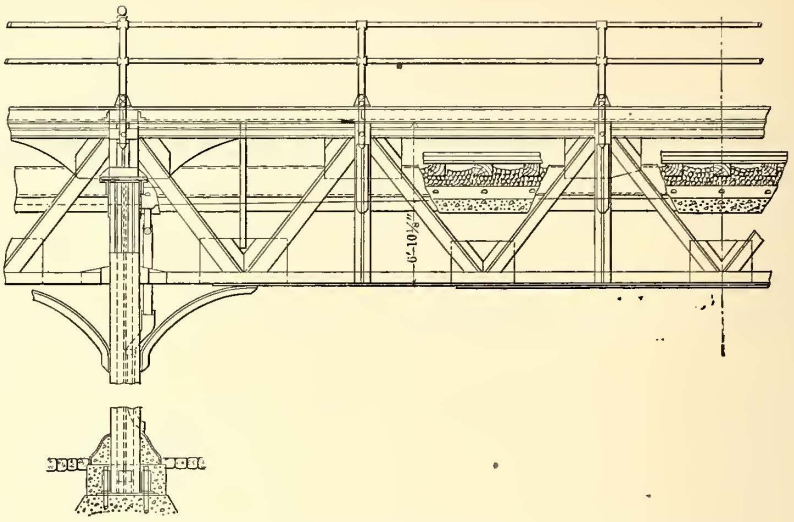


METHOD OF THIRD RAIL FOR A DOUBLE BULKHEAD IN SUBWAY

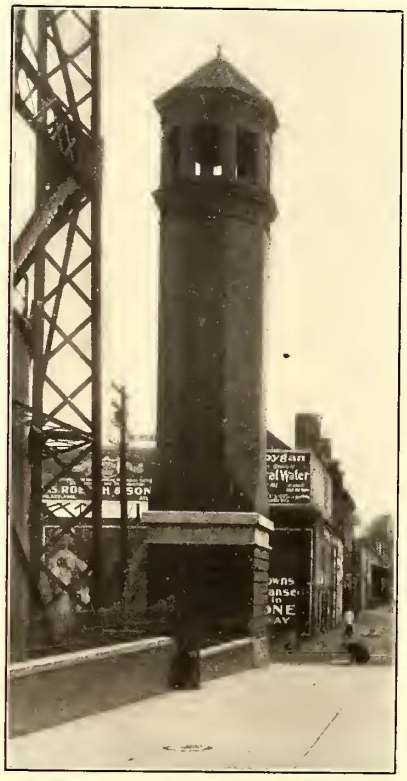
two different grades so as to unite the subway with the surface and elevated tracks. The 214½-ft. channel span and the 90-ft. and 98-ft. adjacent spans are riveted through truss structures and the two end spans and plate-girder structures about 78 ft. and 82 ft. in length, all of them of special construction to provide for the somewhat unusual arrangement of tracks. The two tracks in the center of the bridge for the elevated service ascend to the west on a grade of about 5 per cent, and continue beyond the river on the elevated railway. The two outside tracks are approximately on the level of Market Street, and connect west of

the bridge with the street railway tracks at the surface of the street.

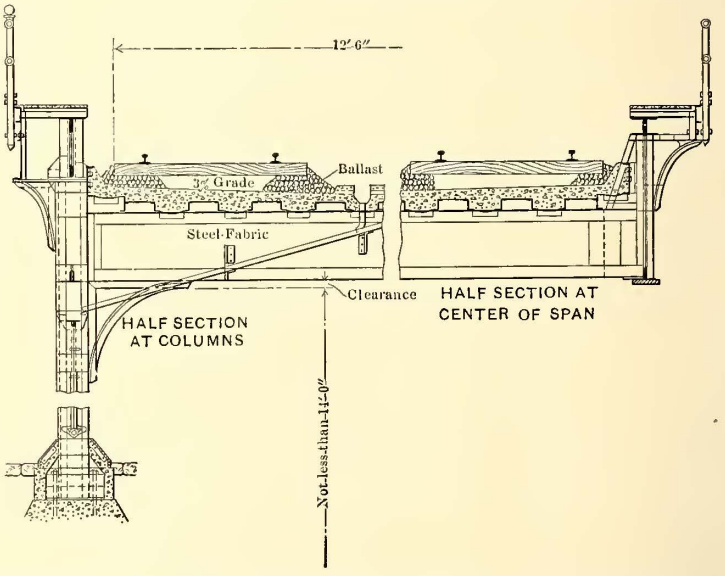
Nearly all of the elevated railroad structure is on a tangent. The maximum grade is 4.5 per cent; the minimum clearance above the street is 14 ft. 1½ ins., and the minimum height of rail above the street is 18 ft. 5 ins. In general the structure is made with 50-ft. longitudinal latticed girders directly connected to vertical columns 24 ft. apart transversely, with spans in special situations from 50 ft. to 80 ft. long, having the columns braced. At the stations, where passages are provided over the street, under the tracks, with the consequent increased elevation of the structure, longitudinal bracing is afforded by the use of deep latticed trusses.



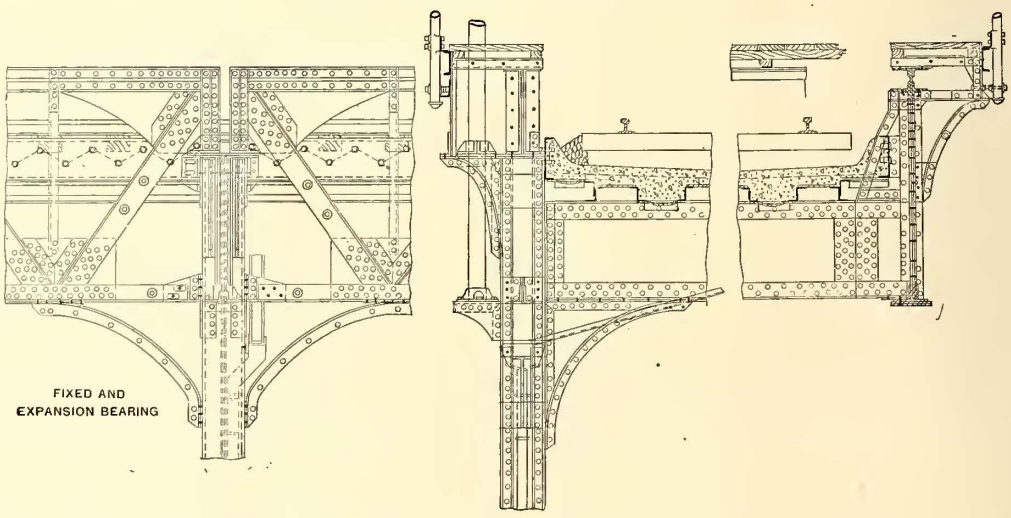
LONGITUDINAL ELEVATION OF REGULAR SPAN (MARKET STREET ELEVATED)



TYPICAL VENTILATION TOWER



TRANSVERSE ELEVATIONS OF REGULAR SPAN (MARKET STREET ELEVATED)



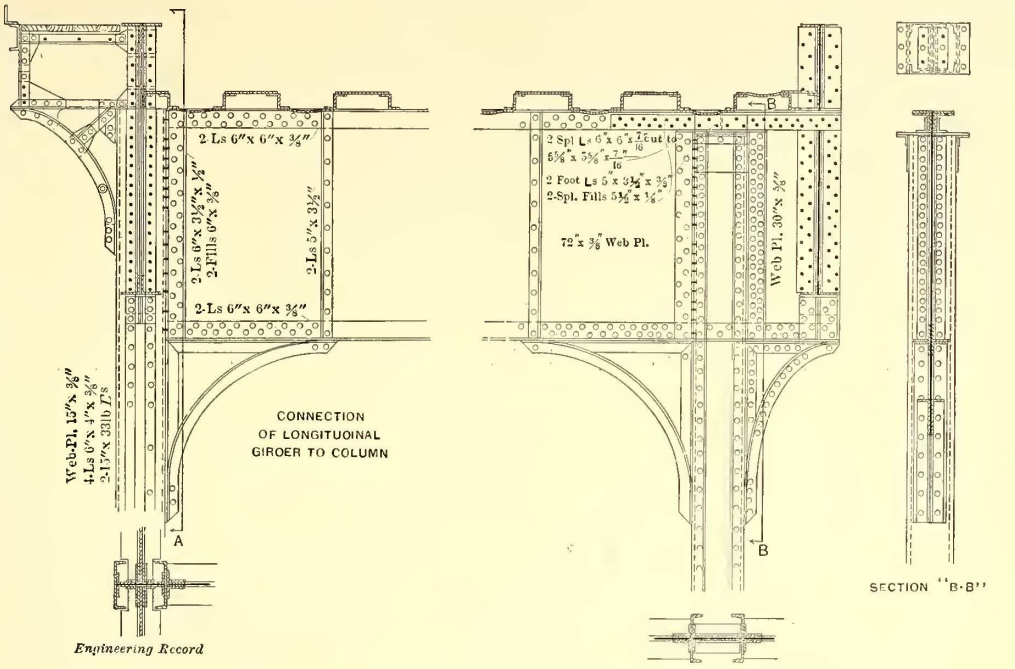
REGULAR COLUMN CONNECTIONS, FLOOR CONSTRUCTION AND TROLLEY-POLE SUPPORT

At the river end, where the tracks form a reversed curve to follow the offset of the alignment of the street, there are seven spans of plate girders from about 30 ft. to 60 ft. in length. The lengths of the spans and the arrangement of the columns is varied in a number of places on account of the clearance required for the cross streets and for the location of the stations. The latter are generally about four squares apart, and to minimize the transmission of train vibrations are supported on independent girders.

In general, there are three types of construction: the regular style with 50-ft. longitudinal girders about 7 ft. deep over all, which is used for about 17,900 ft.; about 517 ft. of deep span construction near the stations made with 50-ft. longitudinal girders about 15 ft. deep; the third, about 325 ft. of plate girders. Up to the Delaware County line, a distance of 18,750 ft., the city ordinance required a solid

floor which would intercept all leakage and drip. The rest of the structure is of the ordinary open floor construction with cross-ties laid on the top of the flanges of the longitudinal girders.

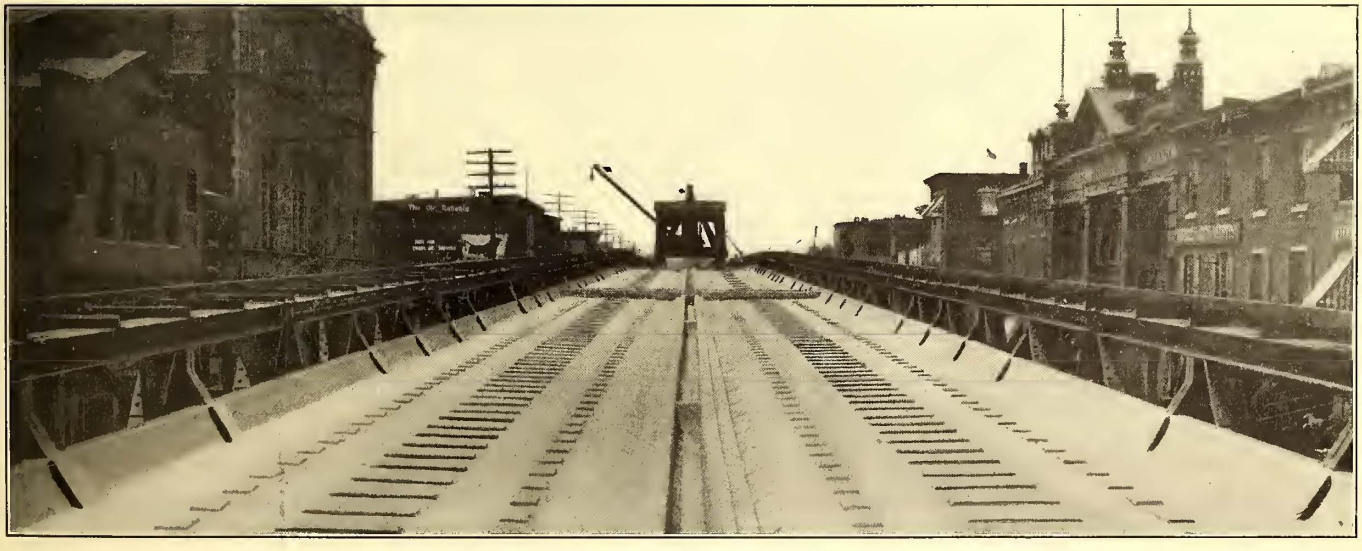
In the typical construction the columns have an H-shaped cross-section made with a web plate connecting four angles, and two 15-in. channels, the flanges of the latter being turned inward with round corners. The feet of the columns have extended bases reinforced by horizontal flange angles and are seated on concrete pedestals about 20 ins. below the pavement surface. The columns continue nearly to the base of the rail and receive both the longitudinal and transverse girders. The top chords of the longitudinal trusses are about 2 ft. higher than the base of the rail, and support the inner ends of wooden sidewalk beams.



DETAILS OF COLUMN AND GIRDER CONNECTIONS ON MARKET STREET

The solid floor as shown in the cuts is made with longitudinal troughs. The troughs were shop-riveted complete in sections about 7 ft. wide and 20 ft. long, the dished bottom plates being cut to clear the flanges of the transverse girders. The top plates of the troughs are spliced with short horizontal cover plates, and at the ends of the bottom plates short angles are riveted to the edges of the transverse girder flange angles to prevent any drip from following the surface of the girder. The troughs are filled with 1:3:6 concrete made with Vulcanite Portland cement filled in to a minimum height of 4 ins. above the top plates. To prevent shrinkage cracks, the concrete is reinforced with ⅜-in. Johnson bars, 12 ins. apart transversely and 18 ins. apart longitudinally. To secure the concrete and key it thoroughly to the vertical face of the fascia web and at the expansion joints where the concrete is retained by a similar cross-curb, horizontal bolts are made to project a few inches from the webs of the curbs or fascia and are united by ziz-zag lines of wire bedded in the concrete.

The concrete is finished with 1 in. of granolithic, pitched to the gutter on the center line of the structure, the latter having a minimum grade of 1 per cent to drainage holes at both ends of every span. Stone ballast is filled in on the concrete surface and receives the cross-ties as indicated. The rain water, drip, etc., drains to the open gutter and thence through short vertical pipes to inclined steel troughs with their lower ends discharging into cast-iron catch basins placed inside the main vertical columns. These catch basins waste through vertical pipes carried down inside the columns to the street level, where they discharge to underground drains connected to the sewer.



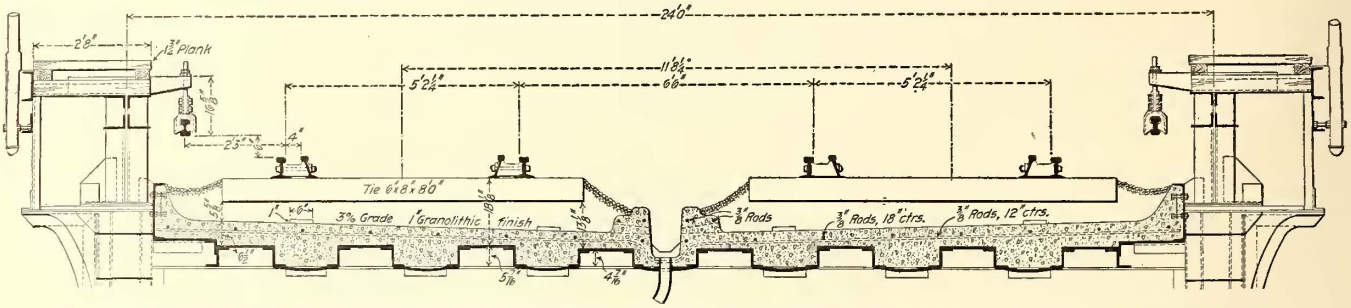
APPEARANCE OF CONCRETE FLOOR BEFORE BALLAST AND TRACK WERE LAID

In the deep span construction the longitudinal girders are made with lighter chords than those of the regular construction and the knee-braces are omitted. The transverse girders

at the column bents in the deep construction are of the same depth as the longitudinal girders, and like them are light lattice girders supporting the floor troughs on their top flanges. The intermediate floor beams in the deep construction consist of latticed cross-frames.

In the spans adjacent to the Schuylkill River, where the plate-girder construction is adopted, there is considerable variation on account of the deflection of the alignment, and in a number of spans the longitudinal girders are supported by transverse girders projecting a considerable distance beyond them to provide for the location of the vertical columns at suitable points in the street, and to clear the street railway track connections. The longest transverse girder is about 53 ft. 4 ins. long.

The structure was proportioned for a live load of electric cars 46 ft. long over all, with 25,000-lb. loads on each of the four axles, with provision for impact. The total weight of the main steel superstructure is about 41,000,000 lbs., and that of the solid floor type is about 2000 lbs. per linear foot. The work was designed and supervised by the Philadelphia Rapid Transit Company, Wm. S. Twining, chief engineer, and Charles H. Mills, principal assistant engineer. The steel work was furnished by the American Bridge Company.



CROSS-SECTION OF THE MARKET STREET ELEVATED STRUCTURE, SHOWING FLOOR AND TRACK CONSTRUCTION

VIEW SHOWING METHOD OF THIRD-RAIL SUSPENSION ADOPTED ON THE MARKET STREET ELEVATED LINE TO SIXTY-THIRD STREET

The track construction adopted for the Market Street elevated structure covers the use of a 90-lb. T-rail laid on 6-in. x 8-in. x 8-ft. ties in rock ballast on the concrete floor or on the ties alone on the open span beyond the county line. Up to Sixty-Third Street the same type and style of outside suspension or underrunning third rail employed in the subway is used. Beyond that point, which

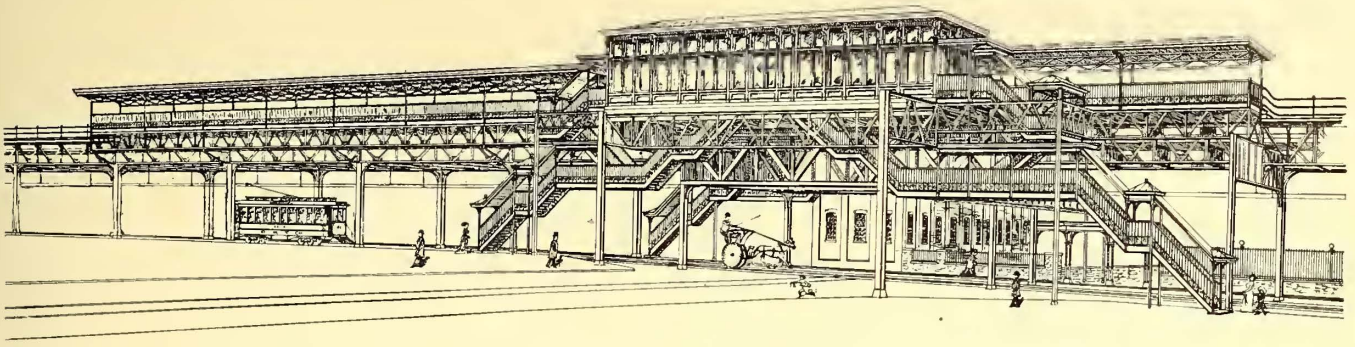
AT MARKET AND SIXTY-THIRD STREETS, WHERE THE THIRD RAIL IS PLACED BETWEEN THE TRACKS

marks the descent to grade terminating at Sixty-Ninth Street, the company has placed the contact rails between the tracks and used the supporting bracket under-running type adopted by the New York Central Railroad. One of the accompanying illustrations was made from a photograph taken at the place where this change-over is made.

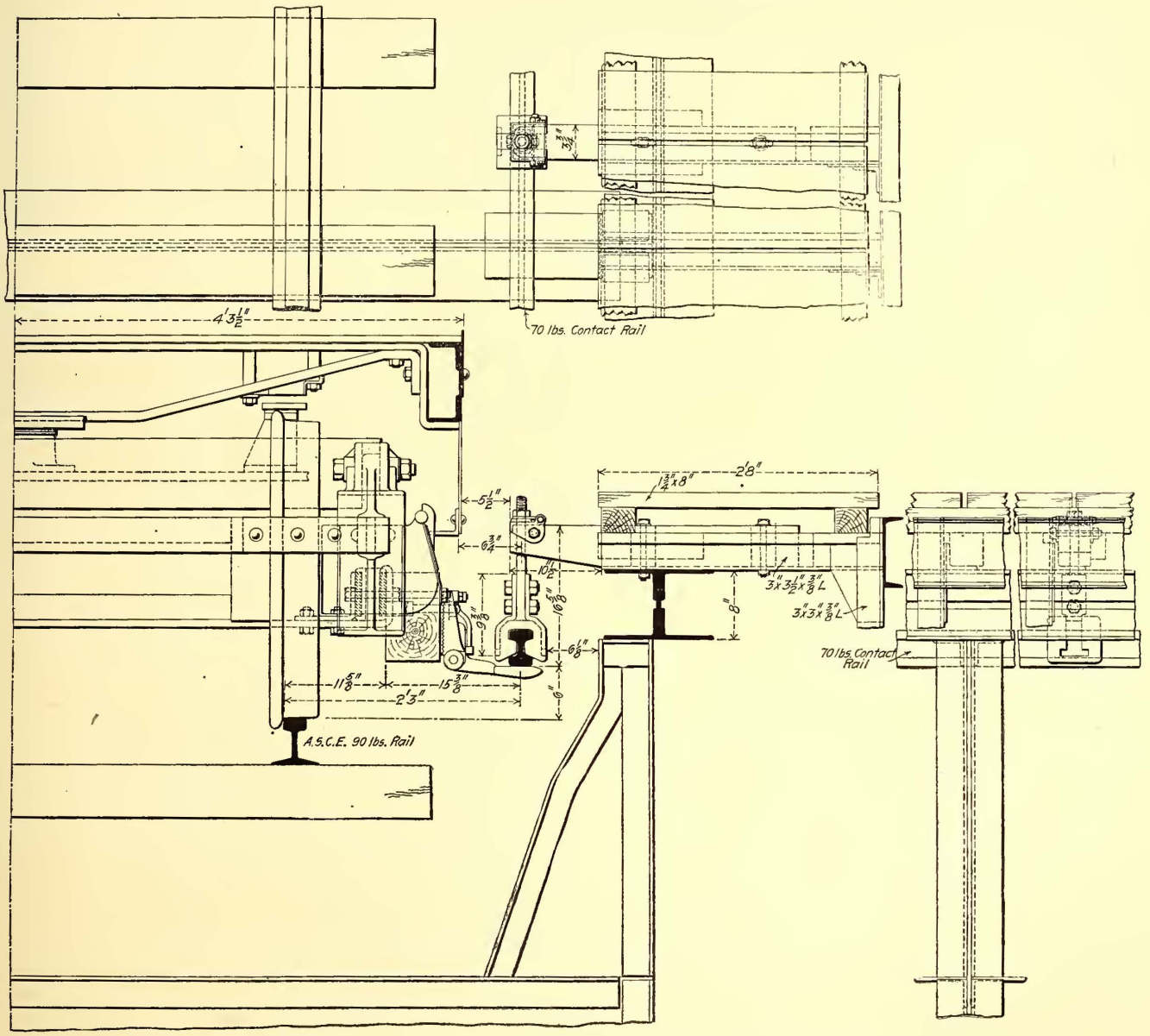
Among the views of the constructional and electrical features of the elevated railway will be noted several which show the substantial construction of the passenger stations. Another illustration shows a typical passenger station as it will appear when completed.

THE FRANKFORD ELEVATED RAILWAY

The next portion of the elevated railway system to be built by the Philadelphia Rapid Transit Company will run on Delaware Avenue, forming the Frankford division. The columns and longitudinal lattice girders on this structure will be similar to the Market Street line except that the spans will be longer, namely, 85 ft. The transverse girders,



TYPICAL STATION ON THE MARKET STREET ELEVATED LINE, PHILADELPHIA



DETAIL OF THIRD-RAIL APPLICATION ON MARKET STREET ELEVATED, BETWEEN TWENTY-NINTH AND SIXTY-THIRD STREETS

however, will be entirely different. No track ballast will be used. For drainage purposes there will be a 3-in. reinforced concrete floor placed as shown on the accompanying cross-section. The same illustration also shows that the third rail is of the New York Central underrunning type and placed on the outside of the tracks. The Frankford section is to start at Arch Street and terminate at South Street. It will have siding and cross-over tracks in addition to the two running tracks. The minimum headroom will be 20 ft. 6 ins.

THE COMBINATION TERMINAL

The Philadelphia souvenir issue of the STREET RAILWAY JOURNAL referred to the building which was to be erected at Sixty-Ninth and Market Streets to serve as a common terminal for the Philadelphia Rapid Transit Company, the Philadelphia & West Chester Traction Company, and the Philadelphia & Western Railroad. The location of the terminal at this point led to an interesting study in track location without grade crossings, as the Philadelphia & Western's right of way passed through the center of the property which the Philadelphia Rapid Transit Company has laid out for repair shops, car houses and a steam plant. The solution of the problem will be noted from the accompanying plan in addition to the references given later to the different track layouts.

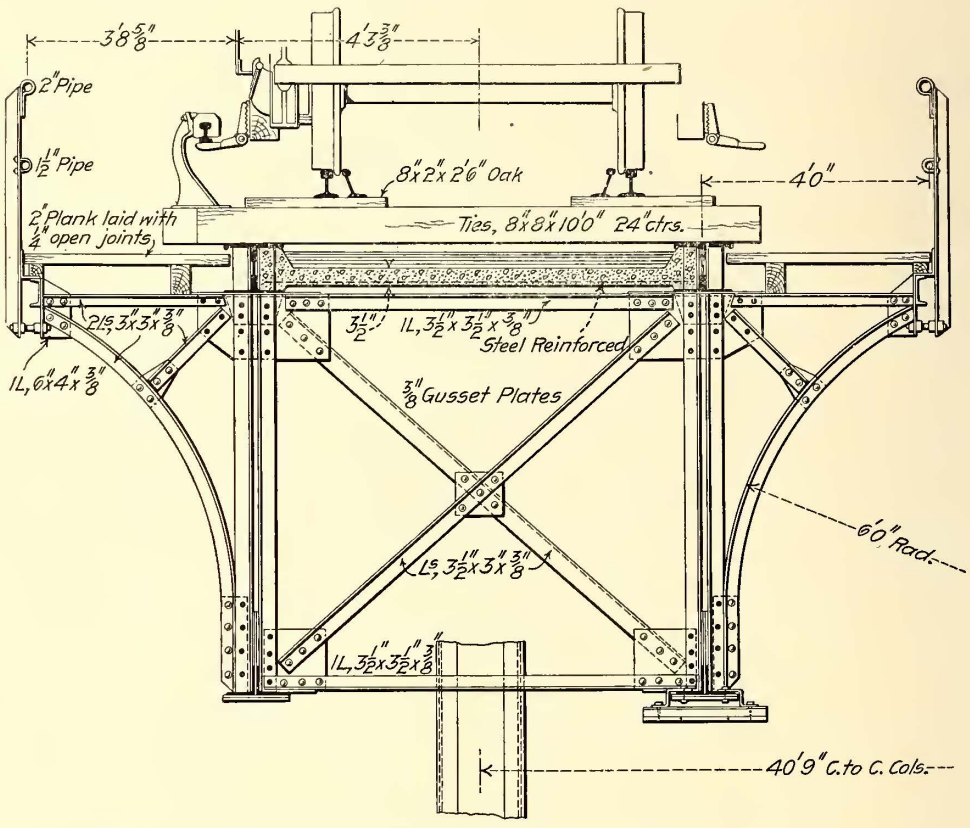
The terminal building will consist eventually of three parts, each built by one of the three companies. However, the portion intended for the Philadelphia & Western Railroad has not yet been put up. This will be added to the northern end, connecting with the present waiting room.

The Philadelphia Rapid Transit Company's section is at the southeast corner, which contains the common waiting room and ticket offices. Its frontage is 97 ft. and its depth 117 ft., with a rear portion 75 ft. wide and 79 ft. long extending over one emergency and two regular passenger tracks and two 350-ft. reinforced concrete platforms. The second floor is to be used for offices, trainmen's quarters and other purposes.

The discharging platform is 15 ft. wide and the loading platform 33 ft. The Market Street elevated cars will enter the eastern end of the station, discharging passengers at the north platform, which communicates with the waiting room and the loading platform by a bridge and stairways. The latter platform, as noted, is considerably wider, as it also serves the emergency track. The western exits from the waiting room lead directly to the Philadelphia & West Chester tracks and the southern exit to the street. Passengers on the north platform may also transfer to the platforms of the Philadelphia & Western Railroad.

If the unloaded elevated cars are to go to the shops they turn north, crossing the Philadelphia & Western tracks under grade; otherwise they describe a rising loop of 150-ft. radius over the depressed shop tracks, returning to take east-bound passengers from the south platform. The emergency track previously mentioned starts from the storage tracks and encircles part of the loop. It extends under the station, being used for extra trains and for unloading freight at the basement level, from which it is continued as a switch track connection to the Philadelphia & West Chester Company's tracks. Cars from the Philadelphia Rapid Transit Company's surface lines connecting with the Philadelphia & West Chester at Sixty-Third and Market Streets can therefore be hauled to the shops if necessary.

The Philadelphia & West Chester Company's section has a southern frontage of 172 ft. and is 117 ft. deep. Part of the east end is two stories high, the upper floor serving the same uses as that of the Philadelphia Rapid Transit Company's office floor. The tracks of this company coming from the west climb a walled embankment leading to a five-track stub terminal level with the waiting rooms. The northernmost track is furnished with an inspection pit. The loading tracks are 155 ft. long except the one on the south, which is 17 ft. less. The platforms in this section are also of reinforced concrete. The middle platforms, which are four in number, are 15 ft. 5¼ ins. wide and have a fence down the center for the entire length of the shed to prevent confusion between arriving and departing passengers. A similar fence will extend from wall to wall along the west side of the lobby used by the Philadelphia & West Chester passengers. This fence will have double sliding gates at the end of each platform, so that passengers can only reach the platform sections intended for them.

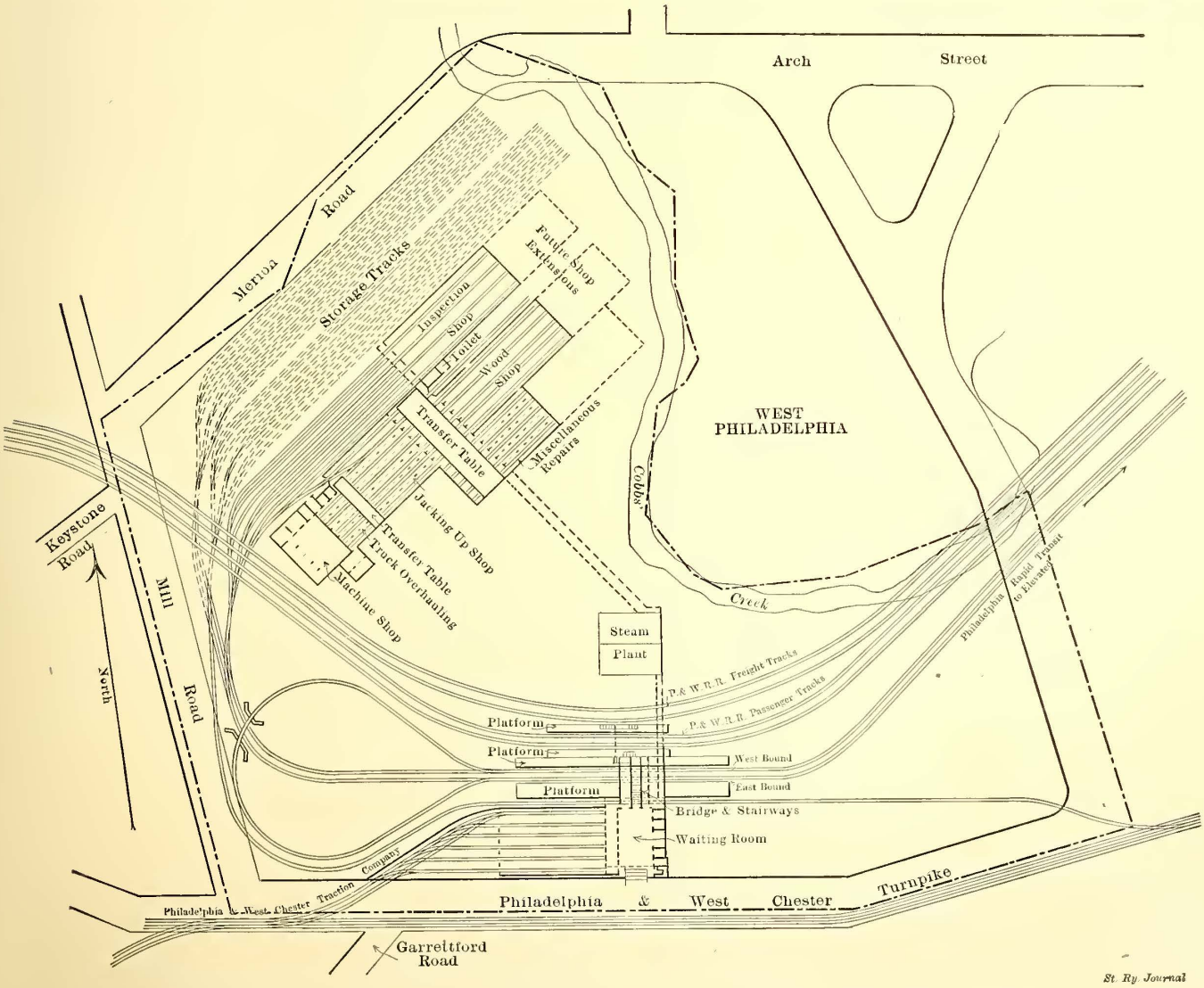


SECTION SHOWING STEEL AND TRACK CONSTRUCTION PROPOSED FOR THE FRANKFORD ELEVATED RAILWAY, PHILADELPHIA

THE REPAIR SHOP

The inspection and repair shops of the Philadelphia Rapid Transit Company for the elevated-subway division are located on the company's property about 700 ft. northwest from the terminal at Sixty-Ninth Street. The layout of these build-

THE MARKET STREET TERMINAL OF THE PHILADELPHIA RAPID TRANSIT COMPANY AND CONNECTING RAILWAYS



GENERAL PLAN OF COMBINATION TRACK LAYOUT AT THE MARKET STREET TERMINAL

ings was published in the Sept. 23, 1905, issue, but the accompaning illustration is given to give some idea of their general appearance at present. These buildings comprise an inspection shop, a jacking-up and truck repair shop, a machine shop, miscellaneous repair shop, a store room, offices, employees' quarters, etc. Thus far the only work done at these shops has been to fit up the new rolling stock, but machine tools are already installed for carrying on the activities of an up-to-date railway maintenance shop.

THE ROLLING STOCK

One of the forty steel cars which the Pressed Steel Car Company has furnished to the Philadelphia Rapid Transit Company for the Market Street elevated and subway service was illustrated in the Oct. 13, 1906, issue of the Street Railway Journal. In that issue the construction details were given, together with a statement of some of the fittings adopted. Since then the cars have been equipped ready for regular service, making it possible to give more extended details.

INSPECTION AND SHOP BUILDINGS OF THE PHILADELPHIA RAPID TRANSIT COMPANY, NEAR THE MARKET STREET TERMINAL

The cars are built of steel throughout with non-combustible floor. The outside sheathing is of cold rolled steel and the underframe consists of deep fish-belly side sills, with cross-bearers and connections in girder form. In consequence of this construction it was necessary to place the contactors of the multiple-unit system further back from the side of the car than is usual, as otherwise it would not have been possible to look after them as easily as where the ordinary sill is used. The girder adopted, however, was needed in view of the installation of center doors.

The underframe is covered with corrugated steel sheets and Monolithic flooring composition. The interior finish is of straight-grained mahogany. The roof is constructed of tongue and groove poplar ½ in. thick and covered with 8-oz. cotton duck. There are two safety chains on each end, equipped with 4-in. diameter springs. Pantagraph safety gates are applied on platform corners opposite the motorman's cabs. Mason safety treads are applied at each end door. Each car is fitted with twelve pairs automatic ventilators and Keystone hand fire extinguishers. There are twenty-four side windows per car, eighteen of which have upper sash movable and lower sash stationary. These windows are furnished with Pantasote curtains and Forsythe ring fixtures. The cars are painted Tuscan red with gold stripes.

The seating arrangement, as published in the Oct. 13, 1906, issue, shows that, despite the center door, eight cross seats are in place. These transverse seats, however, can easily be taken out as soon as the growth of traffic requires the use of the center door. Both the vestibule side and center doors are arranged for pneumatic opening and closing. Each brakeman actuates the closing handle on his car, and when all the doors on the train are closed a buzzer sounds in the motorman's cab as the signal for starting.

The car bodies are mounted on Curtis trucks fitted with Symington journal boxes. The draft rigging is of the Van Dorn type and the air brakes were furnished by the Westinghouse Traction Brake Company. In addition to the air brakes there are bevel-gear vertical hand brakes on each side of the car, A novelty for this type of service is embraced in the installation of pneumatically-operated Kalamazoo track scrapers.

The electrical equipment per car consists of two GE-66 125-hp motors using type-MC-36 control. The electric lighting consists of twenty-five single fixtures, one headlight and two markers on each end controlled by one main fuse and six individual fuses. The heating equipment is made up of eighteen Consolidated heaters. A double train line is used, one for the air-brake connections and buzzer circuit to the motorman and the other for the train control, lighting and heating circuits. All of the operating switches are placed in a cabinet built in a corner of the car opposite the motorman's cab. They are all properly stenciled and are mounted on a slate panel enclosed by a steel door covered with insulating material on the inside and finished on the outside in harmony with the all-steel construction of the car. This cabinet is very compact, not projecting more than 3 inches from the car body.

The seating capacity of this car, as made up of four longitudinal seats for nine passengers each and eight cross seats for two passengers each, totals 52. The approximate weight of an empty car is 32 to 33 tons, and of a loaded one about 40 tons. The principal dimensions are as follows: Length over platform (over all), 49 ft. 7¼ ins.; length over door posts, 40 ft. 6¼ ins.; length inside of car (end lining), 39 ft. 6¼ ins.; width of car outside of side sheets, 8 ft. 7 ins.; width of car inside, 7 ft. 7¾ ins.; height from rail to top of floor, 3 ft. 10 ins.; height from floor to ceiling center, 8 ft. 6½ ins.; height from rail to top of car, 12 ft. 7 ins.; opening for vestibule side door (between door posts), 2 ft. 9 ins.; width of end door opening, 3 ft. 2½ ins.; width of center

door opening (side), 3 ft. 4 ins.; distance from center to center of trucks, 34 ft. 6 ins.; width over eaves—upper deck, 5 ft. 6¾ ins.; width over eaves—lower deck, 8 ft. 8⅝ ins.; width of vestibule end door opening, 2 ft.

CORRESPONDENCE

SUBSTITUTION OF THE ELECTRIC MOTOR FOR THE STEAM LOCOMOTIVE

Feb. 13, 1907.

Editors STREET RAILWAY JOURNAL:

The letters of Messrs. Sprague, Armstrong and Henderson, published in your issue of Feb. 9, constitute an interesting addition to the discussion of the paper which Mr. Putnam and I had the honor to present at the meeting of the American Institute of Electrical Engineers, on Jan. 25.

It appears from Mr. Sprague's letter that his position in respect to the 1200-volt d. c. motor has been misunderstood. It is particularly gratifying to learn from his letter that "he believes that there are many opportunities and possibilities for alternating-current equipment," and that as regards 15 cycles he feels that "it may be advisable in the end to adopt for a. c. operation about this periodicity."

As regards the opinion expressed in our paper, to the effect that for the equipment of trunk-line divisions a. c. systems only are worthy of consideration, this view is founded not only upon a general view of the possibilities and limitations of the contrasted systems available, but also upon the results of painstaking investigation and calculation in important specific instances.

The effort to stretch the direct-current system to meet the requirements of general railroad equipment is in some respects analogous to the similar effort which has been made in certain quarters to force the direct-current lighting system by increasing voltage to cover the broad field of electric illumination. In some cities here and abroad the 440-volt, three-wire d. c. system is used for lighting purposes and it is, of course, used successfully, but it falls far short of proving itself in general a satisfactory substitute for the alternating-current system of distribution for lighting purposes. Undoubtedly the 1200-volt motor will work, and it will work successfully, but the essential limitations of the system as compared with the single-phase a. c. system are so obvious that it is difficult to imagine a case in which its adoption for the operation of a trunk line division could be justified.

The position which Mr. Putnam and I take in this matter may be stated as follows:

(a) A general view of the railway field, including freight as well as passenger traffic, obviously shows that for anything approximating a general solution the single-phase a. c. system is decidedly superior to the 1200 or 1500-volt d. c. system. This conclusion is corroborated by calculations easily made and based only upon established facts.

(b) The admitted advantages of electricity in respect to increased earning power and decreased cost of operation are such as in the near future assure rapid increase in the use of electricity by railway systems now operated by steam.

(c) The necessity of standardizing frequency rests practically upon the same arguments as have induced railways to standardize track gage, height of drawbar, location and couplings of air-brake train line and steam line.

In other words, the significance of our estimates of comparative operating costs is that the results, viewed in connection with admitted facts, in respect to increased earnings indicate that a general electrification of important railway divisions and even trunk lines is coming much more rapidly than has been realized, even by electrical engineers, and the lesson to be drawn from this conclusion is that we must standardize as promptly as possible everything essential to convenient interchange of rolling stock.

Specifically and especially the only thing which should be agreed upon now is frequency, and this, we take it, has been practically settled by the remarkable unanimity of competent engineering opinion which was evidenced during the discussion of our paper.

I infer from Mr. Sprague's letter that if he should ever be induced to use a single-phase alternating-current motor for railway work he would prefer 15 cycles to a higher frequency.

It is surprising to find Mr. Armstrong and a few other engineers opposing the idea of standardizing ordinary railway practice. The explanation of their attitude must be found either in the fact that they have inferred more than was intended by our use of the word "Standardization" or that they have failed to realize an adequate general view of the railway problem which confronts us.

Our paper proposed that standards of practice be agreed upon in respect to (a) location of third rail; (b) location of overhead conductor used with single-phase alternating systems; (c) frequency of alternating traction systems. We remarked also that it is clearly desirable but probably less easy to agree upon a standard system of multiple-unit control for train operation.

In his interesting letter Mr. Armstrong expresses the opinion that "it is hard to see the advantage of forcing the adoption of any electrical standards at the present time. At best the standardization of apparatus or methods is attended by the constant danger of Chinese stagnation, and, too, no piece of apparatus or method is ready to be standardized until its continued use has shown it to be a survival of the fittest."

In 1890 the engineers of the Westinghouse Company selected for lighting purposes a standard frequency of 60 cycles per second. This choice was based upon knowledge certainly not more complete in respect to the requirements, limitations and possibilities of the field of use in which it was expected to employ this frequency than is now available to enable us to make a wise choice of frequency for railway purposes. In 1890, 60 cycles was not a case of a survival of the fittest. As a matter of fact, when it was chosen as the standard frequency to supersede much higher frequency previously in use it had never been embodied in a commercial plant in actual operation. Nevertheless it appears to have withstood successfully the test of time.

Similarly in 1890 the Westinghouse Company selected as the standard frequency for work in which rotary converters were to be employed extensively a frequency of 30 cycles per second. About two years later, and before any important plants using 30 cycles had been installed this was changed to 25 cycles, owing primarily to the fact that the Niagara Falls Power Company had arranged to install turbines operating at 200 r. p. m.—a speed which did not permit the development of 30-cycle current by alternators directly connected to the turbine shafts.

The frequency 25 cycles per second, when adopted for the Niagara installation was not selected as the survival of the fittest among a number of alternative frequencies preferred by various engineers and experimented with in commercial service at the expense of the purchaser. At the time it was

chosen knowledge of the facts essential to a wise choice was far less exact and comprehensive than to-day is our knowledge of the considerations which should enable us to predetermine and select that frequency which is best fitted to survive.

The letter of Mr. G. R. Henderson deals with certain important features of our estimate of operating expenses. Discussion of this kind is decidedly apropos and useful. Mr. Henderson's arguments, however, in large part, are based upon misconception of facts, due perhaps to lack of perspicuity in our exposition of our premises and reasoning. We shall avail ourselves of an early opportunity to point out some of the errors into which he has fallen and shall endeavor to set forth, in somewhat greater detail than was practicable in our paper, certain assumptions and methods embodied in our calculations. L. B. Stillwell.

RECORDING AND CHECKING TRAIN ORDERS

Cuyahoga Falls, Ohio, Jan. 31, 1907.

Editors Street Railway Journal:

I notice in your issue of Jan. 5 an editorial on "Keeping Records of and Checking Train Orders," recommending that all copies of orders should be compared and some one obliged to explain the discrepancies, thus avoiding the natural tendency to become careless. I enclose a draft of a form of train sheet, which seems to cover all the points mentioned. The sheet, I think, is self-explanatory. The conductors receive the order over the telephone and write same on a blank order. This is given to the motorman and later turned over to the division superintendent, who can then easily compare them with the dispatcher's train sheets. All transfers of cars and reasons for same should be noted on margin of sheet, thus making a permanent record of the sheet for future reference. A. S. Kidd.

JAMAICA, BATH & NEW UTRECHT TRACTION CO.
TRAIN SHEET, A.B.& C. DIVISION

DESPATCHER'S CODE
Meeting Points
Call order ---- C.
Carry Signals ---- S.
Flag ---- F.
Changed order ---- C.O.
Signals off ---- S.O.

WEATHER REPORT A.M. P.M.

NORTHBOUND

Car No.	Leave Terminal	"A"	Southern Div. Crew	Northern Div. Crew	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	Car No.
27	5.40	6.03	Adams Johnson	Adams Johnson	6.03		✓		✓	✓		✓		7.10	30
7				Murphy Smith	6.33	✓			✓					7.40	26
2	6.30	6.48	Martin Jones	Martin Jones	6.50		S ✓					c		8.16	23
11	6.40	7.02	Graham Dean	Graham Dean	7.03		✓					c ✓		8.16	18
12				Butler Amos	7.33	✓			c	✓		✓	✓	8.50	31
30	7.40	8.02	Ross Starr	Ross Starr	8.03		✓		c	✓		✓		9.12	27
28	Limited 8.30	8.47	Goff Harris	Goff Harris	8.47									9.40	

SOUTHBOUND

Northern Div. Crew	"J"	"J"	"I"	"H"	"G"	"F"	"E"	"D"	"C"	"B"	"A"	Southern Div. Crew	"A"	Arrive Terminal	Despatchers will Note any Causes of Delays, Accidents or Special Note.
Ross Starr	5.40			✓			✓		✓	✓	6.40	Ross Starr	6.40	7.00	
Foster Mason	6.40			✓		✓			✓	✓	7.40	Foster Mason	7.40	8.00	
Wagner Lamy	7.40			✓			✓		✓	✓	8.40	Wagner Lamy	8.40	9.00	
Noble Plant	7.55			✓		✓			✓	✓	8.44	Noble Plant	8.44	9.00	Limited
Green Dale	8.25			✓		✓			✓	✓	9.14	Green Dale	9.14	9.30	"
Adams Johnson	8.40		✓	✓			✓		✓	✓	9.40	Adams Johnson	9.40	10.00	

Street Ry. Journal

DESPATCHER'S TRAIN SHEET

The tax paid by the United Railways & Electric Company, of Baltimore, in 1906 to the city for the maintenance of parks amounted to $410,208, the largest on record. The company is required to pay the city 9 per cent of its gross receipts in the city as a park tax. The gross earnings of the United for 1906 amounted to $6,589,847. The tax returns indicate that the gross receipts from the city lines totaled $4,558,985, so that the earnings of the suburban lines were $2,002,862.

CAR EARNINGS OF THE PHILADELPHIA RAPID TRANSIT COMPANY

From the number of car licenses purchased by the Philadelphia Rapid Transit Company, as recorded in the Bureau of Highways, it is possible to figure some interesting results respecting the operations of the company, says the Philadelphia News Bureau. The number of cars regularly licensed, not including the additional bridge licenses for cars crossing the Schuylkill, was 2,070 in the year ended Dec. 31, 1906. The company reported 448,576,785 passengers carried in the year ended June 30, 1906. This would give the average number of passengers carried per car during the year as about 216,703. In 1902, when the company began operations, 1725 cars were regularly licensed and the number of passengers in the company's fiscal year was 325,801.963. So the number of passengers carried during the year, per car, was then about 188,869, or 27,834 per car per annum less than at present. In observing this increased efficiency per car it is to be remembered that not only has there been concentration in the car service, but there has also been very material increase in the size of the cars which have been built and put on the lines in the last few years. The results may be somewhat affected by the number of summer or open cars, which may not be altogether included in the figures for licensed cars, but as the summer cars when in operation are substituted for other cars in many cases, the general results indicated by the following figures may probably be fairly taken as a criterion.:

	Number Cars Reg. Licensed	Number Passengers	Av. No. Pass. Carried per Car During Year
1906	2,070	448,576,785	216,703
1905	2,000	402,893,245	201,446
1904	1,895	390,532,689	206,085
1903	1,844	365,908,051	198,431
1902	1,725	325,801,963	188,869

Similarly, taking the company's earnings figures for the respective fiscal years, the gross net earnings per car show:

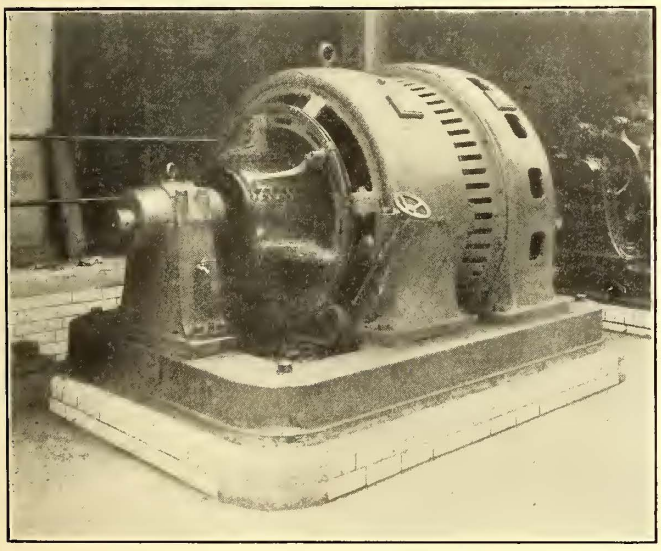
	Gross Earnings	Gross Earnings Per Car	Net Earnings	Net Earnings Per Car
1906	$17,483,144	$8,619	$8,329,541	$4,024
1905	16,188,645	8,094	8,005,208	4,202
1904	15,923,507	8,404	7,930,193	4,184
1903	15,277,806	8,285	8,042,913	4,386
1902	13,969,232	8,098	7,566,894	4,386

The gross receipts per car show a decided gain, but the net receipts per car, on account of the increasing ratio of expenses to gross earnings reflect a decrease in the net receipts per car.

MOTOR CONVERTERS

The methods employed abroad and in this country for rectifying alternating currents for railway and general power purposes are quite different. In Europe the rotary converter has never reached the same popularity as here, and the motor generator is used in its stead, partly, perhaps, because of the higher commercial frequencies generally used. In this country the rotary converter is considered both less expensive and more efficient, and is almost the only device considered. For the reasons outlined above, little attention has been given in this country to substitutes for the rotary converter or motor generator. On the other hand, European inventors have been giving a great deal of attention to this subject, and within the past year or so have developed at least three entirely different kinds of machines, all of which are practically unknown so far as use is concerned.

Two of these have been described in recent issues of this paper, and for a better understanding of their design a short resumé will be given of their salient features and differences. The first is the permutator described in the issue of Dec. 23, 1906. This machine is very similar to the converter except that the armature is stationary and the brushes revolve synchronously. The revolving magnetism is produced by stationary polyphase windings that are inductively related to the stationary armature winding of the permutator. This machine, as developed in the Rougé-Faget design, exhibits the desirable characteristics of possessing a small mass of rotating ma-



MOTOR CONVERTER

terial, and therefore can be rapidly synchronized. Moreover, the machine would neither experience nor produce any injurious effect if it were to fall out of step; its synchronizing power is enormous, so that the possibility of such occurrence is very remote.

A second substitute for the converter and motor generator can properly be designated as an alternating-current rectifier, and was described in the STREET RAILWAY JOURNAL for Jan. 12, 1907. As noted at that time, the rectifier operates to best advantage when used on electric locomotives for supplying to the motors pulsating direct current at variable voltage, and is being applied for this purpose.

A third type of converter, and one for which many claims are made in connection with its advantageous characteristics when used to deliver constant potential direct-current when the supply is high-frequency, high-voltage alternating current, is being built by Bruce Peebles & Co., of London and Edinburgh. This machine has been introduced on a large scale for electric railway work in Great Britain, where it is stated that there are now more than four times as great capacity in use for 50-cycle current as there are rotary converters, although the latter have been available for at least four times as long. The cascade converter, or the "motor converter," as this rectifier is called in England, consists of two machine structures whose revolving parts are mounted on the same shaft. The input machine resembles in every respect an induction motor with a coil-wound (rotor) secondary; the output machine is exactly similar to

ROTOR WINDINGS OF MOTOR CONVERTER

a rotary converter, and it receives its current from the secondary winding of the input induction motor at a frequency much reduced from that impressed upon the primary winding.

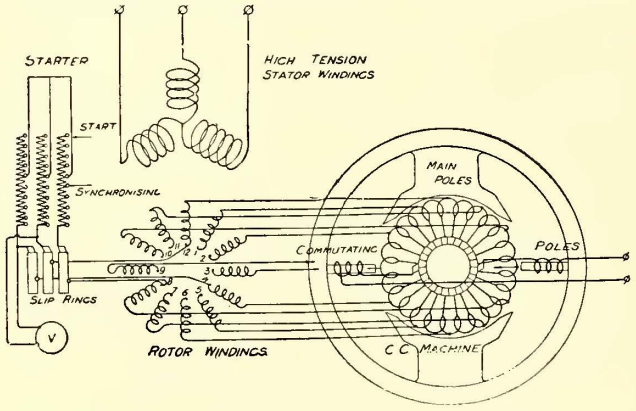
For simplicity in explanation it may be assumed that the motor and the converter have the same number of poles. The induction motor rotates at a speed corresponding to half frequency; half of the electrical power supplied to the induction motor will be converted into mechanical power and transmitted by means of the shaft to the converter, while the other half is transferred to the secondary (rotor) windings and thereby to the converter armature in the form of electrical power. Thus the induction motor operates half as motor and half as transformer, while the converter operates half as direct-current generator and half as rotary converter.

The rating of the induction motor is theoretically half as large as it would be if it were to convert the whole of the electrical power into mechanical power, because its rating depends on the speed of the rotating field and not on that of the rotor. The converter runs at a speed corresponding to half the primary frequency, which is more advantageous with regard to commutation. Consequently its design offers less difficulty than would a rotary converter for the same output and primary frequency.

The secondary winding of the induction motor is generally arranged for twelve phases, as is also the alternating-current end of the rotor to which it is directly connected. In starting up the motor converter from the high-tension side, the primary winding is connected directly to the high potential leads. Three taps on the secondary winding, corresponding to three phases, are brought out to slip rings by means of which an external resistance is inserted in this circuit during the starting period. The external resistance is gradually decreased as the speed of the machine increases. The machine thus starts up as an ordinary polyphase induction motor. Since the secondary windings of the induction motor are connected to points on the converter armature winding, the field of the converter is built up as though it were a direct-current generator. A voltmeter is used to indicate when a machine is running synchronously. It is stated that the synchronizing of this machine is so simple

that no special skill whatever is required for its performance, the converter dropping into synchronism automatically a few seconds after the synchronizing notch of the rheostat has been reached. The current taken at starting varies from one-quarter to one-third of the normal current and depends upon the magnetizing current of the induction motor.

The advantages of the "motor-converter" for single-phase



CIRCUIT DIAGRAM OF MOTOR CONVERTER

service are particularly marked because the synchronizing force of a single-phase set is practically as powerful as it is in a polyphase converter, this being due to the fact that the rotor of a single-phase converter is also wound with twelve phases. Furthermore, the difference between the efficiency of a single-phase and a poly-phase motor converter is less than the corresponding difference in the case of rotaries or motor generators. It is claimed that in comparison with a motor generator the motor converter is more economical in first cost and 2½ per cent more efficient in operation. In comparison with a rotary converter and the necessary bank of transformers, the motor converter is about equally as expensive in first cost and has an efficiency 1 per cent less than the rotary equipment. It is claimed to be better than the rotary converter for frequencies above 40 cycles on account of the improved commutation at the low frequency used in the direct-current portion of the machine. For lower frequencies, such as from 20 to 30 cycles, the rotary converter is evidently preferable, although for all frequencies the motor converter is said to afford much better control of the voltage of the current delivered and requires less skilled attention.

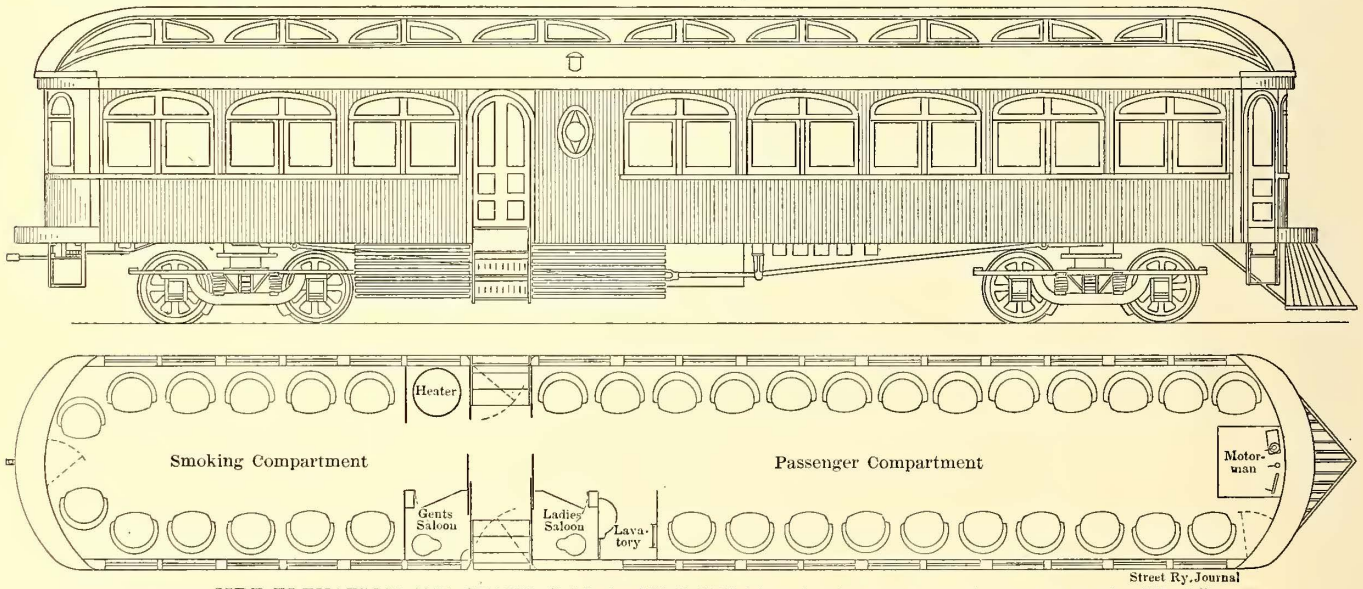
A CENTRAL ENTRANCE INTERURBAN CAR

A central-entrance car has been designed by H. A. Nicholl, general manager of the Indiana Union Traction Company, which it is believed avoids the greater number of objections which are present when the usual end-entrance car is placed in limited service. The car is intended for operation in one direction only. In addition to the central entrances, end doors are provided for the convenience of the motorman and conductor.

The car contains two compartments, one on either side of the central entrance. There being no vestibules or platforms, all of the passengers are able to see the track either forward or behind, and the car is therefore strictly an observation car. The forward compartment, instead of being given over to smokers, who constitute the minority of passengers, is reserved for the ladies, children and non-smokers. The central-entrance feature avoids the necessity of smokers passing through the ladies' compartment or vice versa. The one entrance, it is believed, also gives greater freedom from accidents, as it can be watched closely by the trainmen.

Saloons are provided in both compartments and a lavatory is located in the larger one. The heater, instead of being enclosed in a cabinet as is sometimes the practice on interurban cars, is merely surrounded by an iron rail.

In some features the car resembles the private car "Martha" which has been in service on the company's lines for several years. This private car has the central entrances and the smaller door at each end. The motorman, instead of being isolated in a cab, occupies space in the large front compartment of the car. The successful operation of this private car in a service which approximates that of limited service has no doubt influenced Mr. Nicholl in working out the new car design in question.

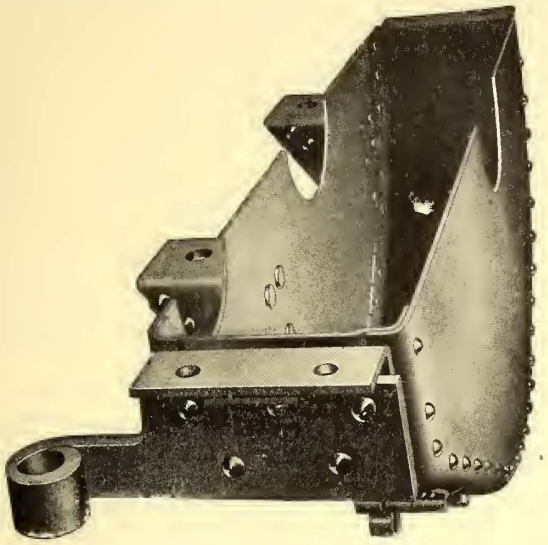


SIDE ELEVATION AND SEATING PLAN OF INTERURBAN CAR, DESIGNED BY H. A. NICHOLL

As operating managers of the Manila Electric Railway & Light Company, J. G. White & Company, Inc., have been working steadily for the attainment of the highest operating efficiency. Probably the most important move in this policy has been the replacing of the service of the old plant of La Electricista Company by up-to-date service from the new steam turbo-electric plant which supplies power for general commercial purposes as well as for the street railway.

SHEET STEEL GEAR CASE

The Electric Service Supplies Company announces that it is now ready to take care of orders for Lyon sheet steel gear cases. These cases are manufactured by the Lyon Metallic Manufacturing Company, and their sale controlled by the Electric Service Supplies Company. For some time



SHEET-STEEL GEAR CASE

the demand for these cases has been so great that the company was not able to take care of its orders, but its factory has recently been quadrupled in size, so that orders can now be given prompt attention.

The Lyon sheet steel gear case is said to weigh from 75 to 100 lbs. less than a cast-iron case, hence will reduce the weight on each car from 150 to 300 lbs. This saves the amount of power necessary to propel the car, and it also facilitates the handling of gear cases in car pits. Some operators not familiar with this gear case have raised the objection that the case is too light. By examining the engraving of the top section of the case shown herewith, it will be seen that the case is strongly reinforced and amply riveted throughout, and is made extra strong at the brackets, where all strains come.

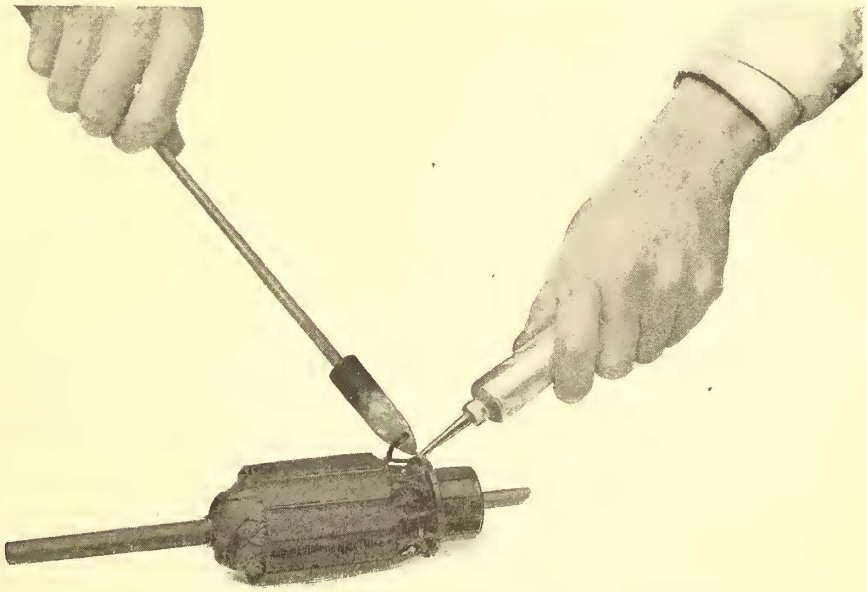
WELLS-FARGO EXPRESS COMPANY ESTABLISHES FREIGHT LINE BETWEEN COLUMBUS AND MARION

The Wells-Fargo Express Company, which recently entered into a contract with the Columbus, Delaware & Marion Railway Company for the handling of its express matter over that line between Columbus and Marion, put a special Wells-Fargo express car on the line Feb. 11, which is now making two trips daily between Columbus and Marion. The express matter has been handled heretofore in the regular freight and combination cars of the railway company. This is the service that gives the Wells-Fargo an entrance into and an outlet from Columbus, Ohio, and a connection at Marion with the Erie Railroad, which handles its express matter East and West.

SOLDERING FLUX IN COLLAPSIBLE TUBES

The convenience of the metallic collapsible tube for general use has led manufacturers wherever possible to make their liquid and paste products available in this form. In the case of soldering flux so put up, perfection is approached in convenience, usefulness and economy, provided the all-important consideration has been taken into account of the possible closing up of the vent through which the flux issues, and such occurrence provided against. Blake Tube Flux is a product which the manufacturer, the Blake Signal & Manufacturing Company, of Boston, says permits the paste to be applied not only directly to the joint at the same time with the heat without soldering the vent, but makes it possible to stick the aluminum spout into the solder without danger of clogging it up. In the workshop this tube keeps the soldering flue free from dust and dirt, so that there is no waste from foreign matter. Besides, just the required quantity can be put on the spot desired, thus reducing waste and making a better job. Because both hands do not have to be used in order to get the soldering flux on a splint and do the work, the use of the tube flux saves time. Moreover the protection which the tube affords to the flux makes the last squeezed out as good as the first.

As far as convenience in transportation is concerned, the tube can be carried in the tool kit without smearing over the tools, and by the outside wireman the tube can be carried in the pocket like a screwdriver. For the general repair man the danger is entirely removed of his dropping the flux where not wanted. The same advantages as regards convenience of application apply in all classes of service, more especially in overhead work and in intricate switchboard work, where foreign matter might seriously damage the



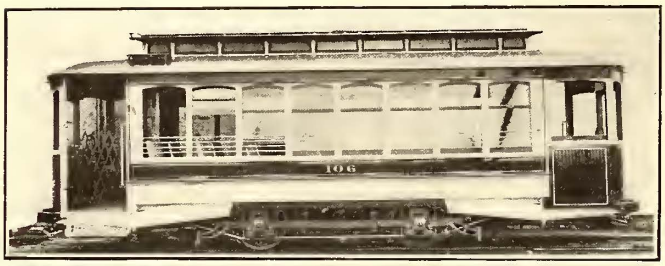
SOLDERING FLUX AS USED IN ARMATURE WORK

switchboard connections. For the armature room tube flux is almost indispensible, as it allows the workmen to get the flux just where it is needed for soldering armature leads to the commutator bar. Its advantages for this work and for electric light work in connection with repair shops and stations are made readily apparent in the accompanying illustration.

The Indiana Union Traction Company is planning to operate through service between Indianapolis and Ft. Wayne.

IMPROVEMENTS IN JACKSON, TENN.—NEW ROLLING STOCK

Since the Jackson Railway & Light Company came, about a year ago, under the control of a Louisville syndicate which also owns properties at Scranton, Miss., and Rome, Ga., the system has developed considerably. At present, a new power plant and a new car house and shop are in the course



EXTERIOR OF THE JACKSON CAR

of construction. The lines are being extended to Hicksville and Bemis, two nearby towns, which will add about 8 miles to the system. Jackson is a city of about 22,500 inhabitants and is not dependent on the surrounding farming country for its support as are most Southern cities of its size. It is a railroad center of some importance and possesses large cotton and machine factories, and its central location makes it a favorite place to hold conventions. Any enterprise engineered by the street railway company is capable of being well supported, and the populace has taken very kindly to the improvements now in progress at Highland Park, or "Happyland," as it is now called, owned by the railway company. New buildings are going up, artificial lakes formed and other attractions to create a first-class place of amusement.

The American Car Company furnished the new rolling stock, which consists of six cars containing the Brill grooveless-post semi-convertible window system. Both ends of cars are enclosed with stationary round end vestibules; opposite diagonal corners of the vestibule are paneled around to body of car, permitting entrance on one side of car only. At the other entrances the Brill folding gate is utilized. The truck is of the No. 21-E pattern with a wheel base of 8 ins. The interiors of quartered oak are well lighted, lights being arranged down the center of the ceiling as well as along the upper section of the headlining on each side; the globes are frosted. The seats are of Brill make. Following are the chief dimensions: Length over end panels, 20 ft. 8 ins.; over crown pieces, 30 ft. 1 in.; width over sills, including sheathing, 7 ft. 9½ ins.; framing consists of side sills 5 ins. x 3⅜ ins.; sub-sills, 4¼ ins. x 5 ins., and center sills, 3¼ ins. x 4¾ ins.

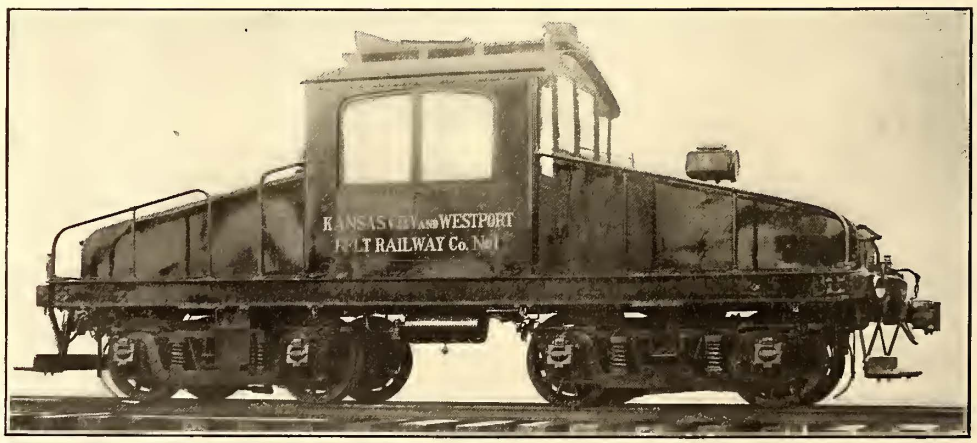
The West India Electric Company, which operates in Kingston, Jamaica, reports that earnings from the electric lines are about $100 a day less than before the earthquake.

FREIGHT TRAILERS FOR OHIO-INDIANA SERVICES

The Indiana, Columbus & Eastern Traction Company put on a limited passenger service between Columbus and Zanesville, Ohio, Jan. 1. Two limited cars are run daily each way, with intermediate stops only at Hebron and Newark, and about an hour is cut from the regular running time between the two points. The distance to Zanesville, 50 miles, is made in two hours, and from Zanesville to Columbus in one hour and fifty-five minutes.

ELECTRIC LOCOMOTIVE FOR THE KANSAS CITY & WESTPORT BELT RAILWAY

The American Locomotive Company, in conjunction with the General Electric Company, has recently completed for the Kansas City & Westport Belt Railway a 50-ton electric locomotive designed for freight service. The body is carried on two four-wheel motor trucks of the equalized type, with a total wheel base of 22 ft. and a rigid wheel base of 6 ft. 6 ins. Each truck is equipped with two G. E. type 55-H direct-current motors, inside-hung, half the weight being carried on the axle and half by nose suspension from the truck frame. The rated maximum tractive effort is 16,400 lbs. When exerting the rated draw-bar pull, the motors take a current of 160 amps. per motor and operate a train of 320 tons on a 2 per cent grade at approximately 8 m. p. h. At a current of 215 amps. per motor the locomotive exerts a maximum instantaneous effort for starting purposes of 25,000 lbs., and will haul the same weight of train on the level at a speed of 13 m. p. h. The locomotive is provided with type-M single-unit control, with five steps in series and five in parallel. It is equipped with General Electric Company's combined automatic and straight air brakes, operated by one centrifugal pump and a No. 23 air compressor, with a piston displacement of 50 cu. ft. per minute when delivering at a pressure of 90 lbs. Only one U. S. trolley is used. The frame is of 10-in. channels with cast-iron bumpers and floor plates of ⅜-in. steel. The cab is of the steeple type with one main motorman's cab and two auxiliary cabs. Some of the principal dimensions are as follows: Length over all, 31 ft. 1 in.; height over cab, 11 ft. 9 ins.; width over all, 9 ft. 6½ ins.; total wheel base, 22 ft.; rigid wheel base, 6 ft. 6 ins.; driving wheels, 36 ins. in diameter.



50-TON ELECTRIC LOCOMOTIVE FOR FREIGHT SERVICE ON KANSAS CITY & WESTPORT RAILWAY

LEGAL DEPARTMENT*

ASSISTING PASSENGERS

It is remarked by a standard legal author that "the obligation of a carrier to assist passengers in getting on and off depends largely upon the nature of his vehicle, the facility with which access may be had without assistance, and similar circumstances. Thus, where a ship lies considerably above the level of the pier, and no plank is run ashore, or where she lies at a distance from the shore, the master, if he has undertaken to carry passengers, is bound to hoist them aboard. So a railway company, stopping its train for passengers at a place so steep or inconvenient that they could not easily get on or off the train, would be bound to assist them to do so. But when access is easy, without such aid, as where a guarded plankway is laid from a ship to a pier, or the platform of a railway car is attainable by steps of ordinary length, and otherwise convenient, assistance cannot be required as a right."

The doctrine so laid down is applicable to street railways unless statutes, ordinances, or rules of companies provide otherwise. A street car company is not bound to help persons on or off, unless there be something peculiar about the place of landing or alighting. If, however, passengers be called upon to enter or leave cars at unusual or dangerous places, the carrier will be required to provide such assistance as the necessities of the case demand, and whether or not proper assistance has been rendered will be a question for a jury to decide if any person is injured and brings suit.

Attention may profitably be directed to two qualifications of the general rule. First. If a carrier, although not required to assist passengers, through its conductor or other servant, volunteers such aid, it will be liable for any negligence of the employee in the course thereof through which the passenger is injured. The matter has very recently been passed upon by the New York Court of Appeals in a steam railway case, and its principle would seem equally applicable to cases of street railway passengers. (Hanlon v. Central Railroad of New Jersey, N. Y. Law Journal, Jan. 23, 1907.) The principle was reiterated that a steam railway company was not bound to assist passengers off its cars at a station, but it was held that if a conductor assumes to help a woman down from a platform and does it in a negligent manner by suddenly withdrawing his support and causing her to fall, the company is answerable in damages.

It was argued that where an employee of a carrier volunteers to do an act of mere kindness or courtesy his master cannot be held responsible for the manner in which it is performed. The Court of Appeals on this point, however, said:

"A conductor is placed in a position of responsible control by the company and he is bound to exercise the greatest care in seeing to the safety of the passengers. He is invested with such apparent authority over them as reasonably to induce their confidence in and compliance with his directions, and, as well, their reliance upon his acts. The situation in this case, it is true, was not such as to suggest any serious danger to the plaintiff in leaving the car; but when the conductor assumed to extend his aid in doing so, she had the right to accept it and to rely upon his act being a careful one."

Second. A carrier is not bound to accept as a passenger without an attendant, one who, because of physical or mental disability, is unable to take care of himself; but if it does voluntarily take such a passenger without an attendant, the disability being obvious or having been made known at the time to its servants, the company is guilty of negligence and liable therefor, if proper assistance under the circumstances be not afforded.

An interesting comparatively recent decision on this point was by the Supreme Court of Minnesota, in Croom v. Chicago, Milwaukee, etc., Ry. Co. (52 Minn. 296). The Court remarks: "Of course, a railroad company is not bound to turn its cars into nurseries or hospitals or its employees into nurses." The opinion then lays down the doctrine of obligation to extraordinary care by reason of acceptance as a passenger of an infirm person, and concludes: "In such case it must exercise the degree of care commensurate with the responsibility which it has thus voluntarily assumed, and that care must be such as is reasonably necessary to insure the safety of the passenger, in view of his mental and physical condition. This is a duty required by law as well as the dictates of humanity."

Here again the question whether reasonable care was exercised will be a jury question. The case last cited was a steam railway case, but its doctrine is applicable to street railways in the absence of special provision either by law or by a company's rule.

CHARTERS, ORDINANCES, FRANCHISES, ETC.

CONNECTICUT.—Error to State Court—Scope of Review—Question not Involved in the Record—Constitutional Law—Impairing Contract Obligations—Reserved Power to Amend or Repeal Street Railway Charter.

1. A Federal question respecting the validity of a paving assessment against a street railway company is not open on writ of error from the Supreme Court of the United States to a State court, where the latter court based its ruling that the question had no standing in the case upon its view as to the scope of the application of the railway company for relief from the assessment, and of the pleadings, and it is not contended that such view is erroneous.

2. The imposition upon street railway companies by Connecticut act of July 1, 1895, of the cost of paving and repaving that part of the streets occupied by their tracks, is a valid exercise of the power reserved by the State to alter or amend the charter of a street railway company, which required such company to keep the street between its tracks and 2 feet on each side in good and sufficient repair.—(Fair Haven & Westville Railroad Company, Plff. in Err., vs. City of New Haven, 27 Sup. Court Rep., 74.)

CONNECTICUT.—Trial—Non-Suit—Failure of Proof—Street Railways — Streets — Duty to Repair — Judgment — Conclusiveness—Denial—Discretion of Court—Continuance—Surprise—Trial—Reception of Evidence—Qualifications—Witnesses—Redirect Examination—Refreshing Memory—Request to Charge—Weight of Evidence—Opinion of Court.

1. Where, in an action against a city and a street railway company for injuries caused by a defect in a street, there was no cause of action alleged against the railway company except one based on its failure to perform its statutory duty of repairing the highway within certain prescribed limits, and plaintiff failed to produce any evidence of the existence of a defect within such limits, he failed to make a prima facie case, entitling the railroad company to a non-suit as provided by Gen. St. 1902, Sec. 761.

2. Where a street railway company was required by statute to keep in repair a part of the street on which its tracks were laid to a distance of 2 feet on each side thereof, the railroad company owed no duty to travelers in respect to the repair of the street except the specific duty imposed by the statute.

3. Where, in a statutory action against a street railway company and a city for injuries from a defect in the street, plaintiff suffered an involuntary non-suit against the street railway company and then elected to pursue his action against the city, which he was not bound to do, and was defeated in a trial on the merits, he was bound by the judgment.

4. The denial of a non-suit in favor of one of two defendants is wholly within the discretion of the court.

5. Where, in a statutory action against a street railway company and a city for injuries on a defective street, the court granted an involuntary non-suit in favor of the street railway

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company, but denied a non-suit in favor of the city, it was within the court's discretion to grant the city a continuance on the ground that it had prepared to try the case as an action primarily against the street railway company and only incidentally against the city, as authorized by Gen. St. 1902, Sec. 3838, and that it was not then prepared to try the action as one against the city for a defect in the portion of the highway under its care.

6. Where, in an action for injuries on a defective street, plaintiff sought to introduce defendant's map as a part of plaintiff's case merely as "illustrative" and not as "accurate," the court properly held that, if plaintiff put in a map as an exhibit, it must go in without qualification with such explanations as plaintiff might wish to make by his witnesses.

7. Where plaintiff, on redirect examination of his own witness, sought to examine him as to his testimony on a former trial, the court properly ruled that the examination should be conducted in a manner appropriate to the purpose of refreshing the witness' memory.

8. Where the court properly stated the law to the jury, it was not bound to change the language of written requests, though such requests were quoted from opinions in reported cases.

9. Where, in an action for injuries by a defect in a highway, the court charged that, if plaintiff, in the exercise of his best judgment, believed the sidewalk to be dangerous, and that the roadway was a safer place for him to travel, the fact that he was in the roadway could not bar his right to recover, it was not error to refuse a request that it was not negligence for plaintiff to walk in the roadway and that the bare fact that he was walking there when he received his injuries could not prevent a recovery.

10. Where the court submitted the questions of fact to the jury, without any direction as to how they should find the facts, the fact that the court either directly or inferentially expressed its opinion on the facts was not error in the absence of abuse of discretion.—(Crotty vs. City of Danbury et al., 65 Atl. Rep., 147.))

NEW YORK.—Master and Servant—Injuries to Third Person—Punitive Damages—False Imprisonment—Evidence—Malicious Prosecution—Pleading—Issues—General Denial—Acts Constituting—Misdemeanor Justifying Arrest.

1. In an action against a master for a tort of his servant, punitive damages cannot be given for the malice of the servant.

2. In an action against a railroad company for an arrest by its servant, evidence that he believed that the act of plaintiff in getting on a moving train was a misdemeanor was inadmissible on a cause of action for false imprisonment.

3. In an action against a railroad company for illegal arrest by its servant, evidence that the servant believed that the act of plaintiff in getting on a moving train was a misdemeanor was admissible on a cause of action for malicious prosecution, malice being an essential ingredient of the cause of action itself.

4. On a charge against a railroad company for false imprisonment by its servant, a general denial was sufficient to authorize the admission of evidence that plaintiff got on the steps of a moving train on the wrong side and climbed over the platform gate into the car.

5. Pen. Code, Sec. 426, subd. 2, prohibiting persons from getting on any car while in motion for the purpose of obtaining transportation as a passenger, though under the caption "Riding on Freight Trains," makes the attempt to get on a moving passenger train a misdemeanor, so that a railroad company whose servant arrested a person getting on a moving train was not guilty of false imprisonment or malicious prosecution.—(East vs. Brooklyn Heights Ry. Co., 101 N. Y. Sup., 364.)

NEW YORK.—Carriers—Misconduct of Servant—Excessive Damages.

A passenger on boarding a car paid a cash fare, instead of tendering his transfer. Before the conductor had rung up the fare, the passenger requested the return of the money, whereupon the conductor abused him and undertook to forcibly remove him from the car. The passenger remained on the car. He suffered no serious injury. Held, that a verdict of $500 was excessive and should be reduced to $100.—(Burfeindt vs. New York City Ry. Co., 101 N. Y. Sup., 589.)

VERMONT. — Contracts — Part Performance — Quantum Meruit Recovery — Action — Evidence — Admissibility — Asumpsit, Action of —Pleading Declaration—Damages—Breach of Contract—Loss of Profits—Evidence—Appeal Harmless Error—Curative Instructions.

1. Where one who had contracted to furnish electric power to an electric railroad failed to furnish the amount of power which he was required to furnish, though the railroad availed itself of the power furnished, he was entitled to a quantum meruit recovery for the power furnished, less any sum in which defendant was damaged by the breach.

2. In an action for a quantum meruit recovery, it was proper to admit evidence tending to show that plaintiff's failure was the result of an extraordinary drouth affecting his water power; that after the shortage occurred or became imminent, steam power could not have been established in time to relieve the situation, and that plaintiff gave defendant a preference over other patrons.

3. A technical quantum meruit count is not necessary to a recovery quantum meruit, but such recovery may be had under the common counts in indebitatus assumpsit.

4. Where one who had contracted to furnish electric power to an electric railroad failed to furnish all the power required, but that furnished was used, and thereafter recovery quantum meruit was sought, it was error to exclude evidence tending to show that, in consequence of plaintiff's failure to furnish the power according to the contract, defendant suffered a loss of patronage and earnings.

5. Plaintiff contracted to furnish electric power to an electric railroad, but failed to furnish the amount of power required, though that furnished was accepted, and subsequently he sought a recovery on quantum meruit for that accepted. Evidence was introduced by plaintiff to show that at the time plaintiff failed to perform his contract, defendant was under contract with a certain lighting company not to take power from plaintiff while plaintiff furnished light in certain cities, and that a suit had been commenced against defendant to compel the performance of such contract, and that defendant was enjoined from taking power from plaintiff, though the injunction was dissolved on the giving of a bond, for the purpose of showing that defendant derived a benefit from the termination of the contract between plaintiff and defendant, but plaintiff failed to show wherein defendant was benefited, and did not furnish a basis for computing such benefit, if any. Held that in the absence of such explanatory evidence, that admitted was erroneously in the case, and ground for reversal, notwithstanding an instruction by the court to the effect that the evidence was withdrawn from the consideration of the jury in an instruction in which the court stated the purpose of the evidence and the reason why it was not open to the consideration of the jury.—(Viles vs. Barre & M. Traction & Power Co., 65 Atl. Rep., 104.)

LIABILITY FOR NEGLIGENCE

INDIANA.—Trial—Preponderance of Evidence—Evidence—Opinion Evidence—Medical Experts—Damages—Personal Injuries—Nurse Hire—Witnesses—Examination—Leading Questions.

1. An instruction enumerating certain facts and circumstances which the jury might consider, but not undertaking to tell the jury that if such facts were shown to exist by a preponderance of the evidence they should return a certain verdict, and closing with a statement that from all such facts, together with all the evidence and circumstances given in evidence, the jury should determine whether defendant was negligent as charged in the complaint, did not invade the providence of the jury.

2. An instruction that where witnesses of equal candor, fairness, and intelligence testify, with equal knowledge, opportunity of knowledge, and memory, and their testimony is in all respects of equal weight and credibility, and there is, nevertheless, a conflict which cannot be reconciled, a verdict should be rendered in harmony with the testimony of the greater number of witnesses, was erroneous, as taking from the consideration of the jury all corroborating circumstances.

3. In an action for personal injuries, a physician competent to testify as a medical expert, and who attended and treated plaintiff immediately after the injuries and for some time after that, was competent to testify as to what in his opinion was the producing cause of sleeplessness and nervousness with which plaintiff was afflicted.

4. In an action for personal injuries, there was no error in admitting evidence as to the value of nurse hire where plaintiff lived, though the evidence showed that he was nursed by his wife.

5. In an action for injuries sustained by a passenger on a street car, a question to a witness, on redirect examination, as to whether he noticed "the motorman have hold of the brass handle and operate it in any way just previous to the accident," was erroneous, as leading.—(Indianapolis & E. Ry. Co. vs. Bennett, 79 N. E. Rep., 389.)

INDIANA.—Appeal—Complaint—Attack—Street Railways—Rights in Streets—Pedestrians—Use of Street—Care Required—Street Car Drivers—Degree of Care—Trial—General Verdict—Special Findings—Injuries to Pedestrians—Contributory Negligence—Proximate Cause—Last Clear Chance—Evidence—Opinions—Appeal—Harmless Error—Record—Briefs—Instructions—Estoppel to Allege Error—Husband and Wife—Injury to Wife—Medical Bills—Recovery—Verdict—Review.

1. A complaint will be upheld when first attacked on appeal if the facts alleged are sufficient to bar another suit for the same cause of action.

2. A street railroad company has no superior and predominant right to the use of the streets of a city on which its tracks are laid over the rights of other users, except the right of way when required.

3. Where a street on which defendant's street car tracks were located was covered with melting snow and ice to a depth of from 6 to 14 inches, except the space between the rails, which was paved with brick and practically free from obstructions, the pedestrian was entitled to use such space for passage, using ordinary care for her own safety, and was not bound to assume that she would be run into by a car approaching her from the rear at an excessive rate of speed, at broad daylight, on a straight track without warning.

4. Where a street car was being propelled along a city street at a speed of from 20 to 25 miles per hour, at a point where persons on foot or in vehicles were constantly passing and repassing, the ordinary care required of the driver was a high degree of watchfulness and vigilance to prevent accidents.

5. Special finding will override the general verdict only when both cannot stand and the antagonism is apparent on the face of the record, beyond the possibility of being removed by any evidence legitimately admissible under the issues.

6. Plaintiff was struck and injured while walking along defendant's street car track, by a car which approached her from the rear without warning at a high rate of speed. The track was straight and the motorman could have seen plaintiff for a distance of from a quarter to a half a mile. When plaintiff entered on the track, she looked in the direction from which the car approached, and again when she had proceeded half a square on her journey, but no car was then in sight. She listened continuously as she advanced, but failed to discover the approach of the car, the noise of which was deadened by the passing of a car in the opposite direction on the adjoining track. Held, that plaintiff's negligence, if any, in not keeping a constant watch for the approach of a car was the remote and not the proximate cause of her injury, and was, therefore, no bar to her right to recover therefor.

7. The motorman in charge of the street car had the "last clear chance" of avoiding the injury, and his negligence in failing to do so was the proximate cause thereof.

8. In an action for injuries to a pedestrian by being struck by a street car, questions "that would not prevent it, would it?" and "she could step off, could she not, and prevent the collision?" relating to the condition of the street adjacent to the track on which plaintff was walking at the time of the accident, were objectionable in form as calling for an opinion of the witness.

9. Where, in an action for injuries, the jury expressly found that, within 100 feet of the place of the accident, there was nothing to prevent plaintiff from stepping far enough from defendant's street car track to have avoided the passing car, by which she was struck, had she known it was coming, defendant was not prejudiced by the exclusion of evidence offered to prove such fact.

10. Where instructions given at appellant's request were not set out either in full or in substance in appellant's brief, the Supreme Court would not search the record in order to make a comparison between such instructions and those given for appellee, in order to determine whether they were conflicting as alleged.

11. Where instructions given by the court independent of appellant's requests were correct, appellant could not procure the giving of an inconsistent or erroneous instruction and then complain on appeal of the error.

12. Where a married woman, after being injured in a street car accident through defendant's negligence, incurred expenses for medical treatment on her own behalf, she was entitled to recover therefor as a part of her damages, though her husband was ordinarily chargeable with the payment of her medical bills.

13. Where a verdict is sustained by evidence and is not contrary to law, it will not be disturbed on appeal as against the weight of the evidence.—(Indianapolis Traction & Terminal Co. vs. Kidd, 79 N. E. Rep., 347.)

KENTUCKY.—Street Railways—Collision—Damages—Trial—Instructions—Damages for Personal Injuries—Negligence—Ordinary Care—Damages—Exemplary Damages—Gross Negligence—Instructions.

1. In an action against a street railway company for damages to person and property caused by collision with a street car, a verdict for $400 rendered under proper instructions is not excessive where plaintiff was badly bruised, was thrown some 20 feet into the street, causing a shock that confined him to the house several days and requiring treatment from a physician, and the buggy in which he was riding at the time was virtually destroyed.

2. In an action for damages resulting from a collision with a street car, an instruction that the jury might compensate plaintiff for permanent injuries or for reduction of power to earn money is unwarranted where there was no evidence that plaintiff sustained injuries of that nature.

3. In an action for damages from a collision with a street car, an instruction that "ordinary care is such care as an ordinary person would usually observe under the same or similar circumstances as those under investigation" is erroneous; ordinary care being such care as an ordinarily prudent person would usually exercise under circumstances similar to those proven in the case.

4. Exemplary damages can never be recovered for anything short of gross negligence, and where the negligence of a motorman, resulting in a collision with plaintiff, was simply failure to use ordinary care, an instruction authorizing recovery of exemplary damages is erroneous.—(Henderson City Ry Co. vs. Lockett, 98 S. W. Rep., 303.)

KENTUCKY.—Carriers—Injuries to Passenger—Injuries to Passenger Alighting from Car—Contributory Negligence.

1. When a street car has been stopped at the usual place for discharging passengers, it is the duty of the operatives of an approaching car on a parallel track to have it under such control that it may be stopped at a moment's notice so that persons who have alighted may cross the track in safety.

2. Though one who alighted from a street car and walked around behind the same to cross a parallel track failed to exercise ordinary care to avoid a car approaching on the other track from behind the car from which she alighted, whereby she was injured, the company was liable if the operatives of the approaching car could, by ordinary care, have discovered her peril and prevented injury to her.—(Louisville City Ry Co. vs. Hudgins, 98 S. W. Rep., 275.)

MASSACHUSETTS.—Carriers—Carriage of Passengers—Degree of Care—Injury to Passengers—Negligence—Contributory Negligence—Assumption of Risk—Questions for Jury—Evidence.

1. A carrier must use the highest degree of care, consistent with the nature of its business, not only to provide suitable vehicles for the carriage of its passengers, but to maintain such reasonable regulations as will protect its passengers against injuries caused by the misconduct of other passengers, which may be anticipated and be guarded against, and to employ a sufficient number of competent employees to meet any contingency, which, in the exercise of a proper degree of care it has reason to anticipate.

2. Where, in an action against a carrier for injuries to a passenger by reason of the pushing of a crowd while attempting to enter a car at a station, there was evidence that there was usually a large crowd in the station at that time of day, and that there had been on many previous occasions the same struggle to get on the car as occurred at the time of the accident, and that the carrier ought to have anticipated the happening of the accident, and ought to have taken reasonable precautions to guard against such injuries, the refusal to charge that there was no evidence of negligence of the carrier was proper.

3. Where the crowding of the platforms and cars of a carrier

at certain hours of the day was unavoidable in carrying on its business, the questions whether the carrier was bound to employ an increased number of men to prevent such crowding as involved danger to passengers, and whether it was reasonable to require such precaution, were for the jury.

4. Whether a passenger, injured while attempting to board a car at a station by reason of the jostling of a crowd, was guilty of contributory negligence or assumed the risk, in view of the fact that she had been in similar crowds before and had seen the same struggling and the same failure on the part of the carrier to control the crowd, was for the jury.

5. Where a carrier held out a station as a proper place for its passengers to go for the purpose of taking its cars, and the passengers had the right to regard themselves as having come to the station by its invitation, the carrier, though not controlling the station, but using it for his own benefit under an agreement with a lessee thereof, was liable to the passengers for injuries caused by defects in the rules regulating the use of the station, rendering the details of the agreement with the lessee inadmissible.—(Kuhlen vs. Boston & N. St. Ry Co., 79 N. E. Rep., 815.)

MASSACHUSETTS. — Carriers — Personal Injuries — Question for Jury—Contributory Negligence.

1. In an action against a street railway for injuries to a passenger, owing to his being struck by a trolley pole while standing on the running board of the car, held, under the evidence, that the question of negligence was one for the jury.

2. In an action against a street railway for injuries to a passenger, owing to his being struck by a trolley pole while standing on the running board of the car, held, under the evidence, that the questions of contributory negligence and assumed risk were for the jury.—(Pomeroy vs. Boston & N. St. Ry. Co., 79 N. E. Rep., 764.)

MASSACHUSETTS.—Street Railroads—Injuries to Pedestrians—Contributory Negligence—Position of Peril.

1. Decedent, who was familiar with the locality, undertook to cross a street on which double street car tracks were located, and, having passed over the north-bound track, between two street cars which were standing, proceeded over the space between the two tracks and to the middle of the south-bound track, when he first saw a south-bound car close upon him. From the time he left the sidewalk, until he was struck, he neither looked nor listened for a car on the south-bound track, though he "hesitated" before he crossed the north-bound track. Held, that decedent was guilty of contributory negligence as a matter of law.

2. The fact that the gong of one of two standing street cars was struck as decedent was passing between them was not a negligent act on the part of the railroad company, indicating that decedent was in a place of peril, so as to justify him in stepping onto the adjoining track, without looking or listening, directly in front of a rapidly approaching car.—(Blackwell vs. Old Colony St. Ry. Co., 79 N. E. Rep., 335.)

MASSACHUSETTS.—Carriers—Injuries to Passengers—Negligence.

A passenger was injured while alighting from a car. Her dress was caught while she was alighting from the front platform so firmly that some one pulled her towards the car to loosen her dress. There were five persons on the platform at the time she alighted. Held insufficient as a matter of law, notwithstanding the doctrine of "res ipsa loquitur," to show negligence on the theory that the platform was defective.—(Thomas vs. Boston Elevated Ry., 79 N. E. Rep., 747.)

MASSACHUSETTS.—Carriers—Injury to Employee Riding on Pass—Contract Exempting from Liability—Question for Jury—Appeal—Right of Review.

1. Though a condition of a pass, issued to a railway employee as a gratuity, that he assumes all risk of accident is binding, it is not binding where the pass is issued as one of the terms of his employment.

2. Whether or not a pass held by a street railway employee was a gratuity or was issued as one of the terms of his employment, thereby making him a passenger for hire, held, in an action for injuries received by him while riding on a car, to be a question for the jury.

3. Where defendant asked the trial judge to rule on a question of fact as if it were a question of law, he could not complain of the court's ruling thereon.—(Dugan vs. Blue Hill St. Ry. Co., 79 N. E. Rep., 748.)

MASSACHUSETTS.—Street Railroads—Injuries to Person on Track — Contributory Negligence — Appeal — Harmless Error—Exclusion of Evidence.

1. A boy of eleven started to "trot" across a street in which there were double electric railway tracks, immediately behind a car on the track nearest to him, and was injured by being struck by a car coming in the opposite direction on the further track. He was familiar with the street, and testified that he looked both ways before he started to cross, but that his view of the car that struck him was obstructed by the other car. Held, that he did not exercise the care required of one of his years.

2. Where, in an action against a street railway for injuries to one struck by a car while attempting to cross a track, plaintiff offered evidence tending to show that the fender on the car was a dangerous appliance, and that the brakes were insufficient, the exclusion of the evidence was harmless; it appearing that plaintiff himself was not in the exercise of proper care.—(Stackpole vs. Boston Elevated Ry. Co., 79 N. E. Rep., 740.)

MASSACHUSETTS.—Master and Servant—Injuries to Servant—Question for Jury—Persons Engaged in Superintendence—Acts of Superintendence.

1. In an action for injuries to a servant owing to the fall of a ladder, held a question for the jury whether defendant's superintendent was negligent in the manner in which he secured the ladder.

2. On an issue as to whether a certain person was defendant's superintendent in the work of unloading coal from a schooner, it appeared that he did manual work only when he felt like it; that it was his duty to report how many men he wanted, and to report them if they did not work properly; that it was his duty to tell the men where to shovel the coal, and to tell the engineer when to hoist and lower the coal scoop, and also to tell the men when to stop work; and that there was no other person in the immediate charge of the work. Held that the facts warranted a finding that he was a superintendent, within the employers' liability act.

3. The act of one in charge of the work of unloading a schooner in selecting an improper piece of rope, for the purpose of lashing a ladder by which access was had to the hold, was an act of superintendence, notwithstanding that he himself did the lashing.—(Hourigan vs. Boston Elevated Ry. Co., 79 N. E. Rep., 738.)

MASSACHUSETTS.—Carriers—Injuries to Passengers—Contributory Negligence—Evidence—Negligence of Carrier—Question of Law or Fact.

1. Evidence that a woman with a child in her care boarded a street car, and while she was still standing, facing partly forward and partly sideways, and helping the child to move over from the end of the seat, the car, which was standing at the beginning of the curve, started with a sudden jerk, causing her to fall, was sufficient to warrant a finding that she was in the exercise of due care.

2. Such evidence did not show as a matter of law that there was no negligence on the part of the conductor in starting the car when he did.—(Hamilton vs. Boston & N. St. Ry. Co., 79 N. E. Rep., 734.)

MICHIGAN.—Damages—Impairment of Earning Capacity—Evidence—Sufficiency to Justify Instruction.

Two physicians who had examined plaintiff, suing for personal injuries, detailed his condition, and plaintiff and his wife testified to his diminishing earning capacity. Plaintiff testified as to the amount of his annual earnings in handling horses, his regular occupation, and as to his inability to longer do such work. Held sufficient evidence of what his diminished earning capacity was to justify an instruction authorizing damages therefor.—(Lewless vs. Detroit United Ry., 109 N. W. Rep. 1051.)

MISSOURI.—Street Railroads—Injuries to Pedestrian—Contributory Negligence—Questions for Jury—Evidence—Instructions—Municipal Regulations—Validity—Action—Instructions — Appeal — Review — Theory of Case — Trial — Questions for Jury—Instructions—Assumption of Facts—Negligence—Personal Injuries—Proximate Cause—Correction of Error—Appeal—Grant of New Trial—Review—Reason for Decision—Street Railroads—Injuries to Pedestrian—Negligence—Actions—Pleading.

1. Whether a boy 11½ years of age, who, on approaching a street railroad crossing, looked, and seeing a car approaching, waited till it had passed, was guilty of negligence in attempting to cross the track in front of a car following without again

looking in the direction from which the car had come, is, under the evidence, a question for the jury.

2. Where, in an action against a street railroad for injuries to a boy at a crossing, there was no evidence that the car injuring him was not stopped in the shortest time and space possible, it was not error for the court to nullify, by instruction, the effect of an ordinance which had been introduced in evidence, providing that "on the first appearance of danger the car shall be stopped in the shortest time and space possible," as there could be no recovery on that theory.

3. An ordinance declaring that the motorman, or any other person in charge of a street car, shall keep a vigilant watch for all persons on foot, especially children, either on the track or moving toward it, and on the first appearance of danger to such persons the car shall be stopped in the shortest time and space possible, is valid, being simply declarative of the common law.

4. In an action against a street railroad for injuries to a boy at a crossing, caused by being struck by a car, it was error not to give an instruction embodying the duty of the motorman to keep vigilant watch, especially for children approaching the track.

5. Where, in an action against a railroad for injuries to a boy at a crossing, caused by being struck by a car, the instructions on both sides proceed on the theory that it was the duty of the motorman to see the boy and warn him, and the case was tried on that theory, it will be heard on appeal on the same theory.

6. Where the facts are undisputed, an issue may be dealt with as a question of law.

7. Where, in an action against a street railroad for injuries to a boy at a crossing, caused by being struck by a car, the question of warning was a disputed fact, and the evidence was substantially one way that there was time and space in which to warn the boy by a gong after he had started to the track, an instruction assuming that it was defendant's duty to warn the boy and that it had time and space to perform that duty by the use of the gong was not erroneous.

8. Mere proof of negligence is not sufficient to support a verdict in an action for personal injuries. Such negligence must be the proximate cause of the injury.

9. In an action against a street railroad for injuries to a boy at a crossing, caused by being struck by a car, the court instructed that if the jury found that the boy used ordinary care in stepping on the track in front of the car without first looking to see if a car was coming, and if they further found that the motorman did not sound his gong so as to give timely warning, and that, if he had done so, the boy would have been warned in time to have kept out of danger, then plaintiff was entitled to a verdict. The court further charged that before the plaintiff could recover the law required him to prove negligence of defendant, and that such negligence was a proximate cause of the accident; and that, if plaintiff had not so proved negligence, and that such negligence was a proximate cause of the accident, then defendant was entitled to a verdict. Held that failure of the court to submit the issue of proximate cause in the first instruction was cured by the latter instruction.

10. Where the court rightfully granted a new trial, the fact that a wrong reason was assigned therefor is not ground for disturbing the ruling on appeal.

11. In an action against a street railroad for injuries to a boy at a crossing, caused by being struck by a car, the petition alleged several pretermitted duties and averred several acts of negligence, and followed these allegations with the averment, "all of which directly contributed to cause the injuries hereinafter complained of." Held that the allegation quoted meant that the pleaded acts of negligence contributed with one another to cause the injury, and plaintiff did not by the use of the word "contributed" plead his own contributory negligence, and hence state himself out of court.—(Deschner et al. vs. St. Louis & M. R. R. Co., 98 S. W. Rep., 737.)

MISSOURI.—Street Railroads—Pedestrians—Use of Street—Collision—Death of Pedestrian—Presumptions—Burden of Proof—Contributory Negligence—Question for Jury—Discovered Peril—Persons on Track—Evidence—Trial—Instructions—Refusal.

1. The fact that a railroad track was laid in a public highway did not make a pedestrian walking thereon a trespasser, he being entitled to use the street for all ordinary purposes in the exercise of due care and caution.

2. Where intestate was killed by being struck by a street car, the law presumes that he was exercising ordinary care at the time, and the burden of rebutting such presumption is on the defendant.

3. A pedestrian is not guilty of contributory negligence as a matter of law in walking at night on a street railway track.

4. In an action for death of plaintiff's intestate by being struck by a street car while he was on the track at night, evidence held to require submission of the question of defendant's negligence and plaintiff's contributory negligence to the jury.

5. A street car company is liable even to a trespasser if it fails to use ordinary care to prevent injuring him after discovering his peril.

6. Intestate, while lying on defendant's street car track at night, was struck and killed by an approaching car, and defendant's servants testified that intestate could have been readily seen on the track for from 40 to 75 ft. ahead of the car, and that the car was actually stopped in 32 ft. after intestate was discovered on the track. Held to justify an inference that defendant's motorman if he had been exercising ordinary care could have discovered intestate on the track in time to have avoided injuring him.

7. Where the instructions given fully covered the case there was no error in the court's refusal of additional instructions requested.—(Goff vs. St. Louis Transit Co., 98 S. W. Rep., 49.)

MISSOURI.—Carriers—Street Railroads—Premature Start—Duty of Conductor—Diligence in Alighting—Evidence—Instructions—Misleading Instructions—Modification.

1. It is the duty of a street car conductor, after the car has stopped to permit passengers to alight, to know before giving the signal to start that no one is in the act of getting on or off the car, and it is no excuse for his failure so to do that he is busy with other matters within the car.

2. A passenger on a street car is entitled to assume that the conductor will not start the car while the passenger is in the act of alighting, though he sees the conductor's arm raised toward the bell cord.

3. Plaintiff had been riding in the vestibule of defendant's street car, which was full of people and tool boxes. The car came to a full stop at the point where plaintiff desired to alight, and as soon as the car stopped he endeavored to get to the steps as fast as he could. There were others ahead of him, whom he followed in his endeavor to alight as soon as possible, and as soon as the man ahead of him got off he stepped down, and while in the act of doing so was suddenly thrown to the street by the starting of the car. Held, that plaintiff exercised reasonable dispatch in endeavoring to alight.

4. In an action for injuries to plaintiff while alighting from a street car, the court charged that if plaintiff was a passenger, and when the car stopped plaintiff undertook to alight, and while in the act of stepping from the platform, and before he had time to alight by using reasonable diligence and exercising ordinary care, the car was suddenly started by defendant's servants, whereby plaintiff was thrown to the pavement and injured, and defendant's servants failed to use the utmost skill and care which prudent men would use under similar circumstances to see that plaintiff had safely alighted from the car or was in a perilous position, plaintiff was entitled to recover. Held, that such instruction was not objectionable as eliminating the question of plaintiff's contributory negligence.

5. In an action for injuries to a passenger while alighting from a street car, defendant requested an instruction that plaintiff had no right to alight or attempt to alight from the car after it had started, or while it was in motion, and, if he did so, he assumed the risk of injury; that if, after the car had started or while it was in motion, plaintiff attempted to get off and was thrown down by the motion of the car, then his injuries, if any, were caused by his own fault, and the verdict should be for defendant. Held, that the instruction as requested was misleading, and was properly modified by requiring that plaintiff must have been thrown down only by the motion of the car, "and without any negligence on the part of defendant's servants in charge thereof."—(Hurley vs. Metropolitan St. Ry. Co., 96 S. W. Rep., 714.)

MISSOURI.—Street Railways—Interurban Railways—Failure to Fence—Double Damages for Stock Killed—Occupancy of Public Roads.

1. An interurban electric railway company, incorporated under Rev. St. 1899, c. 12, art. 3, Sec. 1187, and authorized to operate a street railway for public conveyance of passengers, mail and express, is a railroad corporation within article 2, Sec. 1105, requiring every railroad corporation incorporated in the State under such article, or any railroad

corporation running or operating any railroad in the State, to erect and maintain lawful fences on the sides of its road passing through cultivated fields, and, until such fences are constructed, making it liable for double damages for stock killed on its road.

2. An interurban electric railroad company, incorporated under Rev. St. 1899, c. 12, art. 3, Sec. 1187, is not relieved of its duty to fence its road, as required by article 2, Sec. 1105, making railroad companies liable for double damages for stock killed on roads, not fenced, running through and adjoining inclosed fields and uninclosed lands, because it was constructed on the right of way of a public road by permission of the county court.—(Riggs vs. St. Francois County Ry. Co., 96 S. W. Rep., 707.)

MISSOURI.—Carriers—Injury to Street Railway Passenger—Cause of Injury—Evidence—Negligence—Prima Facie Case—Burden of Proof—Appeal—Harmless Error—Instructions—Trial—Request for Instructions—More Specific Instructions.

1. Evidence, in an action for injury to a passenger on a street car, held sufficient to authorize a finding that the accident was caused by the passenger's heel catching on a piece of metal projecting from the step of the car.

2. Proof of injury to a passenger, by the heel of her shoe catching on a piece of metal projecting from the step of the street car, makes a prima facie case of negligence, putting on the carrier the burden of disproving it.

3. Error, if any, in giving instructions as to negligence, without defining it, is harmless; the instructions having fully defined the degree of care resting on defendant, the absence of which was negligence.

4. One desiring a more specific definition of what constitutes ordinary care than is contained in the charge must request it.—Rattan vs. Central Electric Ry. Co., 96 S. W. Rep., 735.)

MISSOURI. — Street Railroads — Operation — Personal Injuries—Question for Jury—Injury Avoidable Notwithstanding Contributory Negligence—Damages—Excessive Damages.

1. In an action for personal injuries caused by a collision of a street car with a wagon in which plaintiff was riding, evidence held to present a question for the jury whether the gripman operating the car was negligent.

2. Where one riding on a wagon along a street car track relied on hearing the gripman's bell, and did not look for an approaching car, it was a question for the jury whether he was negligent.

3. A person riding on a wagon along a street railway track, and injured by a collision with the street car, is entitled to recover therefor if the gripman on the car saw his danger in time to have averted a collision, or could have seen it had he looked, and failed to exercise ordinary care to avoid injuring him.

4. An award of $2,000 damages for a permanent injury to plaintiff's knee, such that he cannot properly extend his leg, and that it pains him and will continue to do so in the future and is likely to grow worse, is not excessive.—(Winn vs. Metropolitan St. Ry. Co., 97 S. W. Rep., 547.)

MISSOURI.—Carriers—Street Railways—Injuries to Passengers—Negligent Construction—Contributory Negligence—Questions for Jury.

1. Where the elbow of a street car passenger was struck and injured by a passing car, it appearing that the space between defendant's double tracks at the point in question was so narrow that the cars would rub or bump together in passing, and plaintiff's evidence showed that they did so, it would be presumed that the tracks were negligently constructed and maintained, authorizing the jury to find defendant guilty of negligence in operating cars over such tracks.

2. Where plaintiff, a passenger on a street car, sustained a fractured elbow by its being struck by a passing car on an opposite track, plaintiff was not guilty of contributory negligence, as a matter of law, in exposing his elbow to a slight degree from the window of the car on which he was riding, or in resting the same on the window sill within the car.—(Smith vs. St. Louis Transit Co., 97 S. W. Rep., 218.)

MISSOURI.—Street Railways—Injuries to Travelers—Contributory Negligence—Humanitarian Doctrine.

1. Plaintiff, shortly after dark, was driving his two horses and wagon along defendant's street car track, going in the direction the cars ran, with his cap pulled down over his ears, though he knew that a car might overtake him from the rear at any time. There was no necessity for his being on the track, there being ample room in the street proper, and he was struck and injured by a car approaching him from the rear. Held, that plaintiff was guilty of contributory negligence.

2. Plaintiff was struck and injured by a street car approaching him from the rear as he was driving on defendant's street car track at night. He testified that it was dark, and that when he looked back, several times, he did not see a car, until finally, when he heard a noise, he again looked and saw the car only 30 ft. away, which he could then distinguish only as some dark object, which struck his wagon within the time he could hit his horses. Held, that the motorman was not guilty of negligence in failing to see plaintiff's wagon in a position of peril in time to have avoided strikng the same.—(Abbott vs. Kansas City Elevated Ry. Co., 97 S. W. Rep., 197.)

MISSOURI.—Street Railroads—Injuries to Pedestrian—Action—Pleading—Repugnant Allegations—Petition—Review—Allegations—Remedies—Death—Negligence of Employees—Statutes—Application—Municipal Ordinances—Death of Pedestrian—Vigilant Watch—Contributory Negligence—Construction.

1. In an action against a street railway company for injuries to a pedestrian at a crossing, a petition alleging in one count that the motorman failed to keep a vigilant watch, etc., and also that he failed to stop the car in the shortest time and space possible, was not objectionable as alleging repugnant grounds of negligence.

2. Where a petition is defective as alleging repugnant grounds of negligence in the same count the defect can only be reached by demurrer or motion to elect, and not by a demurrer to the evidence.

3. Rev. St. 1899, Sec. 2864, providing that whenever any person shall die from an injury resulting from, or occasioned by, the negligence of any servant or employee while running any car, the corporation in whose employ such servant or employee shall be at the time the injury is committed shall forfeit and pay for every person so dying the sum of $5,000, is applicable to street railways.

4. Rev. St. 1899, Sec. 2864, creates an action for death resulting from, or occasioned by, the negligence of any servant or employee while running any car, etc. Held that the right of action so given included death from negligence generally, whether consisting of negligence as refined by the common law, or arising from a failure to discharge a duty imposed by statute or municipal ordinance.

5. Where, in an action for death of a pedestrian at a street railroad crossing, there was evidence that, by the exercise of ordinary care, the motorman could have seen deceased on the track in time to have saved his life by the exercise of ordinary care thereafter, plaintiff was entitled to recover, though there was no evidence that, after the motorman in fact saw the deceased, he could have prevented a collision.

6. Where, a petition, for death of a pedestrian in a collision with a street car, charged certain acts of negligence, and then alleged violations of a city ordinance, "which violations of such ordinance directly contributed to cause the death and injury of plaintiff's husband," the petition should be construed to mean that the violation of the ordinance contributed with the other precedent acts of negligence charged in the petition to cause such injury and death, and not that they contributed with deceased's negligence to cause such injury.—(McQuade vs. St. Louis & Suburban Ry. Co. et al., 98 S. W. Rep., 552.)

NEW JERSEY.—Master and Servant—Injury to Servant—Contributory Negligence.

Plaintiff, an employee of a water company, was engaged with others in connecting a main at night, the plaintiff's duty being to hold a lantern to show a light to others who were working in a trench, the nearest edge of which was 18 ins. from defendant's tracks. The gang had been working on this job during the latter part of that day, during which the motorman had sounded the gong on approaching the point. At quitting time, about 5 p. m., the men quit, and then resumed work at 10 o'clock at night, of which the trolley employees had no notice. The plaintiff held his lantern 18 ins. from the ground, kneeling for this purpose on the narrow strip between the trench and the tracks, knowing that he would be struck by a passing car if he did not get out of its way. There was nothing in his occupation that prevented the free use of his senses, and no obstruction to his vision up or down a straight track in each direction. These circumstances having appeared in the plaintiff's case, the de-

fendant's motion that he be non-suited for contributory negligence should be granted.—(Bushay vs. Ocean City Electric Railway.)

NEW JERSEY.—Carriers—Injuries to Passengers—Negligence.

1. The plaintiff, a passenger on a street car, alighted for the purpose of taking another car, and in passing to the rear of the first car came in contact with the chain running down from the rear dash to the end of the fender, and was injured. The fender, contrary to the usual custom as to rear fenders, was down. Held, that the facts did not justify an inference of negligence on the part of the street railway company.

2. The street railway company is bound to the exercise of a reasonable judgment and due care and skill, but it is not to be condemned as negligent merely because the event that happened would have been avoided if its judgment had been different.—(Whilt vs. Public Service Corporation of New Jersey, 64 Atl. Rep., 972.)

NEW JERSEY.—Master and Servant—Injuries to Servant—Defective Appliances.

Where it appears, on the plaintiff's proofs, that the grab iron upon the top of a trolley car, which the line or repair man was required to use, was faultily constructed, in that the screws which held it were too small; and that it was also defective, in that wood into which it was fastened was rotten, the court could not non-suit the plaintiff.—(McIsaac vs. South Jersey Gas, Electric & Traction Co., 64 Atl. Rep., 976.)

NEW JERSEY.—Infants—Personal Injuries—Right of Action.

In an action brought by a little girl, two years and seven months old, who had lost a leg by the negligence of a trolley company, it was error for the trial justice to refuse to notice a request by defendants to charge that the jury could not allow any compensation for the loss of the earning capacity of the child until she reaches her majority.—(Gallagher vs. Public Service Corporation of New Jersey, 64 Atl. Rep., 978.)

NEW JERSEY.—Street Railroads—Frightening Horses—Evidence—Non-suit—Instructions.

1. Plaintiff alleged in his declaration that the defendant propelled one of its cars on a public highway in a negligent manner, and with such speed and noise as to cause plaintiff's horse to become unmanageable, whereby plaintiff was injured. At the close of the plaintiff's case there was proof that the plaintiff's horse took fright at the noise made by defendant's car. There was also proof that, after the frightened condition of the horse had become apparent by his behavior, the trolley car followed up the frightened horse at a high rate of speed for several city blocks until the horse became unmanageable and wrecked the wagon. Held that, assuming that plaintiff's testimony failed to show that the noise at which his horse took fright was due to any negligence on the part of the defendant, the further circumstances were such as to render the allegation as to speed a pertinent inquiry for the jury on the question of the defendant's negligence, and that the motion to non-suit was properly denied.

2. In response to a request of the defendant to the trial court to charge the jury that "there must be positive proof that the car made an unusual noise," the court charged as requested with the addition of the words, "or some other misconduct on the part of the defendant making them negligent." Held that the jury will be deemed to have applied this instruction to the case in hand, and that, thus limited, it was not injurious to the defendant.".—(Applegate vs. West Jersey & S. R. Co., 65 Atl. Rep., 127.)

NEW YORK.—Negligence—Imputed Negligence.

The negligence of the driver of a team, with which a street car collided through negligence of the motorman, will not be imputed to an occupant of the team injured by the collision, though he and the driver were engaged in a common employment; he not having done or attempted to do anything to influence the driver.—(Scheib vs. New York City Ry. Co., 100 N. Y. Sup., 986.)

NEW YORK.—Appeal—Judgment of Non-suit—Review—Carriers—Injury to Passenger—Negligence—Questions for Jury.

1. The court, in reviewing a judgment of non-suit, must place on the evidence a construction most favorable to plaintiff and consider the reasonable inferences that may be drawn therefrom.

2. Railroad Law, Laws 1890, p. 1126, C. 565, Sec. 138, provides that trains on elevated railroads shall not be permitted to start until every passenger desiring to alight shall have left the train, provided the passenger has manifested his intention to alight by moving toward the platform of the car. A passenger, on the train stopping, got up, ready to walk out, and he reached the exit door, when the train started with a sudden jerk, injuring him. Held that the question of the negligence of the railroad in starting the train was for the jury; the movement of the passenger being a manifestation of his intention to alight, and it being the duty of the railroad not to start until the passenger had been given a reasonable opportunity to do so.—(Fruhauf vs. Interborough Rapid Transit Co., 101 N. Y. Sup., 781.)

NEW YORK.—Appeal—Non-suit—Inferences from Evidence—Street Railroads—Negligence of Motorman—Question for Jury—Contributory Negligence.

1. Upon an appeal from a non-suit, appellant is entitled to the most favorable inferences deducable from the evidence.

2. Whether a motorman on a clear track, with his car under control, could have brought it to a stop or sufficiently reduced its speed to avoid an injury within the distance of 125 ft., was a question of fact.

3. As a matter of law a person who attempts to cross a street at a crossing but 15 ft. to pass over to reach a place of safety at a time when a car is approaching from a distance of 125 ft. is not guilty of contributory negligence.—(Duffy vs. Interurban St. Ry. Co., 101 N. Y. Sup., 767.)

NEW YORK.—Street Railways—Injuries—Action—Instructions.

Where, in an action against a street railway for the death of a child three years and nine months old, run over by a car, the court left to the jury the question whether the child was sui juris, defendant was entitled to an instruction that if the child was sui juris, he was bound to exercise such care and caution as was to be expected of a child of his age under the circumstances.—(Hirtenstein vs. Interurban St. Ry. Co., 100 N. Y. Sup., 910.)

NEW YORK.—Negligence—Contributory Negligence—Pleading—Carriers—Street Railways—Injuries to Passengers—Position—Collision—Res Ipsa Loquitur—Negligence of Carrier — Damages — Personal Injuries — Conclusiveness—Earning Capacity—Impairment—Issues.

1. Contributory negligence in an action for injuries is an affirmative defense which must be specially pleaded.

2. Where a street railway company adopted a rule requiring users of tobacco to occupy the rear vestibule of a car, and plaintiff was occupying such position in compliance with the rule at the time he was injured in a collision with another car, he was not guilty of contributory negligence because he was not seated in the car.

3. Proof that plaintiff was a passenger on a street car, and was injured by a collision between the car in which he was riding and a car approaching from an opposite direction, was sufficient to raise a presumption of negligence which would be conclusive against the carrier on the issue of negligence, unless the carrier produced rebutting evidence.

4. The motorman of a street car, on which plaintiff was riding, drove the same onto an embankment, where the tracks were so close that cars could not pass. At this time, a car having the right of way approached from the opposite direction, a third of a mile away, and could have been seen by the motorman, but he failed to stop his car. The motorman of the car having the right of way saw the danger and stopped his car before it reached the danger point, but a collision occurred, the only excuse given for which being the slippery state of the rails. Held, that the motorman of the car on which plaintiff was riding was guilty of gross negligence.

5. Plaintiff, a teamster 43 years of age, was injured while a passenger on defendant's street car. He sustained slight injuries to his head and shoulders, and a serious permanent injury to his left hand, the bones of which were broken, and healed so that the hand was so stiff that the fingers could not be closed. Plaintiff suffered great pain, and was disabled from following his vocation, or from doing any work that required the use of both hands. Held, that a verdict of $1,500 was not excessive.

6. Where the petition alleged that plaintiff's injuries were permanent and lasting in character and effect, and had caused plaintiff in the past, and would cause him in the future to suffer great bodily pain and mental anguish, and that his earn-

ing capacity had been impaired, it was sufficient to present the issue of plaintiff's total disability to earn money in the future as a result of his injury.—(Goodloe vs. Metropolitan St. Ry. Co., 96 S. W. Rep., 482.)

NEW YORK.—Railroads—Injuries to Pedestrians on Track—Contributory Negligence.

A pedestrian, intending to take passage on a train at a station, was struck by a train, which did not stop there. No warning was given that the train would not stop. Trains customarily stopped at the station which fact was known to the pedestrian. The pedestrian first saw the train about 700 or 800 ft. from the station. She next saw it about 120 ft. from her and instead of attempting to cross there, she walked a distance of 35 or 40 ft. to a place at or near the center of a street and without looking for the approaching train she stepped on the track and was injured. While walking the distance of 35 or 40 ft. she was in a place of safety and could, at every instant, have commanded a full view of the approaching train. Held, that she was guilty of contributory negligence as a matter of law.—(Cranch vs. Brooklyn Heights Ry. Co., 78 N. E. Rep., 1078.)

NEW YORK.—Carriers—Injuries to Passengers—Acts of Conductor—Negligence.

Where a passenger on an electric car while on the running board for the purpose of changing his seat was injured by a collision of his body with one of the trolley poles between the tracks, the conductor's assent to such change of seats without warning the passenger of his danger was not negligence, where the distance between the trolley poles and the car was great enough to enable persons ordinarily to stand upon or pass along the running board in safety, and where the construction of the road at the place where the accident occurred was not unusual, or the distance between the running boards such as was likely to endanger passengers making ordinary and customary use thereof.—(Tietz vs. International Ry. Co., 78 N. E. Rep., 1083.)

NEW YORK.—Street Railroads—Crossing Accident—Death of Pedestrian—Contributory Negligence—Subsequent Negligence—Appeal—Review—Verdict—Sufficiency of Evidence.

1. Intestate was struck and killed by an electric street car, at 12:30 a. m., as she was endeavoring to cross the track between streets in an outlying district, where the road was rough and badly washed. There was an electric light at the street corner. When intestate was within 4 ft. of the track, and about to cross, the car, with a headlight burning, which could be easily seen, was approaching her at a distance of from 75 to 100 ft., and at a rate of from 6 to 9 miles an hour. Held that intestate was guilty of contributory negligence as a matter of law.

2. After intestate was struck by a street car at night, and while she was under the car, the motorman and conductor were unable to find her, whereupon the conductor directed the motorman to move the car ahead, which he did, when intestate was found, dead. Plaintiff, in an action for such death, however, did not prove affirmatively that the moving of the car caused injury to intestate, nor that she was not dead before the car was moved. Held that plaintiff was not entitled to recover, irrespective of intestate's contributory negligence, on the theory that defendant was guilty of negligence in so moving the car after intestate was struck.

3. Where, under the instructions, a verdict for plaintiff might have been reached by a finding that deceased was killed by the original accident, not contributed to by any negligence of the deceased, which was unauthorized, the verdict could not rest on proof of negligence on the part of defendant's employees in moving the car after the accident had happened.—(Healy vs. United Traction Co., 101 N. Y. Sup., 331.)

NEW YORK.—Street Railroads—Injury to Pedestrians—Contributory Negligence—Evidence—Action—Instructions.

1. In an action against a street railway company for injuries received at a crossing, it appeared that the accident occurred at 8 o'clock at night; that the only time plaintiff saw the car before it struck him was when he was on the sidewalk; that while crossing the street he was walking slowly; that when he came within 5 ft. of the track he looked again, and when asked why he looked both ways for a car when within 5 ft. of the track he stated that there might be a horse coming. The car which struck plaintiff had a brilliant headlight then burning, and while plaintiff was completely deaf his eyesight was good and he could have seen the car. Held that he was guilty of contributory negligence.

2. In an action against a street railway company for injuries received while crossing defendant's track, an instruction that if the jury found that, when plaintiff started across the street, the car was at such a distance as to warrant the assumption of safety by plaintiff in the attempt to cross, it was immaterial whether he looked or did not look to observe the approaching car, was erroneous, as authorizing the jury to ignore circumstances that supervened from the time at which plaintiff observed the car until he was struck.—(Marguiles vs. Interurban St. Ry. Co., 101 N. Y. Sup., 499.)

NEW YORK.—Carriers—Injuries to Passenger—Evidence—Sufficiency.

In an action against a street railroad for injuries to a passenger, it appeared that he was standing on the step of the car preparatory to alighting when it should stop on the further side of a cross street, which the car was then crossing, when the car, according to his evidence, "jumped," and he fell within a few feet from tracks laid in the cross street. It was shown that when crossing the other tracks there was no power on the car on which he was riding. Held that the facts were insufficient to show negligence on the part of defendant.—(Adams vs. New York City Ry. Co., 101 N. Y. Sup., 570.)

NEW YORK.—Street Railways—Contributory Negligence of Person in Vehicle.

In an action for the death of plaintiff's intestate in a collision between defendant's street car and an automobile in which intestate was riding with his employer, it appeared that the car was a north-bound one, and that as the automobile, moving westerly along a street, approached the railroad tracks, there was to the left of the automobile a sign 16 ft. long and 9 ft. high, lengthwise with the street, the end of the sign nearest the railroad track being about 30 ft. therefrom, and that in the space between the sign and the track the view to the south was unobstructed, and that before reaching the sign the view in that direction for 450 ft. was unobstructed after the vision ceased to be in any way obstructed by a house on another street, which was 113 ft. away from the street that the automobile was on. There was no evidence that intestate looked or took any precaution, and the employer testified that after passing the house line he looked to the south and saw no car coming, but that he did not look again until the automobile was on the track. Held, that a judgment for plaintiff could not be sustained.—(Ward vs. Brooklyn Heights Ry. Co., 100 N. Y. Sup., 671.)

NEW YORK. — Street Railways — Equipment — Guy Wire Poles—Negligence—Contributory Negligence—Evidence—Question for Jury.

In an action for injuries to a fireman by striking a guy wire pole maintained by a street railway company, as he was riding from a fire house to a fire on the fire wagon, evidence held to require submission of the railway company's negligence in placing the pole too near to the driveway, and plaintiff's contributory negligence, to the jury.—(Lambert vs. Weschester Electric Ry. Co., 100 N. Y. Sup., 666.)

NEW YORK.—Master and Servant—Injuries to Servant—Negligence—Failure to Warn—Question for Jury—Contributory Negligence—Electric Wires.

1. In an action by a servant working on an elevated track for injuries received from a short current passing from a wire on which the insulation was broken, evidence considered, and held to require submission to the jury of the question of defendant's negligence in failing to warn as to the latent danger.

2. Contributory negligence of a servant working on an elevated track, who was injured by a short current passing through the heavy iron tool with which he was working in close proximity to a wire which passed under the structure connecting with the third rail, is not necessarily shown from the mere fact that he himself accidently broke the insulation, where it further appears that he had never been warned as to such wires and was ignorant of the danger lurking therein.—(Carey vs. Manhattan Ry. Co., 101 N. Y. Sup., 631.)

NEW YORK.—Street Railroads—Streets—Track—Defects—Persons Liable—Railroads—Tracks in Street—Injuries to Pedestrians—Damages—Personal Injuries—Excessive Verdict.

1. Plaintiff stepped on a railway track laid in a street. His foot slipped from the rail, which was defective, into a hole or rut in the crosswalk adjoining the rail, and went under the rail flange, breaking his leg. The track was owned by defendant railroad

company, and defendant street car company was authorized to run street cars over the same, without any obligation to keep the track in repair or any right to interfere therewith. Held that the street car company was not responsible either for the defect in the street or in the track.

2. Where an injury to a pedestrian was proximately caused by a defect in a railroad track laid in the street, which track had negligently been allowed to become out of repair and dangerous, the railroad company owning and operating the track was answerable for the injury.

3. Plaintiff's foot slipped under the flange of a railroad rail laid in a public street by reason of a defect in the rail, and his leg was so twisted as to cause a fracture between the ankle and knee. Held that a verdict against the railroad company for $15,000, which the trial court reduced to $9,000, was still grossly excessive, and should be reduced to $5,266.20.—(Ross vs. Metropolitan St. Ry. Co. et al., 101 N. Y. Sup., 932.)

WASHINGTON.—Master and Servant—Injury to Servant—Fellow Servants—Negligence of Master.

1. The motorman and conductor of one car on a street railroad, the cars of which run on schedule time, are fellow servants of the motorman and conductor of another car on the line, so that one of the motormen injured through the negligence of the other motorman is not performing his duty of turning on the lights of a block-light system, and of the conductor of the other car in not performing his duty to see that his motorman performed such duty, cannot recover of the company.

2. A street railroad does not fail to furnish a sufficient block-light system, so as to be liable for injury to a motorman from collision with another car on the block, where it appears that the accident could not have happened had the motorman and conductor of the other car performed their duty of turning on the light before entering on the block.—(Berg vs. Seattle R. & S. Ry. Co., 87 Pac. Rep., 34.)

WASHINGTON. — Carriers — Injuries to Passengers — Evidence — Trial — Instructions — Language — New Trial — Grounds—Misconduct of Parties—Prejudicial Pleading.

1. In an action for injuries to a passenger caused by a collision of defendant's street railway cars, the speed at which the cars collided and the injury to them was material to show the force of the collision, and the force of the collision was material to show the probabilities as to whether plaintiff was injured, and the nature and extent of the injury.

2. An instruction that the "preponderance" of evidence means the "best" evidence was not inappropriate nor objectionable as tending to mislead the jury, the term "best evidence" obviously not having been used in the technical sense.

3. Though it is reprehensible to plead allegations tending to prejudice the jury, with no intention of attempting to prove them before a new trial should be granted upon that ground alone, the abuse should be flagrant, and its prejudicial effects plainly evident, or exceedingly probable.—(Johnstone vs. Seattle R. & S. Ry. Co., 87 Pac. Rep., 1125.)

WEST VIRGINIA.—Street Railroads—Use of Streets—Superior Rights — Negligence — Excessive Speed — Signals — Street Intersections—Due Diligence—Contributory Negligence—Regulation of Speed—Ordinances—Fenders.

1. A street railroad company has an equal right with the public to the use of streets at street crossings. Neither has a superior right to the other.

2. It is negligence for a street car company to operate its cars at such a rate of speed as not to have them under control and to be able to stop them readily as they approach intersecting streets, in case it may be necessary to avoid a collision or prevent an accident.

3. A street car company should give proper warning of the approach of its cars at street crossings. For a failure to do so it will be guilty of negligence.

4. More care is required in operating street cars at street intersections than at other points, and, if a street car company at such intersections runs its cars at an excessive and unusual rate of speed, it will be guilty of negligence.

5. It is not contributory negligence for one to attempt to cross a street railway track in front of an approaching car, if, in doing so, he exercises that judgment and care which a reasonably prudent and careful person would have exercised under like circumstances.

6. An municipal corporation may, within reasonable limits, regulate and prescribe the speed at which street cars may be operated over its streets, and, when it has done so by valid ordinance, it will be negligence per se for a street car company to run its cars at a speed exceeding that fixed by the ordinance.

7. Where, by valid municipal ordinance, street cars are required to be equipped with fenders of an approved make, it is negligence per se to operate such cars without such equipment.—(Ashley vs. Kanawha Valley Traction Co., 55 S. E. Rep., 1016.)

WISCONSIN.—Street Railroads—Injury to Person on Track—Contributory Negligence.

A passenger, on alighting from a street car, passed over the track behind the car and towards a parallel track, where he was struck by a car coming from the opposite direction. He was familiar with the surroundings and the ordinary speed of cars. He looked for an approaching car on alighting, but did not look again until he was struck. The approaching car was well illuminated by electricity and by a headlight. Had he looked he could have seen the approaching car at a distance of about half a mile. Held that he was guilty of contributory negligence as a matter of law.—(Morice vs. Milwaukee Electric Ry. & Light Co., 109 N. W. Rep., 567.)

WISCONSIN. — Carriers — Injuries to Passengers — Negligence—Violation of Municipal Ordinances—Evidence—Sufficiency—Street Railroads—Operation of Cars—Ordinances—Construction—Non-Compliance with Municipal Ordinance.

1. In an action against a street railway company for injuries to a passenger in a collision with a train at a crossing, the conductor and motorman testified that the car was stopped before crossing the railroad track, and that the conductor passed in front of the car and ascertained that there was no danger in sight before signaling the motorman to cross. The gatekeeper at the crossing testified that he saw the conductor in front of the car before it passed the track, and that he saw the car moving, but did not state that the car did not stop. Held to show, as a matter of law, that the conductor and motorman complied with an ordinance requiring every motorman to stop his car at least 20 ft. from a railroad crossing, and every conductor to pass in front of his car to enable him to ascertain whether there is any danger, before signaling the car to cross.

2. A city ordinance required every motorman to stop his car at least 20 ft. from a railroad crossing, and every conductor to pass in front of his car to enable him to ascertain whether there is any danger before signaling the car to cross. The tracks of two railroads crossed a street car track. The distance between the main railroad tracks was about 80 ft. Held, that the ordinance did not require the bringing of the cars to a standstill between the two railroad tracks.

3. In an action against a street railway company for injury to a passenger in a collision with a train at a crossing, the evidence showed that the conductor preceded the car to a point where he had a clear view of the railroad track in both directions, and then signaled the motorman to proceed. Held to show, as a matter of law, a compliance by the conductor with a city ordinance requiring every conductor to pass in front of his car, approaching a railroad crossing, a sufficient distance to enable him to ascertain whether there is any danger before signaling the car to cross.

4. In an action against a street railway company for injuries to a passenger in a collision with a train at a railroad crossing, the evidence showed that the car was partly over, or immediately adjacent to, the first rail of the first main track of the crossing, when the noise of the train was heard or made known to the motorman or conductor. There was no headlight on the engine of the coming train, and no whistle was sounded to signal its approach. When the conductor heard the train he immediately apprised the motorman thereof, and directed him to speed the car, which was done, but it failed to clear the crossing before the train collided with it. The evidence was contradicted by calculations based on statements of witnesses as to the speed of the approaching train, the speed of the car before, and at the time, and after the persons in its control heard the approaching train, etc. The calculations were speculative in their character, and could have no probative force as against the positive evidence. Held that the evidence, as a matter of law, showed that the employees in charge of the car were not guilty of negligence.—(Bartholomaus vs. Milwaukee Electric Ry. & Light Co., 69 N. W. Rep., 143.)

FINANCIAL INTELLIGENCE

Wall Street, Feb. 13, 1907.

The Money Market

The most important development in the monetary situation during the past week was the heavy loss in cash sustained by the clearing house banks, which carried the surplus reserve to below $3,500,000, or the lowest point recorded in many years. This reduction in the bank reserves was due in part to the return to the Federal Treasury government money deposited by the Secretary of the Treasury during the closing months of 1906 to relieve the money stringency prevailing at that time, and to the payments for the $30,000,000 New York City bonds, which were sold on Feb. 1. These heavy drafts upon the local institutions, together with the increased demand for funds resulting from a more active speculation in and higher prices for securities, caused the large lenders of money to advance interest charges on both call and time loans. The higher rates for money, however, are regarded as only temporary, and in well-informed quarters the belief prevails that money will rule comparatively easy for several weeks to come at least. Secretary of the Treasury Shaw announced that he would purchase at 101½ flat, $25,000,000 of the Government 4s, maturing on July 1 next, but it is not expected that the offer will be fully taken advantage of. The price offered by the Secretary is ½ per cent higher than his offer of Dec. 10 last, but at the same time these bonds can be sold in the market at the price offered by Secretary Shaw. Borrowings by the railroads have continued during the week, the most important of which were the placing of $6,500,000 4½ per cent notes by the Rock Island, and the negotiation of a loan by the Delaware & Hudson of $6,000,000 at 6 per cent for one year, the money to be expended for equipment and improvements on one of the company's subsidiary companies. It is expected that while further borrowings by railroads will continue from time to time, the bulk of the corporate demand has been largely satisfied at least for the present. The foreign exchange market has continued weak, and despite the advance in prices for bar gold and American eagles in the London markets, gold imports are still profitable. Our bankers, however, failed to secure any part of the gold arriving in London from South Africa, and some disappointment was expressed on that account. However, the arrivals of gold from the Cape in London will be rather large during the coming week, and our bankers may succeed in securing part of the late arrival of gold. The European markets have ruled steady, especially at London, and while New York is in the market for the yellow metal, no change in the Bank of England discount rate is probable. Money on call has loaned at 3 and at 6 per cent. Time money advanced ¼ per cent for all maturities, making the quotations at the close 5 per cent for sixty days, 5¼ per cent for ninety days, and 5½ per cent for four to six months.

The bank statement published on last Saturday was very unfavorable. Loans increased $1,518,900. Cash decreased $12,077,600, and as the reserve required was $2,789,375 less than in the preceding week, the surplus reserve was reduced by $9,288,225. The surplus now stands at $3,345,875, and compares with $12,634,100 in the previous week, $5,943,575 in the corresponding week of last year, and $11,036,925 in 1905.

The Stock Market

The past week has witnessed a decided change for the better in the securities market. Trading on the Stock Exchange was somewhat larger than in the preceding week, and although prices at times yielded to bear pressure, the general trend of values was toward a higher level. Foreign investors continued to buy moderately of the standard shares at the prevailing level of prices, but the improvement that occurred during the week was largely the result of extensive covering by shorts, based upon the fact that prices have had a large decline, liquidation has been thorough, and in view of general conditions there should be a change for the better. The rally in prices, however, was less than had been expected, but this was due in some measure to the very unfavorable bank statement of last Saturday, which revealed a loss in cash of more than $12,000,000, and a decrease in the surplus of upwards of $9,000,000. Notwithstanding this heavy loss in cash, less apprehension was felt regarding the immediate future of the money markets, and in banking circles the opinion is expressed that rates for both call and time accommodations will rule comparatively easy for some weeks to come. This belief is strengthened by the offer of the Secretary of the Treasury to purchase $25,000,000 of Government 4s of 1907 at 101½ flat. Sterling exchange rates continued at the gold import point, and it is probable that local bankers will be able to secure additional amounts of the yellow metal for import in the near future. Advices from Washington are more encouraging, and there appears to be some hope for the passage of a currency reform measure before the adjournment of Congress next month. Industrial activity shows some abatement, but the United States Steel Corporation reports an enormous business, and earnings for the calendar year are estimated at record totals. The railway equipment companies are far behind in orders, and some of the important railroad companies are curtailing expenditures for improvements. The strong features of the week included St. Paul, Great Northern preferred, New York Central, Illinois Central, Union Pacific, Southern Pacific, Atchison, Baltimore & Ohio and Reading. At the close the improvement was still under way with prices at about the highest of the week.

Nothing of importance has developed in the local traction situation and the shares of those companies will be governed by general market influences.

Philadelphia

Although the trading in the local traction shares during the past week was considerably smaller than for some time past, the general trend of values was upward, and in most issues substantial gains were recorded. A noteworthy feature was the active buying of Philadelphia Company common, which was accompanied by an advance of 2 points to 47, most of which was maintained. Philadelphia Rapid Transit also was very quiet but firm, less than 3000 shares changing hands at from 20¾ to 21⅜, and closing within a small fraction of the highest. Union Traction rose ½ to 58 on light purchases, and Philadelphia Traction was steady, with transactions at 94¼ and 94⅜. United Company's of New Jersey sold at 253, and Consolidated Traction of New Jersey brought 74¼. Fairmount Park Transportation sold at 15, American Railways at 50⅝ and 51, and United Traction of Pittsburg at 47.

Baltimore

Very little activity developed in the traction issues at Baltimore during the week, and while prices moved with some irregularity the general tone was strong. United Railways 4s ruled fractionally higher, about $50,000 selling at 89⅞ and 90, but the incomes and the refunding 5s displayed weakness, the former declining from 57⅝ to 56¼, and the latter from 86½ to 86. Sales of the free and deposited stock were reported at 12¾. Knoxville Traction 5s were quite active and strong, $38,000 changing hands at from 106¾ to 107. Norfolk Railway & Light 5s advanced ½ to 97½. City & Suburban 5s brought 108½ for $4,000, and Washington City & Suburban 5s sold at 102½.

Other Traction Securities

Trading in the Boston market was extremely dull and devoid of special feature. Boston & Worcester common alone displayed activity, upwards of 500 shares selling at from 27½ to 27, while sales of the preferred were reported at 76. Boston Elevated sold at 150, ex. the dividend, and West End common and preferred brought 93½ and 108 respectively. Other transactions included Boston & Suburban at 13¾ and 14, preferred at 55; Massachusetts Electric at 19 and 19½, and the preferred at 69¼ and 69. The Chicago market was practically at a stand-

still. South Side Elevated sold at 86 and 85¼, and Metropolitan Elevated preferred at 69½ and 68½. The City Council has passed, over the veto of Mayor Dunne, the ordinance granting twenty-five-year franchises to the present street railway companies of Chicago. The vote was 57 to 12. The ordinance will become valid if ratified by referendum vote at the city election in April.

On Monday a block of 500 shares of Aurora, Elgin & Chicago common was sold, sixty days, at $35 a share. This is the largest block that has been sold in some time, and traders have been wondering what it means. Last April, it is said, that some traders sold a big block of this stock at $40 to be delivered a year from the time, and it is possible that they are buying to cover their shorts. On the other hand, the road has been showing handsome gains within the past year, and for the past month or two, especially. This may have been the cause of the buying. In all, about 1000 shares of the stock changed hands within the week and it is possible that investors have been looking into the proposition. New connection, almost completed, will make the Aurora, Elgin & Chicago a better paying road than it has been in the past. On account of the prospects of the road, considerable strength was shown by the Cleveland & Southwestern. Cleveland Electric has not been active and the offers were put half a point higher than last week. Forest City was offered at 100, with 97 bid.

Security Quotations

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

	Feb. 6	Feb. 14
American Railways	50½	50¾
Boston Elevated	149½	149
Brooklyn Rapid Transit	73½	75
Chicago City	a180	150
Chicago Union Traction (common)	4¾	5¼
Chicago Union Traction (preferred)	16	16¾
Cleveland Electric	63½	62
Consolidated Traction of New Jersey	75½	75¼
Detroit United	77	80¼
Interborough-Metropolitan	35½	35¾
Interborough-Metropolitan (preferred)	71¼	71½
International Traction (common)	59	56
International Traction (preferred), 4s	80	80
Manhattan Railway	142¾	145
Massachusetts Electric Cos. (common)	19	14
Massachusetts Electric Cos. (preferred)	69	69
Metropolitan Elevated, Chicago (common)	a26	25
Metropolitan Elevated, Chicago (preferred)	67¼	68
Metropolitan Street	104	—
North American	81½	82
North Jersey Street Railway	40	40
Philadelphia Company (common)	45	46¼
Philadelphia Rapid Transit	20¾	21½
Philadelphia Traction	94¼	94½
Public Service Corporation certificates	68	68
Public Service Corporation 5 per cent notes	96½	96½
South Side Elevated (Chicago)	86	84½
Third Avenue	117½	119
Twin City, Minneapolis (common)	103	103
Union Traction (Philadelphia)	56½	57¾

a Asked.

Metals

According to the "Iron Age," the blast furnaces have not been working well lately, and the output has not been as large as it should be. Prices for spot iron are lower in the South, and $21 for No. 2 Birmingham has been quoted. The pig-iron markets are quiet throughout the country, with little pressure to sell, and very little anxiety to buy. An interesting event in the steel-rail trade has been the sale, for export, of 50,000 tons of 80-pound rails for delivery during the second half of the year.

Copper metal holds very strong, but prices are unchanged at 25c to 25¼c for Lake; 24¾c to 25c for electrolytic, and 24¼c to 24¾c for castings.

ANNUAL REPORT OF THE DETROIT UNITED RAILWAY COMPANY

The Detroit United Railway Company has issued its full pamphlet report for the year ended Dec. 31, 1906. The income account compares as follows:

	1906	1905
Gross	$6,063,182	$5,125,503
Expenses and taxes	3,718,621	3,041,523
Net	$2,344,561	$2,084,040
Other income	58,757	44,076
Total income	$2,403,318	$2,128,116
Charges	1,243,273	1,113,293
Surplus	*$1,160,045	$1,014,823
Dividends	625,000	562,500
Balance	$535,045	$452,323
Depreciation	250,000	.....
Surplus	$285,045	$452,323

* Surplus is equal to 9.28 per cent earned on the $12,500,000 capital stock. Deducting the amount appropriated for depreciation, $250,0000, the surplus available for dividends would then be equal to 7.28 per cent on the capital stock.

The traffic situation of the Detroit United Railway and subsidiary companies is presented as follows:

	Revenue	Transfer	Employees	Total
Detroit United Railway.	105,068,377	32,362,869	4,590,218	142,021,464
Railroad system	4,689,535	311,670	265,071	5,266,276
S. W. & A.	2,264,999	165,720	39,872	2,470,591
D., M. & T. (10 mos.)	988,398	.....	44,063	1,032,461
Total	113,011,309	32,840,259	4,939,224	150,790,792

Mileage statistics:

	Car-Mileage	Earn. per Car-Mile	Exp. per Car-Mile	Net per Car-Mile
Detroit United Railway.	22,274,234	.2265c.	.1373c.	.0892c.
Railroad system	2,344,597	.2551c.	.1728c.	.0823c.
S. W. & A.	435,490	.2328c.	.1207c.	.1121c.
D., M. & T.	820,205	.3596c.	.2353c.	.1243c.
Total	29,973,526	.2334c.	.1432c.	.0902c.

On Jan. 1, 1906, the mileage operated by the Detroit United Railway was 541.537. During the year 1906 78.619 miles were added, making the total mileage operated on Jan. 1, 1907, 620.156.

There was expended and charge to "additions and betterments" during the year $1,025.922, of which the principal items were: New tracks, $447.130; cars, $305.035, and power houses, $95.946. In addition to the above there was expended on the various lines in the system amounts as follows:

Rapid Railway System	$159,124
Sandwich, Windsor & Amherstburg Railway	130,080
Detroit, Monroe & Toledo Short Line	117,467
Various investments, including purchase of Detroit, Monroe & Toledo Short Line	1,040,260

The company does not issue a consolidated balance sheet, but puts out instead individual financial exhibits for the four companies comprising the system. During the last year an attempt to settle the question of the company's franchise in the old city limits was made. The offer made by the company for its renewal was, however, rejected by the voters of the city. The franchise in question expires in 1909, but it covers the lines in the old city limits only. Other franchises expire at different times within the next eight years, but it is claimed by the Detroit United that overlapping franchises and franchises in parallel streets place the company in a position to compete destructively with any concern entering the field, inasmuch as the competitor would have no through communication.

It is telegraphed from Cleveland that the Interstate Commerce Commission has decided that the electric lines are common carriers. This opens a number of questions which are extremely important for the traction properties. One of them is whether the traction lines will have to submit their printed tariffs to the commission. Another is whether the Interstate Commerce Commission can compel the steam railroads to enter an exchange arrangement with the trolley lines.

CHICAGO TRACTION ORDINANCE PASSED OVER MAYOR'S VETO

The Chicago City Council passed the Chicago traction ordinance over the Mayor's veto, Feb. 11. The vote was 57 to 12 in favor of the ordinance—a gain of one vote over the original number in favor of the ordinance. The acceptance or rejection of this ordinance is now dependent upon the referendum vote of the people at the coming April election. If sustained by the people, it becomes law as soon as accepted by the companies. The conservative element of the city is overwhelmingly in favor of the ordinance which will settle Chicago's nine-year traction controversy and settle it on terms most remarkably favorable to the city. Mayor Dunne and certain radical elements in the city are opposed to the ordinance and it is uncertain what strength they will show at election. Mayor Dunne is apparently trying to make the traction question a political issue upon which to make his campaign for re-election in April, as it is only recently that he has faced about and opposed settlement on the terms mentioned in the ordinance.

THE SITUATION IN CLEVELAND

In order to have plenty of time to complete the appraisements and estimates on the properties of the Cleveland Electric Railway Company, the armistice has been continued indefinitely, and the courts will be asked to suspend the actions of the injunctions until President Andrews and President Du Pont are ready to resume. Both feel now that they will be able to make a report within a comparatively short time.

Max F. Goodman is promoting a 3-cent belt line in the city, and within the past week has done considerable work in finding out what the people think of it. His idea is to build a line that will connect with every other road in the city, and in addition give service to sections of the city that is now without street railways. The route, as planned by Mr. Goodman, will start at West Third or Seneca Streets and Lakeside Avenue, run east to East Twentieth Street, then to East Twenty-Second Street, then to Broadway, thence over the Jefferson Avenue Bridge and up what are known as "the flats" to Lakeside Avenue and back to the starting points. The lumber section and many manufacturing plants are located in the flats, and there has been a demand for street car service from there for years. It is said that Mayor Johnson opposes the idea, and is reported to have remarked that a franchise for that purpose would have a hard time in the City Council.

At the annual meeting of the Forest City Railway Company a few days ago the following directors were chosen: M. A. Fanning, Otto Leisy, C. H. Mueller, John H. O'Brien, Thomas P. Schmidt, A. W. Willard, Francis E. Wright and Charles F. Seelbach. According to the reports submitted the earnings of the road were as follows:

November	$2,926.50
December	4,811.67
January	7,702.03
Gross car earnings	$15,441.20
Earnings from other sources	1,830.75
Gross income	$17,271.95
Operating expenses for the period	16,085.09
Net surplus	$1,186.86

The operating expenses, as given, include interest and dividend to the amount of $2,246.55. The cost of building the road has been given as $50,000 a mile, and there are 11 miles of track, which would make an investment of $550,000. It would seem that the interest on this amount of money for three months would be more than given. The report has been criticised, but it seems that the stock keeps well up on the exchange, having gained a few points the past week.

It is said that Mr. Du Pont and Mr. Andrews have reached a mutually satisfactory basis for arriving at the values of the franchises. With plans for ascertaining the physical value and the value of the franchises, the two men are well on the way to results.

ELECTRICITY FOR PHILADELPHIA SUBURBAN LINES OF PENNSYLVANIA COMPANY

The statement is made that Charles M. Shaeffer, superintendent of passenger transportation of the Pennsylvania Railroad, who acted as chairman of the commission appointed to investigate the conversion of steam lines to electricity in Europe, will report in favor of the substitution of electricity for steam on the company's suburban and short-haul lines out of Philadelphia. Mr. Shaeffer, it is understood, will present his report within a few days. Inquiry of the representatives of the company resulted in the statement that nothing official would be available for publication until after the report had been formally rendered to the officials of the company.

MEETING OF NEW YORK TRANSIT COMMISSION

The Rapid Transit Commission, at its meeting on Thursday, Feb. 7, had a public hearing on the proposed contract for the Lexington Avenue subway. The Merchants' Association, City Club, Citizens' Union and various other bodies had representatives present to object to some form of the proposed contract. The main objection seemed to be to the manner of construction of the tunnel, which is proposed to be built by the open-cut method. It was stated that the business men along Broadway and Fifth Avenue do a business of $1,000,000,000 per annum, and it is estimated that they would suffer a loss of $100,000,000 were this tunnel to be constructed by an open cut and their places of business be obstructed.

Some objected to the proposed loop connecting the new tunnel with the present subway at Forty-Second Street on the ground that the contract as drawn would permit of the construction of the tunnel along the whole route, or, only that portion above Forty-Second Street. This would, in the opinion of the objectors, give the Interborough an unfair advantage over other possible bidders, and the opinion was advanced that the Interborough would be the only bidder and the new route would then become merely a feeder for the present overcrowded subway, thus defeating the primary object for which it is proposed to build it.

In the proposed contract is a clause which reserves the right to the Commission to order the operating company of the Lexington Avenue road to increase the equipment whenever it thinks the same may be necessary, the violation of such an order to be considered a breach of the contract of operation and rendering the operating company liable to a forfeiture of its lease. This clause was objected to by counsel for the Interborough on the ground that it was too arbitrary and there should be some appeal possible from an order which the operating company might consider onerous and unnecessary in its provisions.

Chief Engineer Rice submitted a report on the result of his examination of the elevated cars of the Brooklyn Rapid Transit Company. He stated that in his opinion the newer elevated cars of the Brooklyn Rapid Transit were as safe as the wooden cars at present in use in the subway and could be used with safety in the new subway loop if they were provided with more powerful motors necessary on account of the heavy grades. He recommended that any additions to the rolling stock to be used in the subways should be of steel construction throughout and as nearly fireproof as possible.

The chief engineer also submitted a report on the desirability of granting the request of the Pennsylvania, New York & Long Island Railroad for permission to open Thirty-Second and Thirty-Third Streets, in order that the tunnel now being built by that road may be finished as soon as possible and the street surface and the adjoining property safeguarded. He stated that, in his estimation, the request was a reasonable one, and is to some extent necessary because of the treacherous nature of the soil, which will not permit boring with any degree of safety in the places desired to be opened. He says that the work should be finished in twelve months and recommends that the request be granted.

This matter was opposed by property owners on these streets, and it was referred to a committee to report at the next meeting. Counsel for the company stated that the company was suffering from a loss of $1,600 per day while the work was stopped, and it was willing to enter into an agreement to protect the adjoining property owners from any loss of rentals and also to be responsible for any damage which might be done to buildings during the course of the work.

NEW YORK CENTRAL TO EXTEND ITS SERVICE

The New York & Harlem Railroad has announced that it will extend its electric service to that city by Feb. 17. The entire Mount Vernon freight yard is being moved back to give room for a 1000-ft. platform and a yard for the storage of the electric trains. In reaching out to Mount Vernon the New York Central will go a little beyond its first electric zone. Its next step will be to continue the electric system to White Plains, but this cannot be done until several important grade crossings are eliminated. It is announced that as soon as the electric service is extended to Mount Vernon two additional expresses between that city and the Grand Central station will be added, for the convenience of the Mount Vernon commuters.

THE T-RAIL AGAIN IN COLUMBUS

The Indiana, Columbus & Eastern Traction Company announces that when it gets ready it will lay T-rails in Columbus, Ohio, regardless of the attitude of the city authorities, who favor the grooved rail. The law firm of Pomerene & Pomerene, of Columbus, attorneys for the traction company, says the company has the right to lay T-rails in the city under its franchise. The franchise provides that any rail of an approved standard type may be laid, and the company claims the 90-pound "T" laid with the special block paving is an approved standard type and meets the requirements of the franchise.

The controversy over the T-rail in Columbus came up some weeks ago, when the city authorities attempted to compel the company to replace its T-rails on an unimproved street of the city with grooved rails, preparatory to improving the street. The company declines to remove its T-rails, but does agree to replace them with heavier T-rails and put in the special paving, which it is claimed answers all the purposes of a grooved rail. The situation is in a state of deadlock at present, as neither the city nor the company will concede anything further than has already been conceded. It is expected the city will make the first move by trying, through the courts, to compel the company to lay grooved rails on this street, when it is ready to improve it. The city expects to improve a number of streets during the coming summer, and has notified the traction companies operating over them to put down the grooved rails in preparation for the paving. The Columbus, Urbana & Western Traction Company has agreed to lay grooved rails on Water Street, between Gay and Spring Streets, and on Spring Street west of Dennison Avenue, and has ordered the rails and will comence work as soon as the material arrives.

ANNUAL MEETINGS OF BROOKLYN SUBSIDIARY COMPANIES

The annual meetings of stockholders of the subsidiary companies of the Brooklyn Rapid Transit Company, held last week, resulted in additions to several of the boards of directors and in changes in two instances. Nine directors were added to the board of the Brooklyn Heights Railroad Company. The re-elected members are: J. G. Jenkins, D. H. Valentine, H. C. Du Val and Eugene N. Foss. The new directors are: A. N. Brady, E. W. Winter, T. S. Williams, A. R. Flower, H. H. Porter, E. H. Harriman, W. G. Oakman, Norman B. Ream and Henry Seibert.

The following were added to the board of the Brooklyn, Queens & Suburban Railroad Company: D. H. Valentine, Henry Seibert, J. G. Jenkins, H. C. Du Val and Bernard Gallagher. The re-elected directors are: A. N. Brady, E. W. Winter, T. S. Williams and J. F. Calderwood.

C. D. Meneely was substituted in place of J. T. Nelson in the board of the Sea Beach Railway Company. Otherwise the board remains the same as last year. G. D. Yeomans took the place of E. H. Harriman in the board of the Coney Island & Gravesend Railway Company. No changes or additions were made in the boards of the Nassau Electric Railroad, the Brooklyn Union Elevated, the Transit Development Company, the American Railway Traffic Company and the South Brooklyn Railway Company.

REPORT ON BRIDGES FOR HUDSON PROPOSES PROVISION FOR SPECIAL ELECTRIC LINES

The New York Interstate Bridge Commission, in its report to the New York Legislature, made public Thursday, Feb. 7, expresses the opinion that three bridges properly situated will best establish the desired direct communication between New York City and New Jersey. One of these, it thinks, should be somewhere between Fourteenth and Seventy-Second Streets, and the two others should span the Kills which flow between Staten Island and New Jersey. These bridges should be considered strictly as public highways and as works of public improvement, and the expense should be borne either by the States of New York and New Jersey or by the State of New Jersey and the City of New York in just proportion. The cost of construction of the Manhattan Bridge proper and the anchorages would not be less than $25,000,000, and might easily run to $35,000,000, says the Commission. It recommends that in view of the large space needed for terminals if they were to include trans-continental trunk lines and passenger and freight traffic, the bridge should be primarily for vehicles, foot passengers and trolley lines, rather than for trunk lines. The trolley lines should include, however, a special union line crossing and connecting with all the trunk lines in New Jersey. There should be provision for a union passenger station to Manhattan for such special union trolley line, where tickets could be sold and baggage checked for points on the trunk lines with which this trolley line would connect.

ANOTHER ACCIDENT FAKIR RUN DOWN IN PHILADELPHIA

The Philadelphia Rapid Transit Company is having more trouble with accident fakirs, despite the punishment meted out not so long ago to this class of criminals. Carl O. F. Nordlander, of New York, is the man apprehended this time. He was arrested in the company's office in the Land Title Building while trying to settle a $30,000 claim for $1,000, and was taken before Magistrate Beaton and held in $2,500 bail on a charge of conspiracy to defraud. Incidentally, the representative of the company who was responsible for the arrest, declared that the claim adjusters who were acting for Nordlander in his effort to get $30,000 damages had left town.

According to a representative of the company Nordlander has worked at various times as an insurance and real estate collector, but neither of these pursuits proved very profitable, and one June 27, 1902, he made $10, and again on December 11 last he made $100 in the form of damages from a Brooklyn company by falling from trolley cars. The effect of these accidents was heightened, according to Nordlander's own admission, by a sort of self-mesmeric power, which enabled him to appear unconscious.

On Jan. 4 Nordlander came to Philadelphia, spent the day looking over the city and the next day, while riding in a Market Street trolley car, was thrown to the floor by the car's sudden stopping at Twentieth Street.

Mrs. Margaret Olwell, whom the company's representatives say was a runner for the law firm that took up Nordlander's case, happened to be on the car, and the case was placed in their hands. Nordlander was first taken to the Olwell house, at No. 20 Sickel Street, and later to a house at 123 North Dearborn Street. There Nordlander's clothes were taken from him and he was locked up in a room so he couldn't escape. In the meanwhile he had signed a power of attorney agreeing that the law firm should act as his agents and that they should get one-half of the damages recovered. On Feb. 4, says the company's representatives, the lawyers disappeared from the city, and Nordlander made for the company's office. Mrs. Olwell had filed a claim, through attorneys, for damages, alleged to have been sustained at the same time Nordlander claimed to have been injured. In investigating her case the company's representative learned that she had settled a similar claim in August last. This led to an investigation of Nordlander's case, and when he called at the company's office he was allowed to draw up the papers for his acceptance of $1,000. He was then arrested.

B. R. T. EARNINGS FOR SIX MONTHS

Below are given the gross and net earnings, operating expenses and surplus of each of the four subsidiaries of the Brooklyn Rapid Transit Company for the six months ended Dec. 31, 1906, compared with those for the six months ended Dec. 31, 1905, as compiled by the "Wall Street Journal":

Gross earnings—

	1906	1905
Brooklyn Heights	$7,084,440	$6,627,459
Nassau Electric	1,674,840	1,689,529
Brooklyn, Queens Co. & Suburban	811,653	750,427
Coney Island & Gravesend	41,172	33,959
Total	$9,612,105	$9,101,374

Total percentage increase 5.61 per cent.

Operating expenses—

	1906	1905
Brooklyn Heights	$3,815,212	$3,518,825
Nassau Electric	1,003,553	922,828
Brooklyn, Queens Co. & Suburban	553,742	355,813
Coney Island & Gravesend	31,477	15,566
Total	$5,403,984	$4,813,032

Total percentage increase 12.27 per cent.

Net earnings—

	1906	1905
Brooklyn Heights	$3,269,228	$3,108,634
Nassau Electric	700,560	785,928
Brooklyn, Queens Co. & Suburban	257,911	394,614
Coney Island & Gravesend	10,254	18,608
Total	$4,237,953	$4,307,784

Total percentage decrease 1.62 per cent.

Surplus after charges—

	1906	1905
Brooklyn Heights	$764,968	$869,730
Nassau Electric	235,386	298,314
Brooklyn, Queens Co. & Suburban	146,298	168,708
Coney Island & Gravesend	*9,345	2,262
Total	$1,137,307	$1,339,014

Total percentage decrease 15.06 per cent.

* Deficit.

The reason for such a small percentage increase in gross earnings in the face of much heavier traffic is probably due in a large measure to the fact that the Brooklyn Rapid Transit is to-day giving out 84 per cent more transfers than it did a year ago, says the "Journal." Then, too, the Coney Island fare trouble of last summer caused a heavy loss in gross to the company. During the six months covered by these reports the company has expended a large amount in construction, betterments and additions. Just how much of this has been charged up to operating expenses is not known, but it is possible that operating expenses have been called upon to stand an amount sufficient to account in part for their considerable increase.

BOSTON & WORCESTER AND THE NEW YORK CENTRAL COMPANIES ARRANGE OPERATING RIGHTS FOR ENTRANCE OF FORMER TO BOSTON

A tentative agreement, involving important changes, has been entered into by the officials of the Boston & Worcester Street Railway Company and the New York Central Railroad Company. Among the interesting changes promised as the result of it is the reduction of the running time of the Boston & Worcester trolley air line cars between Worcester and Boston, to 1 hour and 30 minutes, and the establishment of the trolley freight business that has been under consideration by the Boston & Worcester Company for some time.

The agreement is to the effect that the Boston & Worcester road run from Newton Highlands into Boston over the Boston & Albany circuit branch, and have its Boston terminus at the old Park Square station, which the New York Central recently secured on a conditional sale, awaiting legislative sanction. By the carrying out of this agreement, the railroad can electrify its circuit branch, a thing that has been under consideration.

Another plan that the Boston & Worcester has in mind is the construction of a 3¼-mile boulevard from a point in South Framingham, opposite the South Framingham muster field, to Fayville, at the Southboro and Framingham line, to cost $300,000. This last is probably to be the outcome of a proposal of the town of Framingham, after long dickering with the road.

The acquisition of the trolley line by the New York Central would give the steam road the facilities it needs to electrify its circuit branch, the trolley roads power station solving the question of power. The establishment of an hour and a half schedule on the trolley line with the cars running right into the Park Square station the same as steam trains, would give Worcester patrons better service to Boston than the local Boston & Albany trains now give. The time would be about the same, but the advantage would come in more frequent cars and the opportunity to get aboard at City Hall without having to go to Union Station. The advantage to the steam road would lie in the fact that the excellent trolley service would divert most of the local Boston & Albany passenger traffic from the steam road, leaving the tracks clear for through trains and freights.

Anything that would help relieve the congested condition of the Boston & Albany division would, no doubt, be welcomed by the management, and if it could take some of its rolling stock now used in local traffic and use it for other purpose the chance would be snapped up eagerly. Those most familiar with the facts put it that the acquisition of the Boston & Worcester by the New York Central is the logical thing. The establishment of a trolley freight service by the Boston & Worcester means an additional revenue estimated at $100,000 a year, and it is a service the road is anxious to get started.

Recent developments indicate that a select freight and express business and also a fast passenger service over the Boston & Worcester will be a reality soon. This is to be brought about by a skilful move on the part of the Boston & Worcester officials, who, it is said, are negotiating to run their cars into the Hub from Newton Highlands over the Boston & Albany division steam road right of way, by way of the Brookline branch of the Newton circuit.

Another point in the new arrangement quite as important as the carrying of select freight and express, will be the fast passenger express service that will be made possible. The present running time between Boston and Worcester is 2 hours and 15 minutes, at least 15 minutes of which is lost by the slow service between Chestnut Hill and Park Square. That 15 minutes and more will be saved by having the cars run over the Boston & Albany right of way from Newton Highlands is assured. Moreover, the Boston & Worcester officials are planning the completion the coming spring of their double track along the entire line from Worcester to Boston.

AN IMPORTANT OHIO AGREEMENT

An understanding has been reached between the Everett-Moore syndicate and J. W. Holcomb and associates, by which the Cleveland, Alliance & Mahoning Valley lines will be constructed to operate in harmony with the Northern Ohio Traction & Light roads. It is even said that the new road will be constructed with the idea of merging the two later on. C. R. Morley and the Stark Electric are also brought into closer touch with the Northern Ohio, as he is interested in the Cleveland, Alliance & Mahoning Valley. Under the agreement the new road will be built in sections, the portion between Ravenna and Warren being undertaken first. The stretch of track leased from the Baltimore & Ohio will be electrified and the link from Newton Falls to Warren built. This portion, with the Kent-Ravenna division of the Northern Ohio and the Mahoning & Shenango Valley between Warren and Youngstown, will complete the trolley connection between Akron and Youngstown and between Cleveland and Youngstown, for that matter. This leaves the portion of the route between Cleveland and Alliance, which will be divided into two sections, one from Cleveland to Revenna and the other from that point to Alliance. As yet it has not been decided which will be taken up first. At Bedford the new road will probably join the Northern Ohio, thus saving about 3 miles of track construction. From Randall the company will build south to the Northern Ohio tracks, but will come into the city over the original Kinsman Street route. This will allow the limited cars of the Northern Ohio to take the same route, to shorten the route through the city.

IMPORTANT PROJECTS AFFECTING THE PITTSBURG WHEELING LINE

It is expected that electric railway lines will soon be built which will complete electric railway connections between Pittsburg and Wheeling, via Wilmerding, Trafford City, Hunker, Uniontown and Masontown. It is proposed to extend the Uniontown-Masontown line to New Geneva or Point Marion, where connection will be made with an extension of the Wheeling system. A connecting link is to be built between Scott Haven and Hunker, a distance of 11 miles; also an extension from Greensburg to Irwin. Plans have been prepared by the West Penn system for an extension of the Greensburg line northwardly to New Alexandria, with a branch from Jamison No. 1 westwardly to Latrobe, where it will connect with the Latrobe Street Railway Company on Ligonier Street. An extension is to be built from Baggaley through Whitney and Tranger to Hecla, where connection will be made with the Greensburg & Southern. The West Penn Railways also intend building an extension of the Greensburg & Southern to Irwin via Jeannette and Manor. The Pittsburg, McKeesport & Westmoreland Railway Company proposes building a line from Donora north to Claridge near Manor. The lines have been financed, and $200,000 worth of bonds underwritten and mortgages recorded, while franchises are being sought in a number of towns. Scottdale Borough Council has passed the ordinance granting a franchise to the Pittsburg, McKeesport & Greensburg Railway Company, and the company will build the line at once. Notice has been given by W. S. Kuhn, J. P. Kuhn, J. H. Purdy, J. B. Van Wagner and R. P. Watt of their intention to ask for a charter for the Greensburg & Western Railway Company, a constituent corporation of the West Penn system, which will build the line from Greensburg to Irwin, passing through eight towns in the 10-mile route, viz.: Rodebaugh, Grapeville, Jeannette, Penn Manor, Shawtown, North Irwin and Irwin. The line will skirt the Pennsylvania Railroad tracks the greater part of the distance. It is the intention of the Pittsburg, McKeesport & Greensburg Company to build into the heart of the Connellsville coke region this year, and a right of way has been secured in Mt. Pleasant. The local lines in Greensburg also contemplate an extension to Latrobe.

FAVORABLE ACTION ON ELECTRIC RAILWAY FREIGHT BILL IN PENNSYLVANIA

Favorable action has been taken by the House electric railways committee on the Housher bill, permitting electric railways to carry freight, and its early passage is expected. This bill extends the right to all railway or railroad companies in the State to transport freight and to charge and collect a reasonable compensation, any limitations in the charters of said companies to the contrary notwithstanding. There is only one proviso, that the transportation of freight by the trolleys in cities shall be under such regulations as the municipal authorities may prescribe. Many legislators are anxious that there shall be the same local regulation of the freight carrying in boroughs, and an amendment for that purpose will be offered on the floor of the House.

Passes on railroads and street railroads cannot be used by legislators or State officials under a bill put in by Senator Roberts, of Montgomery, which makes the officials of the company and the public officers subject to a fine of $5,000 or imprisonment for one year for violation.

The House passed finally the bill allowing municipalities to institute quo warranto proceedings to compel public service corporations to forfeit their franchises when they fail to perform their duties properly. The vote was unanimous.

Representative Dearden, of Philadelphia, has introduced a bill requiring street passenger railway companies to provide a seat for each passenger, otherwise to collect but half-fare from passengers compelled to stand. This rebate does not apply to a passenger who gives his or her seat to another passenger. Any employee declining to refund half the fare to a "strap-hanger" or to give an order on the company for this rebate is liable to a fine of $100.

Another bill introduced strikes from the act of May 6, 1897, the proviso that any bridge shall be used only for general public travel and shall not be occupied by any railroad, transportation company or private corporation; also, providing for the strengthening of bridges used by street railway companies.

A bill providing for an initiative and referendum system of legislation in cities and boroughs of the State and affecting the granting of franchises has also been introduced. It directs that no measure, save those necessary immediately for the temporary preservation of peace or health of a community, shall become a law until thirty days after its enactment, that no franchise shall be sold or granted for a longer period than six months, nor shall it include a provision for the sale or purchase of real estate. During this thirty days interval 3 per cent of the voting population may by referendum petition demand a submission of the ordinance to a vote of the people, a majority vote to decide. Ten per cent of the voting population may propose the enactment of legislation by initiative petition, and such measure shall have precedence over all but emergency measures, and shall be formally acted upon either by its enactment without change or by the said legislative authorities proposing a competing measure within three months from the filing of the voters' petition. Special elections can be held if demanded by the majority of Councils or by 20 per cent of the voting population. The Mayor cannot veto a measure the people have approved. Any measure passed by a referendum can be repealed only in the same manner.

PRESIDENT WINTER OF B. R. T. DEFINES HIS ATTITUDE WITH REGARD TO EQUIPMENT FOR BRIDGE LOOP

In connection with the proposal to permit the Brooklyn Rapid Transit Company to operate its present elevated equipment through the subway to be built to connect the Brooklyn and the Williamsburg Bridges, President Winter, of the company, has sent to Commissioner Orr, of the Rapid Transit Commission, a letter in which he makes the attitude of the company to the proposal very plain. Mr. Winter explains in detail the equipment which will be suitable for the subway, which consists of 558 motor cars. The rest of the equipment, trailer cars, rebuilt from the old steam elevated equipment and described in the STREET RAILWAY JOURNAL some time since, he deems not available for the new service. To replace this equipment with steel cars, he explains, would cost $3,000,000. President Winter's letter follows:

Brooklyn, Feb. 6, 1907.

Alexander E. Orr, Rapid Transit Commission, New York:

Dear Sir—Lest the magnitude of cost, which would be involved in the one item of composing the elevated trains of the Brooklyn Rapid Transit system, exclusively of motor cars, as suggested at the conference yesterday, should be underestimated by your Commission through lack of technical information on that phase of the subject, I beg leave to supplement what I then said with the following brief statement:

The Brooklyn Rapid Transit elevated equipment consists of 558 motor cars and 269 trailers. A motor car is constructed after plans quite different to those of a trailer. It is heavier, of somewhat different proportions and stronger, in order to accommodate and to carry the equipment and bear the strain incident to its operation. The trailer now being designed for that purpose cannot be adapted to motor service; hence if the elevated trains should be composed exclusively of motor cars the 269 trailers now owned by the company would have to be thrown out and motor cars substituted. This would mean an outlay in the first instance, and without increasing train capacity of say $3,000,000 and a proportional increase in the cost of all new elevated trains.

I mention this because in the somewhat hurried discussion yesterday afternoon it was not brought out. It will readily be seen that this item alone will be an important contribution to the list of serious questions involved in the plan under consideration.

Nor can I see how the operating company could be secured in the right against contingencies permanently to operate other than strictly fireproof cars through the proposed subways, however remote the risk, and I believe with His Honor the Mayor, that it would be remote, but I have not consulted our legal department on this point. It is the earnest desire of this company to co-operate to the fullest extent in your effort to solve the troublesome problem, and we feel that we would fall short of this if we did not put before you in all frankness the grave question, physical and financial, which from our point of view the operation of a subway loop would be invested. Now is the time to consider them.

Yours respectfully,

E. W. WINTER, President.

NEW PUBLICATIONS

Electric and Magnetic Measurements and Measuring Instruments. By Frank W. Roller: New York. McGraw Publishing Company. 398 pages. Illustrated. Price, $3.50.

It is somewhat remarkable that in the wealth of literature upon electrical topics the subject of measuring and recording instruments should have been so comparatively neglected in the past. There has been, it is true, a large number of works upon testing, but they have related to the finer requirements and conditions of laboratory work rather than those of commercial practice. The increase both in the number of instruments used and in the size of the manufacturing industry devoted to their production is sufficient justification for the volume by Mr. Roller. The author describes both the instruments themselves and the principal work for which they are designed. The list in the appendix shows thirty-nine makers of instruments of the kind described.

Concrete Factories. Compiled by Robert W. Lesley. Published for "The Cement Age" by Bruce & Banning: New York. 152 pages. Illustrated. Price $1.00.

The newest contribution to cement literature, and one for which there has been a demand for a long time, is "Concrete Factories," a series of papers descriptive of the uses of cement and concrete as applied in the construction of industrial plants. It offers in condensed form a very complete review of the principles underlying reinforced concrete construction, and contains the report of the United States Advisory Board on Fuels and Structural Materials, the report of the sub-committee on tests, the French rules on reinforced concrete just issued by the Ministry of Public Works in France, and a number of profusely illustrated articles showing the methods of reinforced concrete construction, including all the well known reinforcing systems.

The Prevention of Accidents. Second edition. By F. W. Johnson. New York: McGraw Publishing Company. 37 pages. Price of single copies 25 cents; special price on larger quantities.

The first edition of this pamphlet was prepared by the claim agent of the Conecticut Railway & Lighting Company, to assist the management in instructing its carmen concerning practical means of preventing the more common class of accidents and the proper handling of those accidents, and was given to the men in pamphlet form. The instructions contained were in no sense intended to supplement the rules, but were intended as suggestions for action in case of emergency, and were based on the experience of the company on its different street railway systems in Connecticut. The results of putting into the hands of the men information of this kind was remarkable; not only did the accidents decrease but a spirit of emulation was instilled among all the men to make a record so far as immunity from casualties was concerned, and to take the same measure of responsibility which the management itself felt as to the care of passengers. The demands upon the author from other companies for copies of this book was so great that it was decided by him to publish a second edition for more general circulation. In this edition, which has been prepared with this use in mind, the pointers contained in the first edition, which had a local value only, were either omitted or were changed so as to make them of general application. At the same time the text was considerably expanded by the addition of new matter. As now constituted the book is intended to be of such a character that it can be put directly into the hands of all motormen and conductors and will not interfere with the local rules in force on any road.

A Dictionary of Electric Railway Material, 1907 Edition. New York: McGraw Publishing Company; 164 pages.

This dictionary of electric railway material is a revised edition in book form of the information published in the Street Railway Journal of Oct. 13, 1906, giving a brief description of a very large percentage of the principal types of electric railway apparatus and supplies manufactured in the United States; also several pages of information regarding leading dealers, engineers, contractors, financial institutions, etc., doing business in this field The dictionary had its beginning in the Souvenir Edition of the Street Railway Journal for 1905. It was revised and reprinted in book form shortly thereafter, and again was revised and reprinted in the souvenir Street Railway Journal for 1906. The edition just issued contains thirty pages more than the edition of 1906, and the many cross references in the index make ready reference very easy. The book is intended for general distribution to street and interurban railway companies, and may be had upon application to the Street Railway Journal.

Relazione Sugli Studi e Lavori Esequiti dal 1897 al 1905. Published at Rome, by the Italian Mediterranean Railroad Company. 2 vols.; 382 pages and 54 plates.

This magnificent set of volumes is an example of the way foreign railway companies sometimes chronicle the progress made by them. Other publications of similar purpose issued by the Grosse Berliner Strassenbahn and other German companies have been noticed in these columns, but none has been on such an elaborate scale as that issued by the Società Italiana Strade Ferrate del Mediterraneo. Of course, the completion of the Simplon tunnel, which forms the outlet to the north and northeast of this railway system, and which was celebrated by the Milan Exposition of last summer, offered an unparalleled reason for a publication of this kind. A very full account is given in these two volumes of the construction of the railways which were built by the Italian Government to connect the Italian side of the Simplon tunnel with the through lines of the Mediterranean railway system to Milan on the southeast and Turin on the southwest. The work is very handsomely illustrated throughout with half-tone engravings and working drawings.

The Peabody Atlas: Coal Mines and Coal Railways in the Central Commercial District of the United States. By A. Bement. Published by the Peabody Coal Company, Chicago; 150 pages. Price, $5.00.

This atlas is the successor of several wall maps issued by the publishers, giving the location and information of the coal areas of Illinois and Indiana. The favor with which these maps was received by railway officials, coal producers and consumers led to the publication of the present atlas and the expansion of the territory treated so as to cover Ohio, Michigan, Western Kentucky, Iowa and Missouri in book form. In addition to the maps and comprehensive index, the atlas includes a discussion of the subject of smokeless furnaces and smoke suppression.

The Engineering Index, Vol. IV., 1901-1905. By H. H. Supplee and J. H. Cuntz. New York: The Engineering Magazine; 1234 pages. Price, $7.50.

The value of a comprehensive index in any field of effort is generally recognized. The publishers of the "Engineering Magazine" have covered the general engineering field very acceptably for the past fifteen years, and are to be commended for the thoroughness with which they have done their work. The present volume is carefully cross indexed and gives a short description of the article as well as its length and the paper and date at which it appeared. Over 250 technical journals are indexed, and more than one-fourth of this number are published in languages other than English. Hereafter the index will be issued annually.

Street Railroad Accident Law. By Andrew J. Nellis. Albany, N. Y.: Matthew Bender. Law sheep, 850 pages. Price, $6.00.

The author of the present volume is a member of the Albany bar, and is known to legal and railway circles through his previous volume, "The Law of Street Surface Railroads." The enormous increase in the volume of street railway accident litigation through the electrification of roads and the consequent increase in weight and speed of cars has created a demand for a book of this kind. Mr. Nellis has gathered together, classified and analyzed the principles and rules of law of liability as applied by the courts of the different States and Territories and those in Canada to street railway companies. The volume opens with a general discussion of the use of streets by street railway companies and the nature of their liability for accidents. This is followed by chapters on the principles of the law of negligence as applied to passengers, to employees and to others. Other subjects discussed are pleading, evidence, presumptions, burden of proof, damages and court and jury. Under "damages" a list of cases is given with awards which were considered excessive and others which were not so considered.

SUBWAYS IN LOS ANGELES

The West Fourth Street subway ordinance was the first act of legislation signed by the new Mayor. The permit provides for either single or adjacent tunnels, but the Los Angeles-Pacific Company says that single tunnels containing two stacks will be built at this time; later, a second tunnel will parallel the first; then outgoing cars will run through one tunnel and incoming trains through the other. The subways provide for about 4 miles of tunnels. The cars will cross but one street on grade between Hill Street and Vermont Avenue. Through trains will reach the city limits in 6 minutes. Outside the city crews are now at work on the air lines that will complete the rapid transit road. Many lines of the Los Angeles-Pacific west of the city are being rebuilt. The Los-Angeles Pacific owns practically all the land under which the subways run except the city streets.

After much delay the Mayor has at last signed the last of the special permits to the Harriman interests, giving them the right to tunnel in the north end of town through Sunset Boulevard. The Mayor thought the company should pay as much as $10,000 for the privilege of tunneling under the old cemetery, but the company refused to give more than $1,000. A veto message was dictated by the Mayor, whereupon he was besieged by North End property owners who wanted the ordinance to go through.

"I never thought so many people could get started on a thing all at once," said Mayor Harper. "The question resolved itself into whether the city should accept the subways as the railroad company wants to build them, or whether the project should be abandoned," he went on. "North End citizens assured me that they will accept without protest increased assessments on their property sufficient to raise the $9,000 difference. Subway building is comparatively a new undertaking in the West. Such a system of underground railways as that promised by the Los Angeles-Pacific Company is unprecedented in a city the size of Los Angeles.

"As the Mayor of the city I could not afford to stand right in the path of progress and block the way for the sake of $9,000."

This permit supplied the missing link in the short line from Hollywood to Fourth and Hill Streets. Fifteen minutes to Hollywood is the schedule for the new line. Cars will run from Fourth and Hill Streets along the surface of Hill Street to First, then they will pass through a two-block combination railway and driveway tunnel from First to Temple Streets. This tunnel alone will cost $150,000, and will be built and used jointly by the city and the railway. North of Temple Street the cars will pass through a private subway underground owned by the railway company, and under one end of the old city cemetery. At Hill Street and Sunset Boulevard the new line will join the present Hollywood road.

STREET RAILWAY PATENTS

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

UNITED STATES PATENTS ISSUED JAN. 29, 1907

842,202. Railroad Track Construction; Solon G. Howe, Detroit, Mich. App. filed Sept. 4, 1906. Relates to a method of constructing the roadbed.

842,222. Catenary Suspension for Trolley Wires; George A. Mead, Mansfield, Ohio. App. filed Nov. 23, 1904. The trolley wire is suspended from a messenger wire which is supported by brackets which laterally extend from poles at the track side.

842,241. Mechanical Ear for Trolley Wires; Thomas E. R. Phillips, London, England. App. filed Aug. 1, 1905. Comprises an inverted U-shaped frame in which are mounted a number of pairs of plates in pivotal and removable connection, said plates being adapted at their lower ends to embrace and retain an electric conductor and means for connecting up said frame to a span-wire.

842,285. Block Signaling System for Railways: Adoniram J. Wilson, Westfield, N. J. App. filed Aug. 21, 1906. A signaling system employing the same source of electric energy as that employed for the propulsion of the trains.

842,298. Car Seat; Edward G. Budd and Charles A. Conde, Philadelphia, Pa. App. filed May 25, 1905. Details of construction of a seat of the "walk-over" type.

842,300. Railway Signal; Clyde J. Coleman, New York, N. Y. App. filed March 9, 1903. A semaphore arm is raised and lowered by means of liquid carbonic acid gas, controlled by valves which are opened and closed by relay circuits including track rails.

842,315. Single Track Signaling System; Robert J. Hewett, Westfield, N. J. App. filed Aug. 22, 1906. An overlap system of signals operated by short-circuiting the track rails by a passing train. Employs polarized relays for securing the overlap feature.

842,358. Wireless Balance for Electric Generators; Robert C. Taylor and Edward Taylor, Brooklyn, N. Y. App. filed Aug. 8, 1904. One of the objects of this invention is to provide means in an air-braking system whereby upon the operation of one pump the remaining pumps in the same system are automatically started without the use of additional wires or other connections between the cars in which the system is installed.

842,366. Electric Block Signaling System; Adoniram J. Wilson, Westfield, N. J. App. filed Aug. 21, 1906. Employs among other features the same source of electric energy as utilized for the propulsion of the trains.

842,367. Electric Block and Block-Section Signaling System; Adoniram J. Wilson, Westfield, N. J. App. filed Aug. 21, 1906. Modifications of the above patent.

842,380. Switch Operating Mechanism for Cars; Junius Barnes, Burlington, Vt. App. filed May 24, 1906. A switch-throwing lever extending through the car platform and having a shoe to engage the switch point, said lever having spring means for normally holding the lever out of operative position.

842,424. Fluid Pressure Brake; William H. Sauvage, New York, N. Y. App. filed May 25, 1906. Provides novel means whereby a second or auxiliary cylinder may operate its piston to reinforce or increase the brake pressure after the main cylinder has operated its piston to take up the slack and set the brake-shoes against the wheels with an initial pressure of less degree.

842,425. Fluid Pressure Brake; William H. Sauvage, New York, N. Y. App. filed Sept. 1, 1906. Consists in the combination of a telescoping piston rod for the auxiliary cylinder, a latch arranged to hold the telescoping members extended, and means for tripping the latch before the piston completes its return stroke, said means comprising a fixed dog having a beveled face located in the line of travel of the latch.

842,432. Electric Signal for Railways; Horatio Smelser, Ashton, Neb. App. filed Oct. 7, 1905. Semaphore signals are operated through circuits by the engagement of the car wheel with tappets in the roadbed.

842,460. Railway Switch; Philip D. Hibner, Seattle, Wash. App. filed March 15, 1906. The flange of the car wheel depresses a lever whereby a pin is thrown into position to be engaged by the car to throw the switch.

842,474. Brake Rigging; James A. Lightbody, Waterville, Me. App. filed Oct. 12, 1906. Consists of a truck-bar, a bracket having upper and lower bars joined together and fixedly connected to upper and lower portions, respectively, of the truck-bar, a brake beam and a connection intermediate the bracket and the beam for hanging the latter from the former.

842,475. Fare Register; William L. Lightford, Indianapolis, Ind. App. filed Feb. 2, 1906. Details of a portable receptacle for fares having registering means.

842,476. Fare Register; William L. Lightford, Indianapolis, Ind. App. filed Feb. 2, 1906. Improvements in above patent relating to means for registering different classes of fares.

842,508. Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Sept. 28, 1906. Comprises a longitudinal girder plate having interlocking connection with one side margin of the base plate, a joint bar interposed between the rail ends and the girder plate, and track bolts extending through the rails, the joint bar and the girder plate.

842,545. Electrical Connection for Railway Rails; Eugene Hayward, Clayton, Mich. App. filed Aug. 21, 1905. The webs of the adjoining rails are receded to receive a bond over which the fish-plates are bolted.

842,559. Car Fender; James E. Kinnebrew, Sharpsburg, Pa. App. filed June 6, 1906. Comprises fixed front and back sections and a movable intermediate section.

842,574. Electric Danger Signal; Alexander McCahon, St. Joseph, Mo. App. filed April 30, 1906. A railroad signal comprehending among other features a specially constructed arm projecting from the locomotive, which carries five contacts to

ride on five trolley wires extending on the under side of an insulating board or support.

842,581. Rail Anchors; Fred A. Poor, Chicago, Ill. App. filed Jan. 8, 1906. Interlocking clip members engage the base of the rail and have a depending flange to engage a tie or other support.

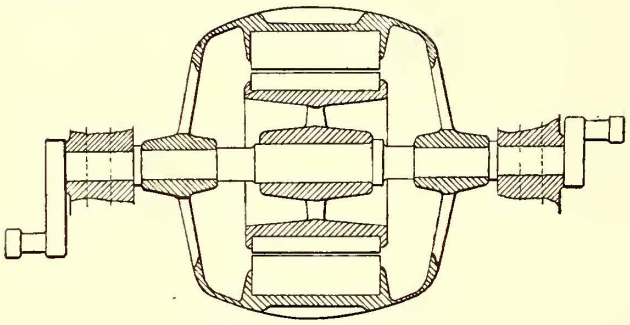
842,646. Self-Locking Switch-Operating Mechanism; Robert F. Gaunt, St. Louis, Mo. App. filed Nov. 6, 1906. Details of an automatic switch-locking and operating mechanism.

842,673. Electrical Apparatus for Setting the Points and Signals on Railways; Lorenz Mottmair and Rudolf Zwack, Munich, Germany. App. filed July 3, 1903. The switchpoints and signals on a railroad are set by means of electrical devices which act thereon in succession so that when an electric circuit belonging to a line is closed, each succeeding actuating device after operating closes the circuit of the next.

842,740. Trolley; Pearl J. Wires, Osborn, Ohio. App. filed March 13, 1906. A pair of trolley wheels are journaled in yokes on a swivel support so as to continue in alignment with the trolley wire regardless of the direction of the pole.

842,781. Insulated Cross-Over for Electric Railways; Edward E. Gilmore, Philadelphia, Pa. App. filed Sept. 27, 1905. A cross-over by which one line is kept electrically separated from the other, as is desirable in case of different railroads or different circuit potentials.

842,774. Air Brake System; William H. Eichelberger, Royalton, Pa. App. filed Oct. 10, 1905. Relates to hose connection between cars and provides means whereby any injury to the hose will cause the air to be automatically cut off.



PATENT NO. 842,957

842,815. Rail Joint; Edward H. Schwartz, Chicago, Ill. App. filed May 25, 1903. The fish-plates are formed with portions which underlie the base of the rail so as to make a tight connection therewith and to press a contact bar into close engagement with the rails to serve as a bond.

842,828. Railway Signal; Clarence W. Coleman, Westfield, N. J. App. filed March 1, 1904. Provides means interposed between the motor and the signal for increasing the efficiency or effectiveness of the motor, consisting of a connection which operates to increase the mechanical leverage.

PERSONAL MENTION

MR. L. RUSSELL GODWIN, at one time treasurer of the Citizen's Street Railway Company, now the Memphis Street Railway Company, is dead.

MR. WILLIAM SCHWERTFOGER, of Fredonia, has been appointed superintendent of the local lines of the Buffalo & Lake Erie Traction Company, to succeed Mr. W. N. Marinan, resigned.

MR. A. S. MURPHY has resigned as purchasing agent of the Indiana Union Traction Company to accept the position of assistant general manager of the Illinois Traction system, with headquarters at Springfield.

MR. E. L. SCHMOCK has resigned as auditor of the Kokomo, Marion & Western Traction Company, of Kokomo, Ind., to become assistant secretary of the Cleveland, Painesville & Eastern Railway Company, with headquarters in Willoughly, Ohio.

MR. H. R. GOSHORN has been appointed general claim agent of the Philadelphia Rapid Transit to succeed Mr. S. L. Rhodes, resigned, who, as previously noted in the Street Railway Journal, has become general supervisor of claims of the Casualty Company of America.

MR. J. W. SMITH has been appointed general manager of the City & Elm Groove Railway Company, of Martins Ferry, Ohio, to suceeed Mr. L. S. Kirker, resigned, who retired from the company because of ill health. Mr. Smith formerly was manager of the Electric Traction Company, of Philadelphia.

MR. F. W. BROOKS, assistant general manager of the Detroit United Railway Company, has been appointed general manager of the company to succeed Mr. J. C. Hutchins, who formerly has held the offices of president and general manager, but who hereafter will act only as president. Mr. Brooks became associated with the Detroit system in 1895, as general manager of the Rapid Railway Company. Before his connection with that company he was with the Illinois Central, the Queen & Crescent and the Texas Pacific Railroads. When the Rapid Railway was taken over by the Detroit United a few years ago, Mr. Brooks was appointed to the position of assistant general manager under Mr. Hutchins. His appointment as general manager is in recognition of the services rendered in the capacity of assistant to Mr. Hutchins.

MR. J. H. PARDEE has resigned as general manager of the Rochester & Eastern Rapid Railway Company, of Rochester, N. Y., to become operating railway manager of J. G. White & Company, of New York. Mr. Pardee was born at Lysander, N. Y., in 1867, and in 1889 was graduated from Hamilton College. In 1891 he was admitted to the bar of New York, and began to practice as a member of the firm of Petrie, Zimerman & Pardee, with whom he continued until 1898. In 1897, however, he perfected the reorganization of the railway, lighting and gas company at Canandaigua. Since 1898 he has, besides acting as general manager of the Rochester & Eastern property, also managed the Canandaigua Gas Light Company and the Ontario Light & Traction Company. Mr. Pardee has been connected with the Street Railway Association of the State of New York as an officer since 1903, and is at present secretary of that body.

MR. WALTER W. WHEATLY, president and general manager of the Mexico Electric Tramways, Ltd., of Mexico City, Mex., has resigned from that company. He expects, however, to remain in Mexico, with which he is pleased as a residence and where he has important business interests. Among the enterprises in Mexico outside the railway field with which he is now identified as a director are the Mexico City Bank, the American Banking Company of Guadalajara, a new insurance company known as La Latino-Americana Mutualista, Compania de Seguros Sobre la Vida, S. C. Ltda., and the Mexican Title & Surety Company. Mr. Wheatly, who formerly was connected with the Public Service Corporation of New Jersey and the Brooklyn Rapid Transit Company, accepted the management of the Mexico City Company at the solicitation of Werhner, Beit & Company, of London, and after serving as manager for about two years he was appointed about a year ago president and manager of the company. So successful was Mr. Wheatly in this capacity that at the last meeting of the Mexico Electric Tramways, Ltd., in London, Colonel Sir Charles Euan-Smith, K. C. B., C. S. I., chairman of the board of directors, who had just returned from Mexico, where he made a thorough inspection of the company's property, said, among other things: "It is with sincere pleasure that I am able, with the concurrence of your board, to bring to your notice the services of Mr. William Walter Wheatly (the general manager), and of the able staff which he has succeeded in gathering around him. Most of these gentlemen are well known in the tramway world as having successfully filled responsible positions in important concerns of a similar character in the United States. Of Mr. Wheatly himself, of his capability and of his devotion to the company's interests, it is impossible to speak in too high terms, and I beg to submit for your appreciation the proposal that we pass a cordial vote of thanks to him and to his colleagues for their services during the past year." It has since become known that when the London board transmitted to Mr. Wheatly this resolution there accompanied it a draft for £3,000, equal to approximately $30,000 Mexican currency, as a substantial token of its appreciation. Mr. R. C. Brown, of Toronto, one of the directors of the new Canadian company, known as the Mexican Tramways Company, and to whom has been given the title of managing director, is now in Mexico City and will perform the duties of general manager for the present at least.