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**EDITORIAL NOTICE**

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

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

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**The New York State Convention**

The annual convention of the New York State Street Railway Association, which is always one of the most important street railway events of the year, is to be held next week at Utica, on Sept. 13 and 14. This convention should attract wide attendance, as a most interesting programme has been provided, and the executive committee has extended a cordial invitation to all supply men and railway managers, whether they are connected with roads in New York State or not. The meetings of this association have an importance which is not confined to the State of New York, and are usually attended by several representatives of street railway interests in other States.

**A Revelation in Costs of Power**

The recently issued Boston Electrical Handbook contains, among other interesting details regarding the Boston elevated system, a detailed report of the cost of power at each of its stations for an entire year. The facts are of a rather startling character and will well bear serious study. As our readers well know, the Boston Elevated Company is unique in being one of the very few great operating companies that has consistently kept up the policy of supplying its network from a group of auxiliary generating stations instead of surrendering to the current fashion of building a colossal central station, and thence feeding sub-stations via a high-tension network and rotaries. The Boston network is of no mean size. The aggregate rated capacity of its stations is over 36,000 kw, and this output is none too large for the demands made upon it. But instead of this capacity being in one station it is in eight, ranging in capacity from 600 kw to 14,400 kw, all save one, and that almost the smallest, being located upon tidewater. The largest units are of 2700 kw, and all, large and small, are driven by reciprocating engines, with a few exceptions of the cross-compound condensing form.

In every station the closest possible account is kept of the costs of each item, and particularly of the output and coal and water consumption. The stations in this respect are practically under continuous test, so that the data presented involve no manner of guess work and depend upon no carefully prepared tests, but represent a year's actual experience. The data given are for the year ending Oct. 1, 1902, that being chosen on account of escaping the subsequent great disturbances in the costs of fuel. During the year the average price of coal was \$3.60 per long ton, a figure rather over the normal in previous years, but not in any sense extraordinary. The costs given in the striking diagram shown in the Boston Handbook are divided into four heads: coal, labor, repairs and supplies, superintendence and general expense. The total do not include fixed charges, but do include all the other expenses. The system includes three rather old stations with relatively small units, in which the costs show nothing remarkable, but the fine modern stations—Central, of 14,400 kw; Lincoln, of 8100 kw; Charlestown, of 4300 kw; Harvard, of 3600 kw, and Dorchester, of 2000 kw—form a group of rather sensational interest. To begin with, the two smallest show the lowest total costs of power, in each case just 0.7 cent per kw-hour. Then comes Lincoln with 0.725 cent, Charlestown with 0.755 cent, and Central, the largest, with 0.76 cent. To a certain extent the outlying stations are favored in the matter of load factor, as much of the variation is taken care of at the Central plant, but considering the high price of coal, the net results are remarkable in the highest degree. They set at naught some commonly held opinions regarding the effect of capacity upon cost of power production, for if a 2000-kw station can turn out power at 0.7 cent per kw-hour, of which a little over 0.4 cent is paid for coal at \$3.60 per ton, how much margin could be gained in a 50,000-kw station to offset the losses of

energy and miscellaneous costs of a high-tension distribution system? Another point which will shock the delicate sensibilities of some engineers is the fact that the Central station, which has hand-fired boilers, shows for coal and labor combined a lower cost than the very modern Lincoln station, which has mechanical stokers. We draw no moral, but merely present the solemn fact for due consideration. To us it merely implies that intelligent attention to the details of station output will give good results with either method of firing. The secret of success in any good modern plant lies in this close study of operating conditions, and particularly in the nice adjustment of load between stations that keeps up the load factors at the several points when feeding is done from a group of stations. In an electric railway system the shifting of the load in amount and position is very considerable, and unless these variations are looked after the economic results will probably be rather bad.

The average cost of power in these various stations of the Boston elevated is scarcely 0.75 cent per kw-hour, and at the costs of coal common in some other localities would fall to about 0.6 cent to 0.65 cent. We doubt whether these results can be equaled in railway plants of anywhere nearly similar size when the costs are determined by rigorous and continuous tests. There is a wide difference between performance under special tests to determine economy and the final results of continuous working. Now as regards the comparison of these Boston elevated data with those from huge stations distributing power at high tension to sub-stations. There is no doubt whatever that large units tend to lower the costs of power, and in this particular the big stations have an advantage. There is no doubt that some very large plants can and do turn out power under the best of the Boston figures, even allowing for differences in costs of fuel. But that any station does beat the Boston figures by a margin big enough to compensate for the energy losses in transmission and conversion in the rotaries with the attendant costs we very much doubt. Merely the losses of energy will foot up to about 25 per cent, year in and year out, and when one adds to this the fixed charges, due to the installation and upkeep of the high-tension apparatus and the sub-stations, the case looks more than dubious. If the high-tension distribution could feed the working circuits directly, as would be the case if alternating railway motors were used, the situation would be mended, but that time is not yet. Of course, there may be local circumstances which render the installation of a single station advantageous—the balance of costs does not necessarily swing consistently in one direction—but these Boston figures ought to make the engineer think twice before going into transmission on a large scale. To ascertain all the facts for a complete comparison one would be compelled to go in detail into fixed charges, the cost and character of the feeding system, and the nature of the variations in load. This would be no easy matter, however instructive the result might be. It is sufficiently evident, however, that the gain in economy with increase of size has been very often grossly overestimated, and that when one gets up to a capacity of several thousand kilowatts the further gains are relatively small. And the margin of economy in the very large stations is by no means necessarily sufficient to justify their existence. Each great system presents its own special set of conditions, which must be taken fully into account. The Boston case, we think, is sufficient to show that other solutions of the problem than gigantic central stations may be possible and in their proper place advisable.

### The Continental Standard Form of Operating Report

As most of our readers are aware, the International Tramways and Light Railway Association, or to call it by its official name, the Union Internationale de Tramways et de Chemins de fer d'Intérêt local, is the organization which represents the street railway interests of the whole of Europe outside of Great Britain. Its headquarters are in Brussels, and it is doing its work in a manner that in one way or another it might be taken for a pattern by any one of the American associations. A number of the papers or reports to be presented at the Vienna convention this week have already been published in these pages, and that on its proposed form of monthly report is presented this week. In this connection it might be said that, in addition to the papers which are read at its conventions, the association publishes six months in advance of each meeting the replies of the different member companies to inquiries as to their practice on each of the various topics to be discussed at the meeting. These replies this year filled 280 pages and supply a fund of information on current European practice. This association differs also from the American societies in that its meetings are held once in two years instead of once a year.

At its last session, held in London in July, 1902, a preliminary report was presented relating to the formulation and adoption of a standard operating report. The committee to whom this subject was assigned has continued the work begun in London, and has recommended a form of report which has been translated and will be found elsewhere in this issue. Owing to the fact that the association is now in session in Vienna, we are not in a position to know what action will be taken upon this form, but in advance of this information it will not be out of place for us to express certain thoughts which are suggested by it, especially as the report has been published and circulated.

It is much easier to tear down than to build up; so is it also much easier to compare an established fact with a proposition, but if we can say anything to help bring the result about we wish the three European societies would consider more seriously the adoption of a report which could be in fact an international standard report.

In an editorial published in this paper in August, 1903, we pointed out that Great Britain, represented by its two associations, was proposing two widely varying forms of report, each of which was designed to be the standard for Great Britain. With this difference in idea if not intent on their part as our text, we showed the benefit that would come from discarding each of these forms and substituting therefor the classification and form of report adopted in America. We now have our argument strengthened by the form of report recommended at the Vienna convention because the territory covered is now increased by the addition of the whole of Europe instead of being limited, as before, to Great Britain and America.

We explained a year ago that there was nothing in the two British proposed forms but is shown equally well and sometimes better in the American, and we now repeat the same claim as relating to the Continental form. In order to show briefly how this conclusion is reached, we will add to what we said a year ago about the proposed Great Britain reports the following result of an examination of the recently proposed Continental form:

In the first place it is, as it is headed, an operating report purely, as no place is provided for the very valuable information which comes from a balance sheet, the balance sheet and all reference to it being omitted. While the income and operating expenses are shown in great detail, the report stops at

net earnings, so that an examination of the report, when filled out by a European company, will not give the officers, nor others interested in that company, anything approaching a true understanding of its financial condition. No place has been provided for the deduction of fixed charges, which of itself should be fatal to the utility of the report, because no operating manager can so quickly realize the results of his service as through the effect of the fixed charges upon the net earnings. If it is the purpose of the Continental association to introduce its report into Great Britain for adoption there, it would seem that this purpose will not be realized until provision is made for depreciation, even though the British associations do not agree as to the extent to which depreciation is to be carried.

Neglecting, however, this omission and assuming that the object is to construct a form which will show the results of the operating department only, the report does not seem, from an American standpoint certainly, to be complete, even though a vast deal of statistics is provided. As an instance of this, while full information is given of the performance of the power station, and while the employees, car mileage, tons carried, etc., are tabulated, all reference has been omitted to the work done in the car shops and by the line and track departments except so far as shown in the expenses. To the American manager detailed information of this kind relating to the track and line is as necessary as that of the power station.

There is one other mistaken custom in which this proposed report indulges and in which many American companies that have not yet followed the American standard are also at fault. We refer to the indiscriminate mixing of statistics with the money results of operation. The first page of the report under discussion well illustrates this point. We think that the promoters of the American standard are to be congratulated that they have segregated everything of a statistical nature to a place by itself.

We do not desire to be understood from our criticisms that the Continental report has no good points, and in evidence we might point out to the American companies one thing provided for in this report which is all too rarely even considered in America, namely, the charging to the proper operating accounts the current furnished by the power plant for lighting and the operation of machinery. We believe that the American custom is not accurate in this respect. It is very rarely also that an American report will show the detailed power plant information that is provided for in the Continental form, and if the latter went further, as we mentioned above, so as to cover other departments of the service, it would more probably accomplish the results for which we interpret it is intended.

The adoption of the Dewey decimal system to the classification of accounts, as shown in the Continental form, is, of course, one of the main features to attract attention in it. This plan has undoubtedly much to recommend it, although there will be many who will agree with us that its advantages are more theoretical than practical, certainly so far as the nine main sub-divisions of operating expenses are concerned. That is, it is a question whether a logical classification should be sacrificed for a division into ten instead of an odd number of accounts. In the American practice there are thirty-eight accounts, and if we apply the Dewey system to these accounts they can be sub-divided as finely as may be desired. This has been done by many American companies with complete success and without destroying in any way the thirty-eight main accounts.

The space at our disposal will not permit a complete analysis

of this report, and as the form is printed in its entirety in this issue, with a brief digest of the report accompanying it, we submit both to the American companies for their information. We must, however, again argue as we did a year ago for one standard international report. We believe it to be a necessity. The rapid standardization of operating practice must bring standard accounting. One cannot come without the other, as it is impossible that standard operation can come except as it follows standard accounting. Operation cannot be compared nor can comparisons be utilized unless the accounting shall first be upon a similar basis.

At this present time the situation is that America has a standard classification and form of report so firmly established and widely adopted by both operating companies and financial interests that it is an actual standard. Its predominant position has been strengthened in this country through its adoption by both the United States Government in its Census work and by the National Association of State Railroad Commissioners. It has been in service for a long time, and by its flexibility and utility has given such satisfaction that it could not be changed without endless confusion. On the other hand, as we pointed out a year ago, there is nothing in any of the European forms of reports but could be adapted to the American with but slight changes. It seems to us, therefore, there is hardly more than one side to the question, and we hope our European confreres are not permitting the word American to deflect them from endeavoring to obtain a standard report that will be actually international. They will certainly not be able to obtain the results which all desire from a standard report if they permit themselves to adopt three forms. Through the operation of the tremendously virile ideas of the last half century the world has become to all practical purposes very much smaller than it was fifty years ago. Securities are held in other countries than those in which the investments are located, and we submit that the time is coming when, among other demands, a standard form of report for electric railways will be one. We submit further, that the one which happened to be composed and adopted first in America is, by its simplicity and adaptability, one which can be without excess of confusion and no greater expense adopted by Europe, thus clearing what will eventually be, should this course not be followed, an atmosphere of confusion and uncertainty.

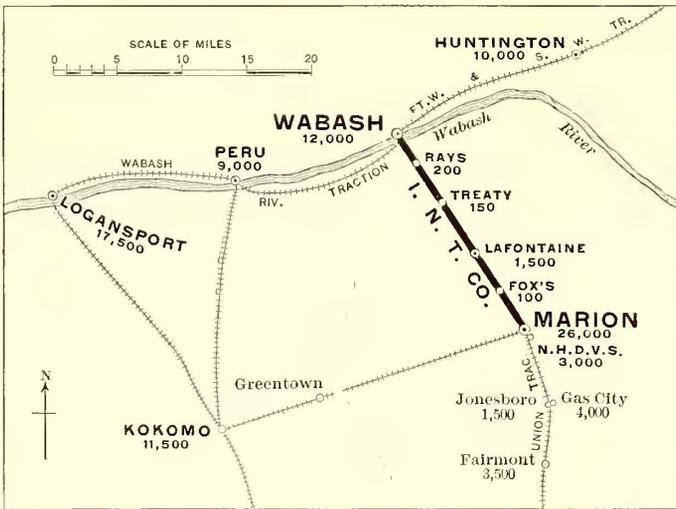
### Light in the Yards

With incandescent lamps in the store room, and current for the mere asking, it is strange that so many master mechanics and shop foremen keep the yards, where cars are stored and switching is done, in such complete darkness. No doubt if they were to know half the troubles of the "night man" caused by lack of light, a speedy reformation would result. The night man has enough difficulties without increasing them by expecting him to find defects by the touch method.

Mishaps, such as blown fuses, trolley jumping off, car off track, etc., are much more likely to occur in yards where switching is done than on the main track, and, therefore, every facility should be offered; first, to avoid such occurrences, and after they have occurred to correct them as speedily as possible. The effect in labor saved of a few clusters of lights placed on poles at frequent intervals about the yards will be at once noticeable; and, too, a haphazard feeling that the night man is likely to have conducting his work in the dark will disappear and give place to a feeling of confidence that will have its effect in causing him to be more thorough in his work in general.

**THE INDIANA NORTHERN TRACTION COMPANY**

The Indiana Northern Traction Company is now completing an interurban line 20 miles long between Marion and Wabash, Ind. This line forms a connecting link between two important interurban electric railway networks in that State. To the



MAP OF THE SYSTEM OF THE INDIANA NORTHERN TRACTION COMPANY

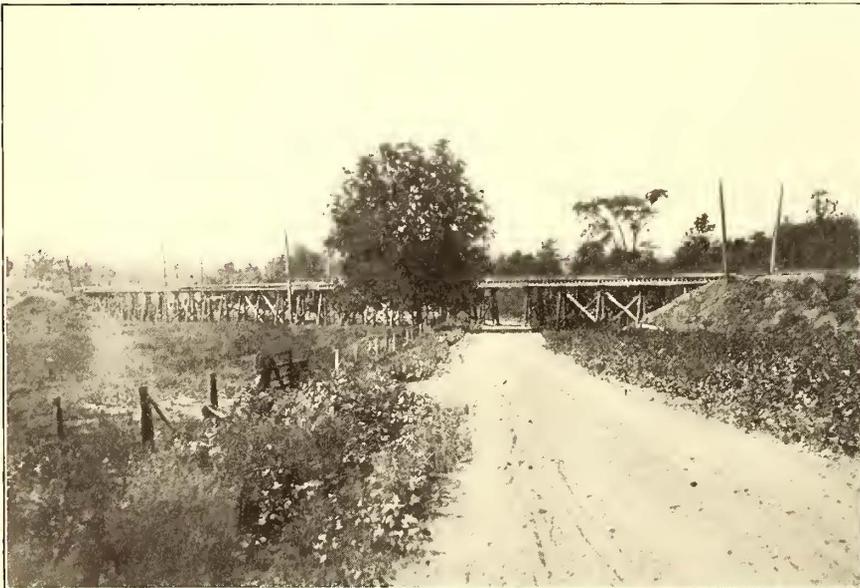
south is the famous Indiana oil and gas belt, with the lines of the Indiana Union Traction Company connecting all its principal cities. To the north are the interurban lines of the Wabash valley, offering interurban transportation from Logansport to Peru, Wabash, Huntington and Fort Wayne. Lines east and south from Fort Wayne are under construction. The accompanying map shows the relation of this company's link to part of the interurban lines on both sides of it. The southern terminus, Marion, is the oil center of the State. It has a number of suburbs to the south of it, where oil and natural gas have attracted many industries requiring these for fuel. The

cluded that the present population in and near the town is 1500. Three other small trading stations along the line have a large rural population tributary. The promoters of the road, however, have not relied entirely upon the population directly touched by the road. The road, as said before, is a connecting link between large interurban systems, and the population brought tributary to the road at each end by these interurban systems is about 110,000 at the Wabash end, and over 350,000 at the Marion end.

A traffic agreement has been made with the Indiana Union Traction Company in Marion, and with the Wabash River Traction Company at Wabash (which is controlled by the same interests) whereby the Indiana Northern Traction Company's cars enter both cities. The Indiana Northern Traction Company is to pay 2½ cents for each 5-cent fare collected in each



APPROACHING WABASH ON THE INDIANA NORTHERN TRACTION LINE



A LONG TRESTLE ON THE LINE OF THE INDIANA NORTHERN TRACTION COMPANY

population of Marion, which has doubled in the past ten years, is now probably about 26,000, judging from the last city directory. It is the county seat of Grant County. Wabash, the northern terminus of the line, is the county seat of Wabash County. Its population is estimated at about 12,000. The principal village along the line is La Fontaine, which, although small, is probably the most rapidly growing village touched by the road. The school attendance is 250. From this it is con-

city to the company owning the city tracks. The city company maintains the tracks and furnishes the power. The Indiana Northern Traction Company will not compete in any way for local business in either Marion or Wabash, and the Indiana Union Traction Company will not parallel the Indiana Northern Traction Company between the two cities. The route is on a private right of way, which parallels the Big Four Railroad from one city to the other except in passing through villages and near the terminals. There is only one grade crossing with a steam railroad on the line. This is on the outskirts of the city of Marion. This grade crossing is to be protected with interlocking signals and derailing switches on both steam and electric railway tracks. Just before descending into the Wabash valley south of Wabash, the tracks of the Big Four Railroad are crossed by a viaduct.

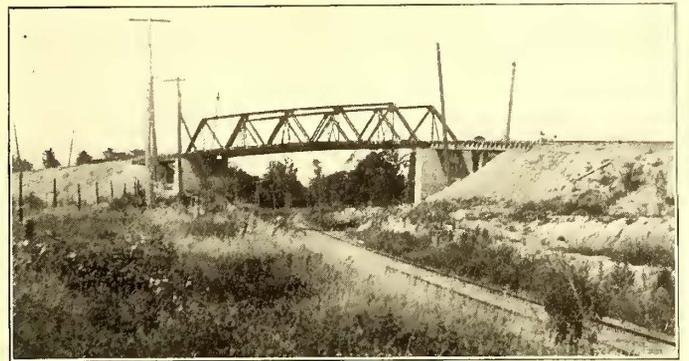
**POWER SUPPLY**

Plans were first drawn up to supply the road with power from two sub-stations operated with high tension, alternating current purchased from one of the neighboring interurban companies or from an electric lighting station. It was found, however, that rented power would be so expensive that it would be advisable to install a power station. As the road is comparatively short and natural gas is cheap, and, as furthermore, the time was limited, it was decided to put in a very simple power station with direct-current generators belted to engines. Such

a power station could be quickly put up and operated with a reasonable degree of economy; furthermore, it involves a minimum investment. As the road is only 20 miles long, with no prospect of being extended in either direction, and the territory at both ends is already occupied, there was no object in putting in alternating-current apparatus for high-tension transmission to extensions. In case the road should ever be supplied with current from an outside source the direct-current power station with belted units would involve the least idle investment.

POWER STATION

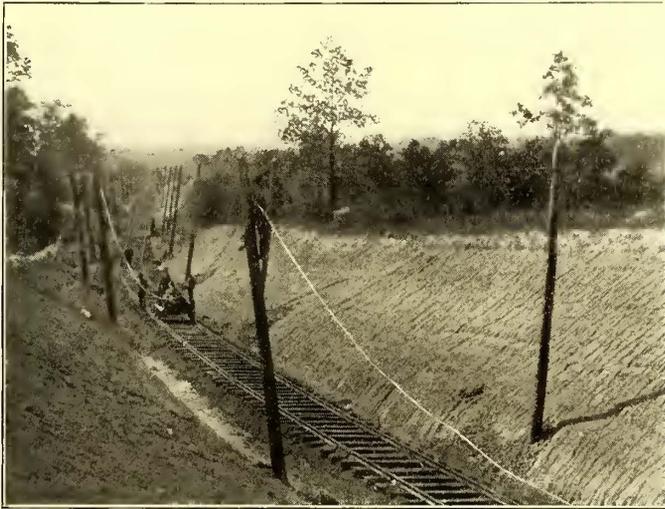
The power station is located at La Fontaine, and is a brick building with wooden roof trusses and gravel roof. The side walls are 12 ins. thick, and that between the engine room and



OVERHEAD CROSSING OF THE BIG FOUR RAILROAD

1 hp at 50 per cent overload with 46 cu. ft. of gas at 1/2-ounce pressure, a horse-power in this connection being considered the evaporation of 34 1/2 lbs. of water from and at 212 degs.

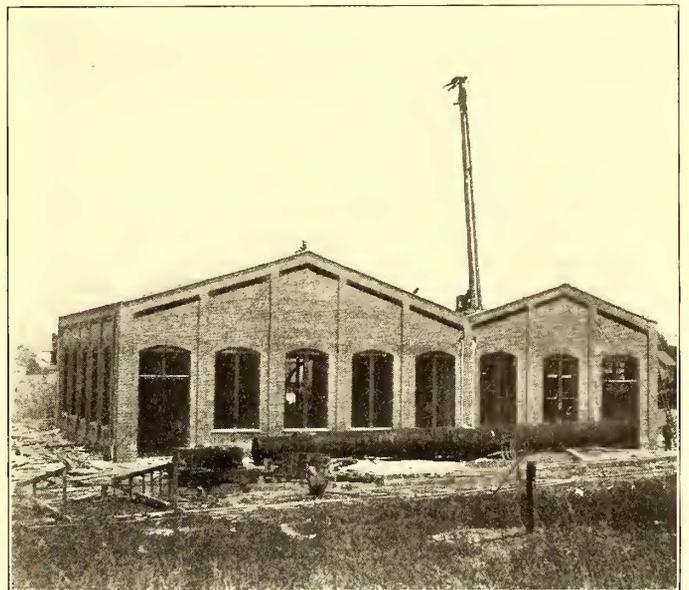
Feed water is taken from Grant's Creek, 30 ft. from the station, by means of a 5 1/2-in. x 8-in. x 7-in. Blake pump, and supplied to a Cochrane open feed-water heater. After passing



OVERHEAD WORK IN PROGRESS ON LINE LOOKING TOWARD MARION

boiler room is 8 ins. in thickness. The power station is divided into an engine room 70 ft. x 60 ft., and the boiler room 39 ft. x 4 ins. x 7 ft. Both boiler and engine room floors are on the same level.

The boiler room contains three Stirling water-tube boilers of 300-hp each. Each boiler is provided with a steel-guyed stack 48 ins. in diameter and 93 ft. in height above the boiler room floor line, and 91 ft. in height above the grates. Natural gas is to be regularly used for fuel, although coal is to be used temporarily, and the boiler is supplied with twelve Claybourne burners, manufactured by the H. F. Reynolds Electric Company, of Marion, Ind. The burners are guaranteed to develop



POWER HOUSE UNDER CONSTRUCTION

through the heater the water is forced into the boiler by a 7 1/2-in. x 4-in. x 10-in. duplex outside type Blake plunger pump. The feed-water heater, which is of 1000 hp, is mounted on an elevated gallery, and the feed pumps are underneath it. The water passes from the heater to the feed pumps by gravity. Each boiler is also fitted with one Penberthy injector.

The engine room contains two 20-in. x 42-in. heavy-duty, single, non-condensing Allis Corliss engines, operating at 100 r. p. m., and each belted to a 300-kw direct-current Bullock railway generator. This simple arrangement of machinery was adopted for the reasons previously mentioned and on account of the low cost of fuel, as the entire cost of gas for the operation of a station is estimated at less than \$1,000 a year. Direct current was used in place of alternating current for the same reason—that is, to reduce the interest charges on the plant. The drop on the feeder system will naturally be quite large owing to the length of line and the distribution by direct current, and to overcome this two 250-kw electrically driven boosters have been installed.

TRACK CONSTRUCTION

The track is laid throughout with 70-lb.



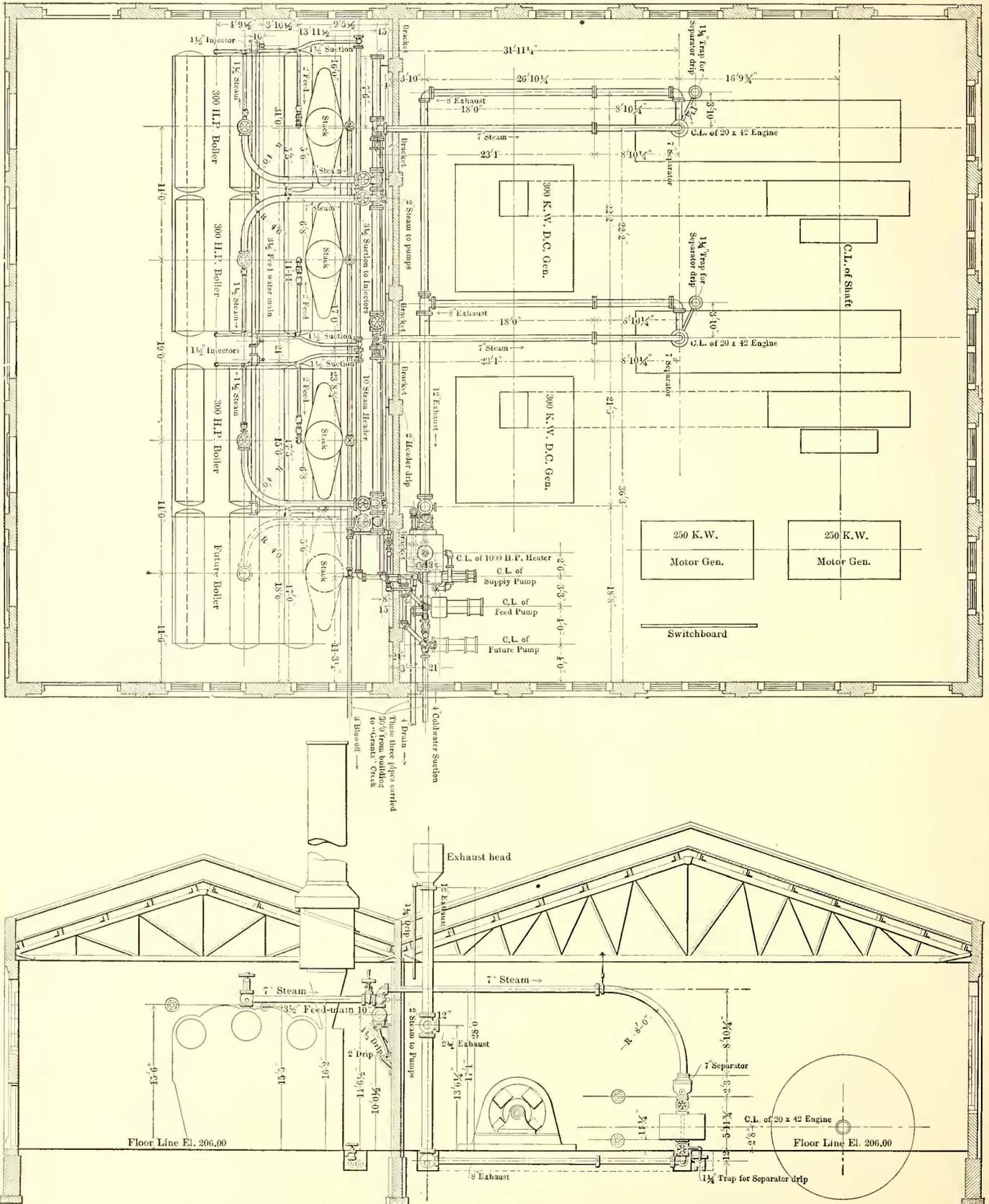
WORKING A GRAVEL PIT

A. S. C. E. rails in 30-ft. lengths. The joints are the standard 30-in. angle-bar joints with six bolts. The rails are laid on 6-in. x 8-in. x 8-ft. chestnut ties on gravel ballast, which is laid 8 ins. under the ties. The latter are spaced 2 ft. centers. All joints are bonded with two American Steel & Wire Company's

are on a 4 per cent grade, which is by far the steepest on the line.

OVERHEAD CONSTRUCTION

The overhead line is built with span construction. Juniper poles with an 8-in. top and 30 ft. in length are used. A double



PLAN AND CROSS SECTION OF POWER STATION

No. 0000 concealed bonds, and cross bonds of the same size with compressed solid terminals are used every 500 ft.

The road is practically level with the exception of one crossing over the Big Four Railroad, where a pony truss with a 90-ft. span has been installed. The approaches to this bridge

No. 000 grooved trolley is employed and 104 poles are used per mile. The feed wire is of aluminum throughout. It is installed in sizes equivalent to 350,000 and 400,000 circ. mil of copper, and one or two new types of joints for connecting the aluminum feed wires are being tried, as well as the ordinary compressing

screw joint. The 350,000-cm feeder runs south from the power house and the 400,000-cm feeder north. The trolley and feed-wire insulators were supplied by the Johns-Manville Company.

The road is to be equipped with block signal and telephone systems. The plan of power distribution is very simple, as the power station will feed directly into the trolley wires at the station, and the two boosters will feed through the aluminum feeders which run from the power house to the two ends of the road. The line is not sectioned.

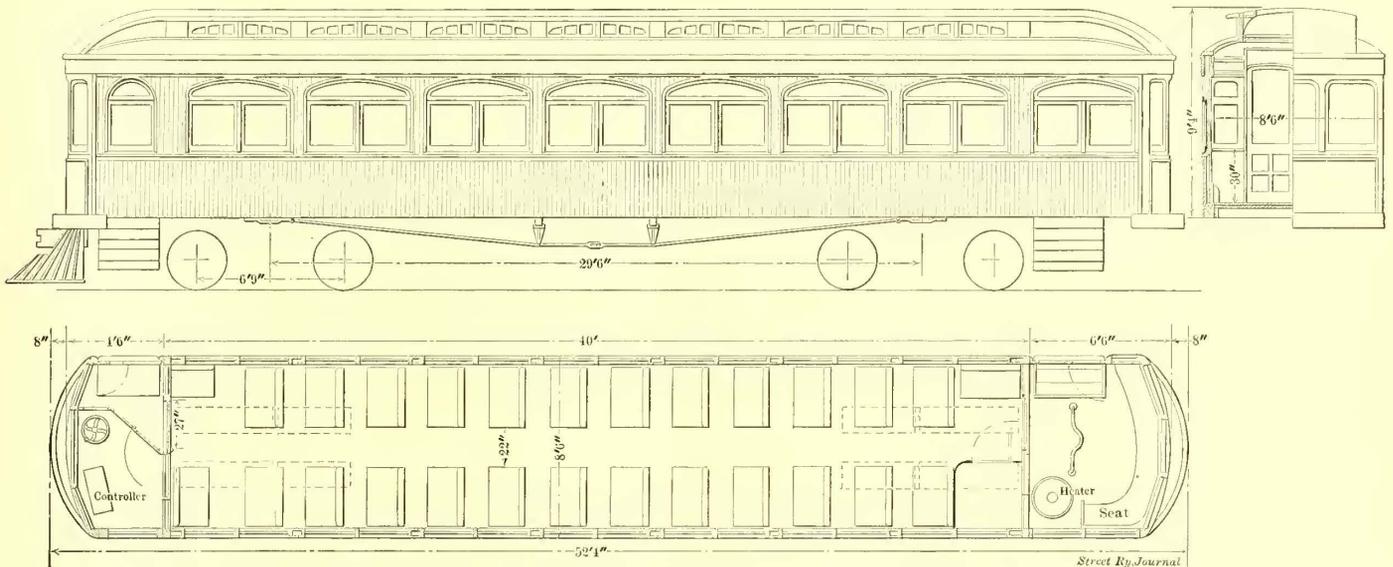
CARS

The cars are designed to be always operated in the same direction. The rear platform, which is enclosed, also serves as a smoking compartment, having a seat extending around the rear of the vestibule. A Smith hot-water heater is located in this rear vestibule. The front end of the car is a motorman's cab, which is separated by a partition from the entrance. The interior finish is mahogany, with olive green ceiling. The

NOTES ON THE ST. LOUIS ELECTRIC RAILWAY TESTS

The two tracks between the Transportation Building and the intramural railway to be used for the electric railway tests, are each about 1400 ft long, and are laid with 60-lb. rail in 30-ft. lengths, resting on 6-in. x 8-in. x 8-ft. cedar ties, spaced 30 ins. between centers. Cinder ballast is used throughout. One of the tracks is about 3 ft. above the other, and both are straight and level throughout. Each joint is bonded with a No. 00 American Steel & Wire Company's bond, having a 7/8-in. head, which is expanded into the bond hole by an iron drift pin through the center.

The line material was furnished by the Wesco Supply Company, of St. Louis, and was installed by the Exposition mechanical and electrical department. Wire-lock wedge-joint steel-tubular poles 28 ft. long, and consisting of three tubes of 6-in., 5-in. and 4-in. diameter, respectively, were used. The



PLAN AND SIDE ELEVATION OF STANDARD CAR USED BY THE INDIANA NORTHERN TRACTION COMPANY

color selected for these cars is rather striking, being orange up to the window sills and lemon above the sills. The seats are Hale & Kilburn, arranged to face permanently one way. The cars were built by the John Stephenson Company, and are mounted on Stephenson M. C. B. type of truck, with the Railway Steel Spring Company's steel-tired wheels. The operating equipment consists of four G. E.-73 motors, with L.-4 controller. The brakes are of the Christensen type, manufactured by the National Electric Company, Milwaukee, Wis.

The running time between Marion and Wabash is about fifty minutes, leaving ten minutes for layover or to make up for time lost, and allowing cars to leave each end once each hour. This will require the operation of two cars for local service, and, possibly, a limited car will be added, making the round trip every two hours, with twenty-minute layover at each end.

The bond issue is \$500,000 in thirty-year 5 per cent gold bonds, or an equivalent of \$25,000 per mile of track. The stock is \$500,000. The officers are: Jilson J. Coleman, of New York, president; R. E. Bred, of Marion, Ind., vice-president; E. M. Hunt, of Trenton, N. J., secretary and treasurer; Hon. F. S. Katzenbach, Jr., of Trenton, N. J., general counsel, and Henry F. Coleman, of Marion, Ind., general manager and chief engineer. The road has been built under contract by J. G. White & Company, under the immediate supervision of I. A. Hodge.

poles were not quite long enough for the higher of the two tracks, and the setting is therefore somewhat out of the ordinary. A wooden plug was driven into the bottom of each pole and allowed to project out 2 ft. The poles were then placed in 6-ft. holes, 18 ins. in diameter, and the holes filled with concrete, consisting of two parts neat Portland cement and five parts finely crushed rock. The poles are all placed between the two tracks, and Hercules double brackets of 9-ft. span were used. The Wesco form "M" hanger and form "M" trolley clamp are employed throughout. The trolley wire is No. 00 round copper, furnished by the American Steel & Wire Company. The latter company has also loaned 3000 ft. of duplex lead-covered cable for delivering alternating current to the track from the Bullock exhibit in the Palace of Electricity.

The tests on the Hunt storage-battery locomotive are finished and the observers are busy working up the results. The alternating-current rail loss tests in the Bullock space, Palace of Electricity, are nearly done, and it is expected as soon as they are completed to make some alternating current loss tests on the test tracks, using the Bullock machines as they are now arranged for the work on single rail lengths.

In the tests on the Bullock space considerable difficulty has been experienced in measuring drops, but by means of raising pressure transformers it has been possible to secure results. The entire pressure reading outfit has been calibrated in place by means of a General Electric volt dynamometer. A General Electric pressure transformer, designed for a minimum of 30 volts and various ratios of transformation from 2 to 16 to 1, was used with a Stanley hot-wire voltmeter. The actual pressures are from 1-16 volt to 2 volts, and the transformer ratios

A new Cleveland Electric Railway band has been formed by the consolidation of the old band of the same name with that of the Cleveland City Railway. The new band now has sixty uniformed members, all of whom are street railway employees.

were found to be about 25 per cent low, due to the comparatively large exciting current at these low pressures.

A series of car runs on the lines of the St. Louis Transit Company for the purpose of testing the Christensen air-brake apparatus have just been concluded. One of the large St. Louis cars was placed at the disposal of the commission, and fully equipped with the necessary instruments, and was run in regular service on the Park Avenue line. Six seats were roped off, equipped with tables, and a corps of nine observers on each of two shifts took data on the runs. The car was equipped with a 22-hp Christensen compressor, with its standard regulating device and storage tank. An additional automatic cut-out was provided to stop the compressor when the motorman took air, so as to render it possible to measure all air compressed. The car is equipped with a 7-in. brake cylinder, in common with the rest of this type of car, and the regular brake rigging is employed. A recording pressure gage, loaned by the Westinghouse Air Brake Company, was used on the brake cylinder. Indicating pressure gages were placed on the storage tank and on the brake cylinder. Current taken by the compressor was measured by a Weston instrument. All these instruments were read when the compressor started and stopped, or when the brakes were applied, as the case may be. The brake piston travel for various pressures was very accurately determined and the conditions of each stop carefully noted, and some interesting results on the amount of air per stop are looked for.

In addition to this, five-second readings were taken of line voltage, and line current was taken on an Armstrong recording ammeter, loaned by the General Electric Company. A Boyer speed recorder and a magneto tachometer were used for speed readings. The magneto tachometer consists of a small telephone magneto with commutator driven by friction wheels bearing on one of the car axles.

The car was run in regular service, and on one trip carried 140 passengers. Runs were made on both dry and wet days, with several motormen, so the test will give the air consumption under practically all conditions. This same car is now being tested with the storage-air system, the tests as outlined above being duplicated.

### CURRENT REQUIRED FOR HEATING A THIRD RAIL

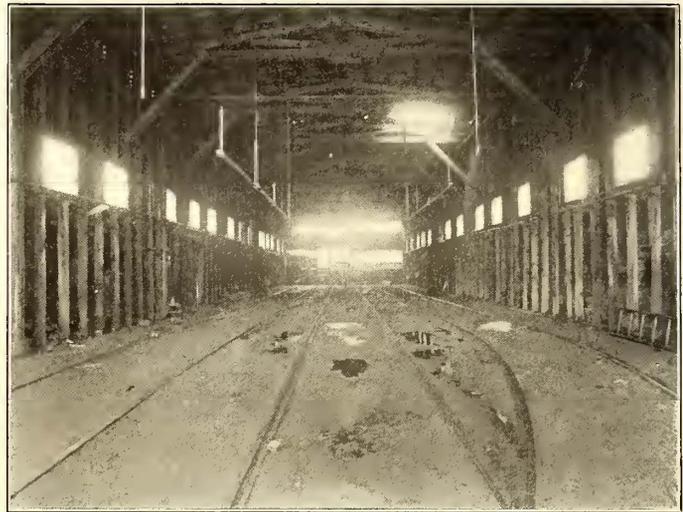
Some interesting experiments as to the amount of current required for heating a third rail to remove sleet were conducted in Bridgeport last winter by Wm. Grunow, Jr., assisted by W. T. Oviatt and R. B. Davis, of the Connecticut Railway & Lighting Company. A 70-lb. T-rail 30 ft. long was used and was heated by means of a steel wire carried under the head of the rail and insulated from it by porcelain bushings. Wood protections were employed to shield the rail from wind and to maintain its temperature. With the air at 15 degs. F., the temperature of the rail was raised 19 degs. in fifteen minutes; and with the air 21 degs., the temperature of the rail was raised 19 degs. in twelve minutes. The energy consumption during these fifteen minutes was equivalent to 90 kw if the heating had been applied to a 1-mile length of the same section of rail.

The Lake Shore Electric Railway Company has perfected an arrangement with the government life-saving department to handle an emergency life-saving outfit which will be maintained on a flat car at Lorain, and will be ready for emergency calls at any points between Sandusky and Cleveland, the electric line being within sight of the lake over this entire division of the system. The contract was made with the company by Captain C. A. Abbey, superintendent of construction of the United States Life Saving Service, who is enthusiastic over the possibilities of the plan for improving the efficiency of the service in that district.

### CAR HOUSE FIRE TEST IN CLEVELAND

A remarkable test of a fire extinguisher outfit designed especially for the protection of car houses was made in Cleveland the latter part of August, and was witnessed by a number of prominent traction officials of that city and vicinity, together with insurance men and representatives of the fire department. The experiment was of a hazardous character, but it was entirely successful, and the results seemed to indicate that the adoption of the system by street railway companies will undoubtedly result in the practical elimination of the great number of disastrous car house fires which have embarrassed street railway companies in the past.

As is well known, the car house is considered by insurance companies as one of the most hazardous risks known, and the numerous fires of this character have had the result of increasing the premiums until car house insurance has grown to be a very expensive item with big companies. A car house fire is disastrous to a street railway company not only through the actual value of the property destroyed, but the absence of rolling stock involves a loss of business until new cars can be secured to handle the traffic. The scheme of installing automatic sprinkler systems has operated satisfactorily in stores and



INTERIOR CAR HOUSE SHOWING SPRINKLERS—REAR END OF BUILDING KNOCKED OUT FOR BETTER DRAFT

factories, and it has been tried in car houses, but it has not been altogether successful, due to the fact that the sprinklers have been suspended from the roof, and the water falling on the roofs of the car is prevented from reaching the fire until it is beyond control, owing to the fact that the fire usually originates inside the car.

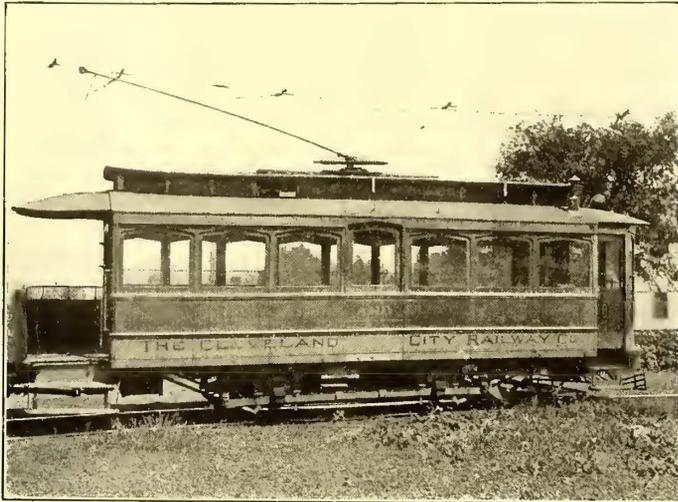
Recently, Henry N. Staats, of Cleveland, manager of the Traction Mutual Fire Insurance Association, which, as is outlined in another column of this issue, has been formed for the purpose of insuring traction properties, conceived the idea of placing automatic sprinklers between the rows of cars in a barn. He presented the plan to the Cleveland manager of the General Automatic Fire Extinguisher Company, who at once saw the advantages of the scheme. With a view to giving the plan a practical test, it was presented to Horace E. Andrews, president of the Cleveland Electric Railway Company, who, after some hesitation, agreed to the company's proposition to install the system in a car house filled with cars and then deliberately set fire to the house. Mr. Andrews insisted that the trial should be made under the most extreme conditions and that a series of tests should be conducted embodying the various causes from which car house fires usually originate.

The building selected was an obsolete frame car house at the corner of Quincy Street and Bolton Avenue, which is isolated from surrounding property and is used for car storage. The

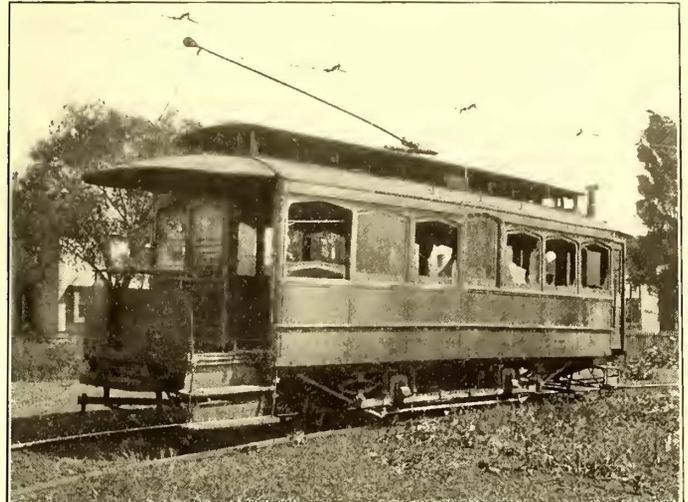
pipng was, of course, of a temporary character. A 6-in. iron pipe from the city main was run through the adjoining lot, extending the full length of one side of the building. From this two 5-in. lines extended into the house. Two vertical 5-in. mains supplied the sprinklers in the house. Across the rear of the house and connected with the main from the street, was a 4-in. main, both ends of which were connected to Siamese

tem, and other lines of hose were laid ready for an emergency.

In the first test the fire was started in car No. 200, located exactly in the center of the house, and in a manner similar to that in which fires usually originate in cars, viz: by means of a short-circuit. Two arc light carbons were connected to the motor circuit, and a piece of fuse wire was placed between the two carbons, which were about an inch apart. The carbons



CAR THAT STOOD WITHIN A FOOT OF DAMAGED CAR



EXTERIOR OF SECOND CAR

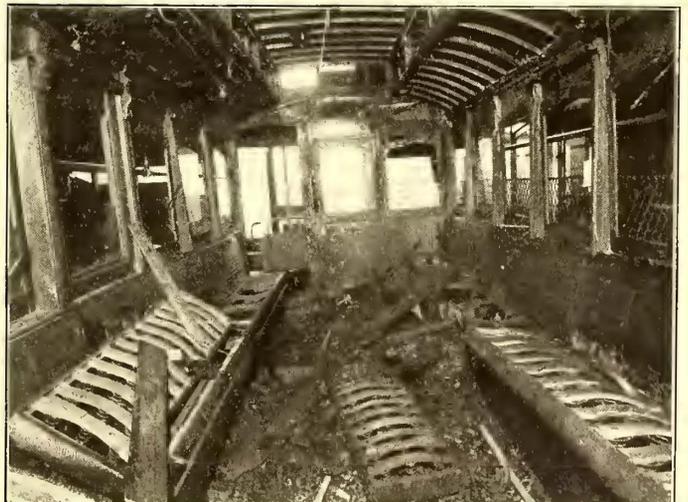
steamer connections, so that pressure from fire engines could be turned into the system if necessary. The piping in the roof followed the General Fire Extinguisher Company's usual practice, the sprinkler heads being placed in rows 7 ft. apart and staggered so as to distribute the spray. The sprinklers between the cars, which was the new feature of the system, were suspended from pipes leading from the roof, and were level with the center of the car windows. The sprinkler heads in both cases were the standard Grinnell type, which have been used by the company for a number of years. The valve in the head is held in place by a central column, which is soldered with a soft metal, fusible at any predetermined degree of heat. In this case they were set for about 150 degs. The water as it is re-

were placed beneath a seat, and when the current was turned on the fuse melted and an arc was formed, which speedily set fire to the seats. In three minutes the interior of the car was in flames and the windows on the sides and transoms commenced to break. Within three minutes from the time the first sprinkler was opened the fire, both inside and outside, was entirely extinguished. Twenty-seven sprinklers were opened in this test.

The second test was even more severe, as it was started from below the car floor; car 198, located directly in front of the first car, being used. To provide better draft, a number of boards in the rear of the building were knocked out. In this test oily waste was placed over the carbon points and a number



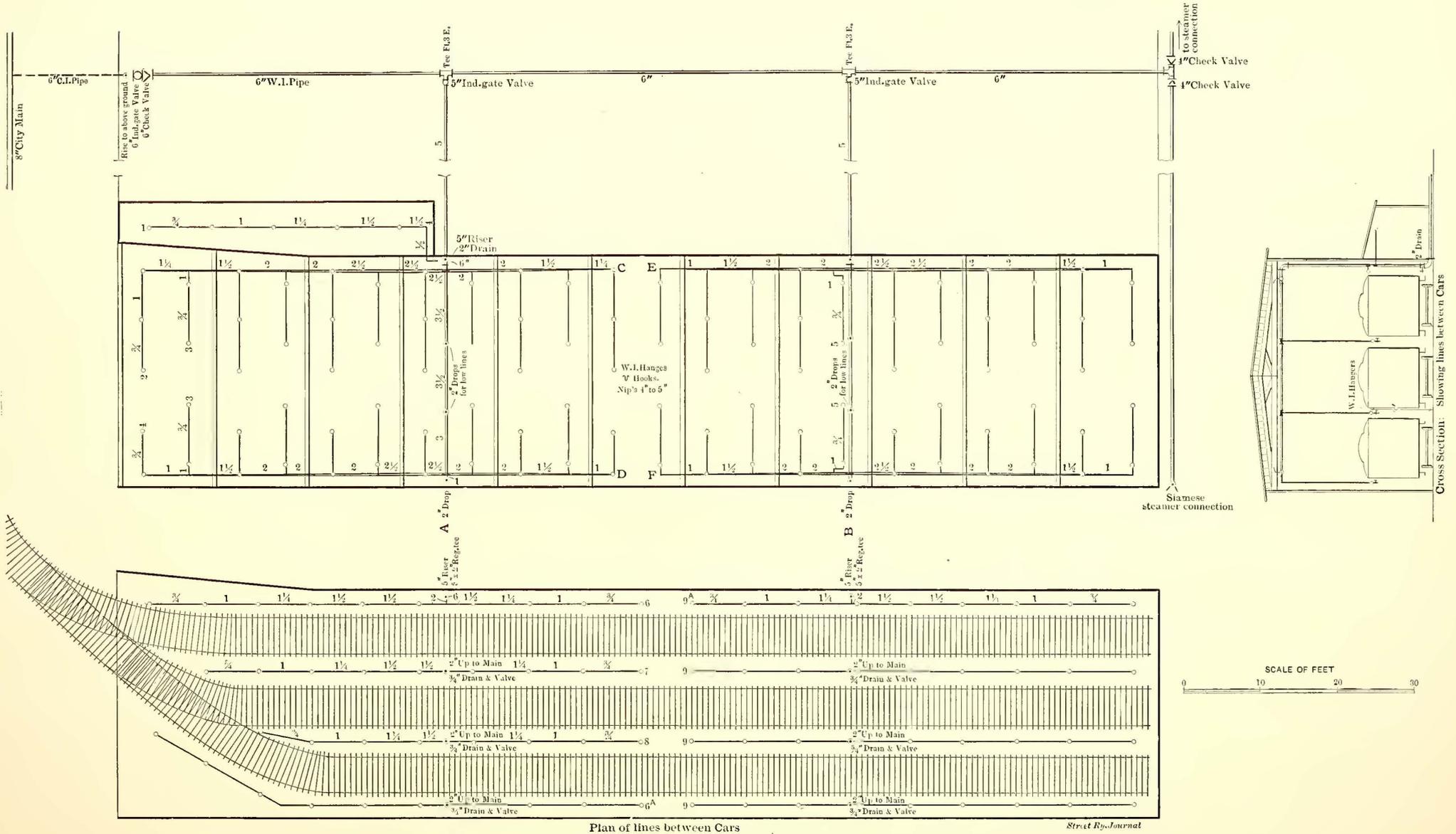
INTERIOR OF FIRST CAR AFTER FIRE. FIRE STARTED UNDER SEAT



INTERIOR OF SECOND CAR AFTER FIRE. FIRE STARTED UNDER FLOOR

leased strikes an umbrella-shaped head, provided with serrations, so that the water is diverted in a heavy spray over a radius of about 16 ft. Thirteen obsolete single-truck cars were placed in the house as closely together as possible. The experiments were conducted by employees of the Cleveland Electric Railway, under the direct supervision of President Andrews, Secretary Davies, Chief Engineer Cook and others. Two fire steamers had lines connected with the sprinkler sys-

of seats were piled on the fire after it was started. The second fire gained good headway and the flames burned through the upper deck and mounted to the roof of the building before the sprinklers opened. Some idea can be gained of the heat from the fact that glass in the windows melted and incandescent lamps were twisted all out of shape. In the first trial the interior of the car had been badly damaged, while in the second it was completely ruined. For a few seconds it looked as



Plan of lines between Cars  
PLANS OF CAR HOUSE, SHOWING SPRINKLER SYSTEM

Street Ry. Journal

Cross Section: Showing lines between Cars

though the second experiment was a failure and the building doomed to destruction, but within about four minutes after the first sprinkler opened, the fire was out. The roof of the building was burned slightly, but the roof sprinklers took care of this fire. The remarkable feature of the tests was the fact that in neither case were the cars on the adjoining tracks injured in the least, beyond a little scorching of paint, and not a window in these cars was broken. In both cases the experiments were made with ordinary city pressure, which varied between 20 lbs. and 25 lbs. After the second fire was extinguished, at the suggestion of President Andrews, the steamers were connected on the pipes, bringing the pressure up to about 50 lbs. It was then that the full efficiency of the system was seen, as the water came down in a solid mass that would have deluged any fire, no matter how severe. This illustrated the pressure that could be obtained by means of a water tower erected on a building. Even greater pressure could be obtained in cases where a car house adjoins a power station and where pumps could be connected to the system with little delay.

The test was pronounced entirely satisfactory and successful by all the street railway men and fire officials. The only suggestion made was that had the sprinklers between the cars been placed 12 ins. to 18 ins. higher, more water would have been thrown through the transoms. If this had been done the damage to the interior of the cars would have been less, since in both cases the flames seemed to break through the ventilator windows before they did through the side windows. The most interesting point demonstrated was that a fire breaking out in a car can be confined wholly to that car without injuring any of the others. The system is effectual in winter as well as in summer, because in cold weather the water is drained and the pipes above ground are kept under an air pressure which releases the water as soon as the air exhausts through the exploded head. The heads are of such shape and construction that they cannot be opened by an accidental blow, and each



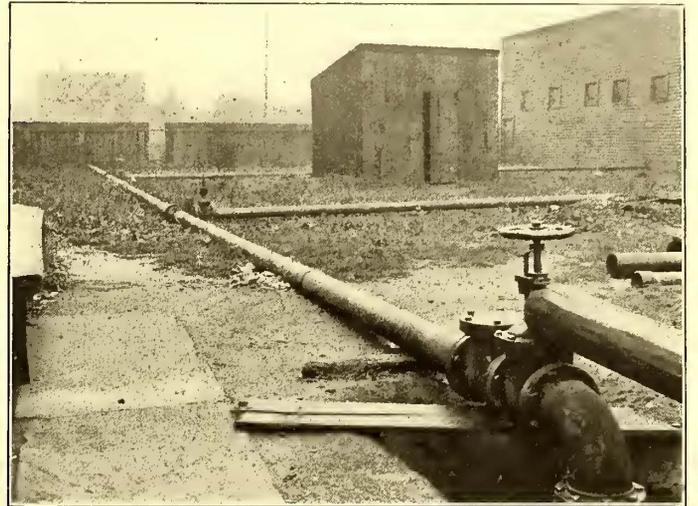
INTERIOR OF CAR HOUSE, SHOWING CARS ONLY 1 FT. APART

head is independent of the others. The test described illustrated a most extreme case. The barn was very old and had low shingle roof on timber supports. The cars were closer together than is now ordinary practice, and the fire was aided in starting by opening the rear of the building, allowing the draft a clean sweep.

The test was of unusual interest to Cleveland managers, because within the past few years nearly every road radiating from the city has experienced car house fires and incurred severe losses. It also attracted attention because of the fact that the Traction Mutual Insurance Association, recently organized by the Cleveland managers, will insist upon unusual methods of fire protection for the properties which it insures, and this test seems to point a long step toward safety.

On Aug. 30 the operating department of the Cleveland Electric Railway Company made another series of interesting tests with the automatic sprinkler system installed in its Bolton Avenue car house. The tests were made to demonstrate the efficiency of the so-called dry system in connection with the sprinklers, and also to demonstrate what would be the result of a large fire such as might have its origin in the well-planned efforts of a firebug to destroy the property.

The dry system is unique in that it is planned with the idea of



SHOWING PIPE IN YARD

preventing the pipes of the sprinkler system from freezing during cold weather. This is effected by removing the water entirely from the exposed portions of the system and substituting air pressure sufficiently strong to keep back the force of the water. The dividing point between the air and the water is below the surface of the ground and is marked by a large valve which is so arranged that the balance is as 8 to 1 against the water. That is to say, when 1 lb. of air is present on one side of the valve it is holding back 8 lbs. of water on the other side. The sprinkler heads in the system are air tight, and all the joints in the piping are designed to stand a fair amount of air pressure. When the heat has become sufficiently intense to melt the metal cap which holds the sprinkler head closed, the air is released and the water immediately follows.

The first fire was started in a car in the rear of the house, and, as in the previous tests, the flames were extinguished before any damage had been done to surrounding cars. The second test was made very severe. A fire was started in a car in the rear of the house adjoining one of the wood walls. All the doors, windows and traps were opened to give excessive draft, and large heaps of tinder, including shavings, car seats and waste, thoroughly soaked with oil, were piled on the flames. In this test the fire gained terrific headway and the car was badly consumed, but the sprinklers extinguished the fire before the building was damaged.

The officials of the company are pretty well satisfied that the system will save a building even under the most adverse conditions, and the indications are that other car houses will be equipped with the system.

T. F. Grover, general manager of the Eastern Wisconsin Railway & Light Company, which operates a one-hour line between Fond du Lac and Oshkosh, has devised a very effective means of advertising this and other routes by issuing a novel colored hanger which can be conspicuously hung in stores and other places. The hanger represents a man carrying one of the company's fine interurban cars. Above him is the slogan, "Take the Yellow Car," and below information regarding time tables, connections and chartered cars.

## AIR BRAKES IN CITY SERVICE

BY EDWARD C. BOYNTON

Something has recently been written about the economy of air brakes and the general advisability of their use in city service. The latter question has been settled as regards double-truck cars in nearly all the large cities in the country in favor of the air brake.

Several questions confront the management when considering the use of air: Are the cars worth the additional expense? for air brakes are undoubtedly expensive. What advantages will they gain by their use? What will be the cost of maintenance?

The first question is not very difficult to answer. All large systems are continually buying new cars, and it is needless to say that the oldest cars are probably not worth the expense. As to the second question, there seem to be three advantages gained over the hand brake, viz: The ability to maintain a faster schedule; the decrease in accidents due to the emergency stop, and the slight economy in power consumed by the car.

Several competitive tests against the hand-braked car have proved this, but as the saving is so slight it is only necessary to convince the management that more power is not being used to drive the independent motor compressor than was used before.

In regard to the ability to maintain a faster schedule, in city as well as interurban service, it is well known that acceleration plays a most important part, but acceleration is both positive and negative, and they are equally important. The time has come when the amount of acceleration, either positive or negative, must be limited by the comfort of the passengers. This renders necessary a uniformly accelerated start and stop as near as it is possible to secure it.

The modern car controller aims to make the positive acceleration as uniform as possible, though, to a large extent, it is still dependent upon the skill of the motorman, as is also the negative acceleration in stopping with the air brake. An acceleration both positive and negative of 2 miles per hour per second can be obtained in a modern car equipped with air brakes without discomfort if fairly uniform. The resulting increase in schedule speed even in city service under the above conditions is remarkable.

The emergency stop with the air-braked car, while it may nearly cause the passengers to "change seats," has undoubtedly been the means of preventing some loss of life as well as the saving of thousands of dollars in damage to equipment. Almost every road which has used air brakes for the past few years can testify to the truth of this statement, and many cases have occurred under the writer's personal observation.

The cost of maintaining an air-brake equipment varies in about the same proportion as the cost of maintaining the motive power of the car. It depends entirely upon the existing conditions on the different roads.

These conditions mean not only the physical characteristics of the road as regards grades, etc., but also on the kind of care and inspection the equipment receives from those immediately in charge. In this last condition lies the whole secret of the cost of maintenance. Rigid inspection daily of the air-brake equipment is as necessary as the inspection of the motors and controllers.

In nine cases out of ten the failure of an air brake is due to such trifles as a wornout carbon brush in the motor compressor or some disarrangement of the connections to the automatic governor, which can be repaired in less than five minutes, and are nearly always due to careless inspection or, more often, to no inspection at all. The result is that the cost of maintenance on different roads varies to an astonishing degree; so also does the cost of maintaining the motive power.

Instances are on record where air brakes have been in service

for upward of four years and nothing done except to keep bearings oiled and brushes in place. The cost of maintenance in the above case is almost negligible for those four years. Other cases are known where bearings soon went down for want of oil, and other troubles arose for lack of attention, and the cost was high.

Another road will adopt air whistles without thinking that the whistle uses more air than the brake. The increased use of air will naturally increase the cost of maintenance. One large system using many air-brake equipments kept a careful record of repairs and found that it cost approximately 30 cents per month per car, or about 1 cent per day. This is a fair average record, but of course did not include brake shoes.

## STANDARD FORM OF REPORT OF THE INTERNATIONAL TRAMWAYS AND LIGHT RAILWAYS ASSOCIATION

In the following four pages a reproduction is given of the standard form of monthly report recommended by the committee appointed to report on this subject at the Vienna convention of the International Tramways and Light Railways Association, which was held this week. This report was rendered by H. Géron, manager of the Cologne Street Railway Company, now in liquidation, and was presented in behalf of the committee, which consisted of Messrs. Géron, Haselmann, L. Janssen, J. Kessels, E. Lavalard and E. A. Ziffer. The report explains the few slight changes introduced in the form since the last report rendered at the London meeting of the association, and also replies to suggestions which were made by members of the association at that convention and which were referred to the committee. One of these related to the desirability of including in the operating report the amounts charged off for depreciation and sinking funds. On this point the committee suggested that it has not been considered desirable to do this from the fact that there is no regular practice among the different companies as to the amount to be charged off to these two funds. Many companies charge off a higher amount in good years than in poor years, many others increase the amounts from year to year, and in other instances the amount to be charged off is regulated either by the charters of the company or by municipal enactments. In view of these facts the committee recommend the establishment of a special account to be called "II, Renewal and Sinking Fund Account," to cover these charges.

Another point brought up was the sub-division of Account 8, General Expenses, which has now been sub-divided to cover taxes, payments to abutting property owners, fire insurance, accident insurance, etc.

The committee states that thirty companies have already adopted this form of report, including the Vienna Municipal Tramways, the Continental Company of Nuremberg, and companies in Lyons, Elberfeld, Brussels, Munich, Odessa, Dessau, Cologne and elsewhere.

Another point brought up at the London meeting was the desirability of establishing some relation between motor-car kilometers and trail-car kilometers, so that a single unit could be used as a basis of comparison. The committee reports that a great many companies use as a unit one in which the trail-car kilometers are considered as one-half that of the motor-car kilometers—that is, if the motor-car kilometers are represented by  $m$  and the trail-car kilometers by  $r$ , the total car-kilometers would be considered to be  $m + \frac{1}{2}r$ . Others use the formula  $m + 1.3r$ ; while still others employ the unit "train-kilometers." The practice, however, is tending toward the use of  $m + \frac{1}{2}r$ , and this is recommended by the committee.

The committee then submits the form shown in the following four pages, and in its report gives definitions of the different accounts.

MONTHLY OPERATING REPORT

of..... (Name of Company)

Commencement of the fiscal year..... 19.....

Month of..... 19.....

| GENERAL RESULTS OF OPERATION              | FOR THE MONTH                           |           | SINCE COMMENCEMENT OF THE FISCAL YEAR |           | EMPLOYEES  | this month  | last month  | Same month last year |                         |                 |
|---|---|-----------|---------------------------------------|-----------|--|---|---|----------------------|-------------------------|-----------------|
|   | this year                               | last year | this year                             | last year |  |   |   |                      |                         |                 |
| Gross earnings (a + b).....               |   |           |                                       |           | 1. { Managers.....<br>Pers. of gen. office.....<br>Superintendents.....<br>Pers. of office.....<br>" of store r'm.....<br>" of depots..... |   |   |                      |                         |                 |
| Operat'g expenses (a + b).....            |   |           |                                       |           |  | 2. { Inspectors.....<br>Starters.....<br>Motormen.....<br>Conductors.....<br>Brakemen.....<br>Chief engineer..... |   |                      |                         |                 |
| Net earnings or loss from operation*..... |   |           |                                       |           |  |   | 3. { Engineers.....<br>Firemen.....<br>Helpers.....                 |                      |                         |                 |
| GROSS EARNINGS FROM OPERATION             |   |           |                                       |           | 4. { Overhead men.....<br>Helpers.....   |   |   |                      |                         |                 |
|   | this year                               | last year | this year                             | last year |  | 5. { Master mechanic.....<br>Workmen.....<br>Helpers.....   |   |                      |                         |                 |
| (a) of the Tramway                        |   |           |                                       |           |  |   | 6. { Track engineer.....<br>Track inspectors.....<br>Track men..... |                      |                         |                 |
| 1. Ordinary fares.....                    |   |           |                                       |           | 8. Miscellaneous.....  |   |   |                      |                         |                 |
| 2. Transfer tickets.....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| 3. Commut'n tickets.....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| 4. School tickets.....                    |   |           |                                       |           |  |   |   |                      |                         |                 |
| 5. Workmen's t'kts.....                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| 6.....                                    |   |           |                                       |           |  |   |   |                      |                         |                 |
| 7.....                                    |   |           |                                       |           |  |   |   |                      |                         |                 |
| 8. Chartered cars.....                    |   |           |                                       |           |  |   |   |                      |                         |                 |
| 9. Baggage.....                           |   |           |                                       |           |  |   |   |                      |                         |                 |
| 10. Goods { Express.....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| Freight.....                              |   |           |                                       |           |  |   |   |                      |                         |                 |
| 11. Advertising.....                      |   |           |                                       |           |  |   |   |                      |                         |                 |
| 12. Miscellaneous.....                    |   |           |                                       |           |  |   |   |                      |                         |                 |
| Total (a) (1 to 12).....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| (b) of the accessory serv.                |   |           |                                       |           |  |   |   |                      |                         |                 |
| 13. Sale of current.....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| 14. Rent of meters.....                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| 15.....                                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| 16.....                                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| Gross earnings (a + b).....               |   |           |                                       |           |  |   |   |                      |                         |                 |
|   |   |           |                                       |           |  | this month  | this year   | last year            |                         |                 |
|   |   |           |                                       |           | Length of line operat'd during   |   |   |                      |                         |                 |
| OPERATING EXPENSES (IV.)                  | FOR THE MONTH                           |           | SINCE COMMENCEMENT OF THE FISCAL YEAR |           | PER KM CALCULATED  |   |   |                      | per ton km in the month | per km of track |
|   | this year                               | last year | this year                             | last year | In the month   |   | For fiscal year   |                      |                         |                 |
| (a) of the Tramway                        |   |           |                                       |           | this year  | last year   | this year   | last year            |                         |                 |
| 1. Management.....                        |   |           |                                       |           |  |   |   |                      |                         |                 |
| 2. Operation.....                         |   |           |                                       |           |  |   |   |                      |                         |                 |
| 3. Power plant.....                       |   |           |                                       |           |  |   |   |                      |                         |                 |
| 4. Electric line.....                     |   |           |                                       |           |  |   |   |                      |                         |                 |
| 5. Rolling stock.....                     |   |           |                                       |           |  |   |   |                      |                         |                 |
| 6. Track & roadway.....                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| 7. Buildings.....                         |   |           |                                       |           |  |   |   |                      |                         |                 |
| 8. General expenses.....                  |   |           |                                       |           |  |   |   |                      |                         |                 |
| Total (a) (1 to 8).....                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| (b) 9. Miscellaneous.....                 |   |           |                                       |           |  |   |   |                      |                         |                 |
| Total expenses (a + b).....               |   |           |                                       |           |  |   |   |                      |                         |                 |
| (a) of the Tramway                        |   |           |                                       |           |  |   |   |                      |                         |                 |
| Earnings.....                             |   |           |                                       |           |  |   |   |                      |                         |                 |
| Expenses.....                             |   |           |                                       |           |  |   |   |                      |                         |                 |
| Net earnings*.....                        |   |           |                                       |           |  |   |   |                      |                         |                 |
| Kilometers run                            | Motor cars (m).....                     |           |                                       |           |  |   |   |                      |                         |                 |
|   | Trail cars (r).....                     |           |                                       |           |  |   |   |                      |                         |                 |
|   | Service cars.....                       |           |                                       |           |  |   |   |                      |                         |                 |
|   | Train-km.....                           |           |                                       |           |  |   |   |                      |                         |                 |
|   | Km. calcul'td (m + $\frac{r}{2}$ )..... |           |                                       |           |  |   |   |                      |                         |                 |
|   | Seat km.....                            |           |                                       |           |  |   |   |                      |                         |                 |
| Ton km.....                               |   |           |                                       |           |  |   |   |                      |                         |                 |
| Power Kw-hr. consumed                     | for the tramway (total).....            |           |                                       |           |  |   |   |                      |                         |                 |
|   | per car km.....                         |           |                                       |           |  |   |   |                      |                         |                 |
|   | per ton km.....                         |           |                                       |           |  |   |   |                      |                         |                 |
| Passengers carried.....                   |   |           |                                       |           |  |   |   |                      |                         |                 |
| Tons carried                              | by loaded cars.....                     |           |                                       |           |  |   |   |                      |                         |                 |
|   | by empty cars.....                      |           |                                       |           |  |   |   |                      |                         |                 |
|   | Total.....                              |           |                                       |           |  |   |   |                      |                         |                 |
|   |   |           |                                       |           | Rolling stock  | Motor   | Trail   | Service              |                         |                 |
|   |   |           |                                       |           | in service.....  |   |   |                      |                         |                 |
|   |   |           |                                       |           | in reserve.....  |   |   |                      |                         |                 |
|   |   |           |                                       |           | in repair shop.....  |   |   |                      |                         |                 |
|   |   |           |                                       |           | Total.....   |   |   |                      |                         |                 |
|   |   |           |                                       |           | Passes in force during }<br>month..... }   |   |   |                      |                         |                 |
| OBSERVATIONS                              |   |           |                                       |           |  |   |   |                      |                         |                 |

\* Deficits are written in red ink.







## PROGRAM OF THE TWENTY-SECOND ANNUAL MEETING OF THE STREET RAILWAY ASSOCIATION OF NEW YORK

All arrangements have now been completed for the twenty-second annual convention of the Street Railway Association of the State of New York, which is to be held in the New Century Club auditorium at Utica, N. Y., on Sept. 13 and 14. The executive committee has spared no pains in providing for the instruction and entertainment of the visitors, and from present appearances the coming meeting will eclipse all previous conventions of the association. The officers of the association, as well as the management of the Utica & Mohawk Valley Railway Company, have extended a cordial invitation to attend the convention to street railway managers in other States, and also to the supply men.

The headquarters of the association will be at the New Century Club auditorium. Delegates and guests will register and there receive a badge from W. W. Cole, secretary, which badge is supplied by the association. Delegates and visitors will be entitled to free transportation during the convention on the lines of the Utica & Mohawk Valley Railway, upon showing this badge to the conductor.

One of the most interesting features of this convention will be the special trial runs to be made with the General Electric Company's new single-phase railway motor on one of the lines of the Utica & Mohawk Valley Railway Company. Seven miles of trolley line have been equipped for 2200 volts between Oriskany and Rome, and runs will be made between the convention hall and Rome with a car equipped with compensated alternating-current motors. From Utica to Oriskany the motors will run with direct current and from Oriskany to Rome with alternating current. It is expected that W. B. Potter, of the General Electric Company, will be present and will have charge of the tests.

The formal proceedings of the convention will begin with a conference of the executive committee at 9:30 a. m. on Tuesday, Sept. 13. At 10 a. m. this session will be followed by a meeting of the association, which will receive the various official reports and take up the reading and discussion of the papers presented, of which a detailed list is given below. Upon completing this work, arrangements will be made for the nomination and election of new officers and the selection of a place for the next meeting.

At 10:30 a. m. the ladies' entertainment committee will call on the visiting ladies at the New Century Club auditorium, corner of Genesee and Hopper Streets, to accompany them on a trolley ride over the line of the Utica & Mohawk Valley Railway to Clinton. At Clinton carriages will be in waiting for a drive to the summit of College Hill and about the campus of Hamilton College. The party will return to the cars and proceed directly to the Yahnundasis Golf Club, Genesee Street, where luncheon will be served at 1:30 p. m. At 3:30 p. m. special cars will call for the ladies at the Yahnundasis Golf Club, and they will be taken by the way of Frankfort, Ilion, Mohawk and Herkimer and the "Big Bridge" to Little Falls, returning in time to prepare for the annual banquet, which will be held at 7:30 p. m. at the banquet hall of the Masonic Temple.

Promptly at 9:30 on Wednesday morning the association will take up unfinished business and discuss the contents of the question box. This meeting will adjourn at noon.

The entertainment feature of the morning will be a carriage ride up the beautiful Sauquoit Valley, through New Hartford and to the Sadaquada Golf Club overlooking New York Mills, where luncheon will be served.

At 2 p. m. there will be a trip in special cars from the Sadaquada links for a trip through the historic Oriskany battlefield to Rome, returning directly to Summit Park, where, later in the afternoon, luncheon will be served.

The following is a list of the interesting papers prepared for this meeting:

"Power Distribution of the New York City Railway Lines," by M. G. Starrett, chief engineer of the New York City Railway. The discussion on this paper will be lead by C. E. Roehl, electrical engineer of the Brooklyn Rapid Transit Company.

"Progress of Freight and Express Business on Electric Railroads," by C. E. Van Etten, general freight agent of the Brooklyn Rapid Transit Company.

"The Best Method of Maintaining Car Equipments," by H. A. Benedict, electrical and mechanical engineer of the United Traction Company, Albany, N. Y.

"The Comparative Merits of Long and Short Cars in City Service," by W. J. Davis, Jr., of the General Electric Company.

The Union Switch & Signal Company will present a paper on signals, which will be discussed by State Railroad Commissioner Barnes and others.

Papers are also to be submitted by J. P. E. Clark, general manager of the Binghamton Railway Company; R. E. Danforth, general manager of the Rochester Railway Company; H. M. Beardsley, auditor of the Elmira Water, Light & Railroad Company, and three or four others.

The innovation at this convention, the question box, is under the direction of W. M. Probasco.

## WHEELS IN LIVERPOOL

In a report recently presented to the Tramways Committee in Liverpool by the general manager and engineers of the Liverpool tramways, some interesting particulars of the experience with wheels is brought out. The wheels of the German cars, which were the first to be used in Liverpool in 1898, were steel tired, and those of the American cars, which followed, were chilled cast iron. The steel tires "spread" in running, became loose and out of gage, and were ultimately abandoned in favor of the chilled wheel, which was giving much better results on the cars received from America. About 1900 the British manufacturers commenced the production of special steel-tired wheels for street railway service, and experiments with these wheels were carefully watched. In May, 1902, a number of selected tires were placed in service in Liverpool, and later it was considered desirable to try tires of all the representative makers. Fifty-two of the cars are now fitted with steel-tired wheels, none of which has yet worn out, and therefore final figures cannot be quoted. Very divergent results have, however, been obtained. The mileage per unit of wear has varied to the extent of 50 per cent, indicating the importance of selecting tires of suitable composition. The average life of the steel-tired wheels is estimated at 60,000 miles. The average life of the chilled wheel was 35,000 miles.

The engineers are now engaged on the design of a new steel-tired wheel, which, it is thought, will cost 50 per cent less than the price at which such wheels can at present be bought in the market, and which, it is believed, will afford a life considerably in advance of the average of the former steel-tired wheels. It is hoped that on trial this new wheel will be found suitable for general adoption.

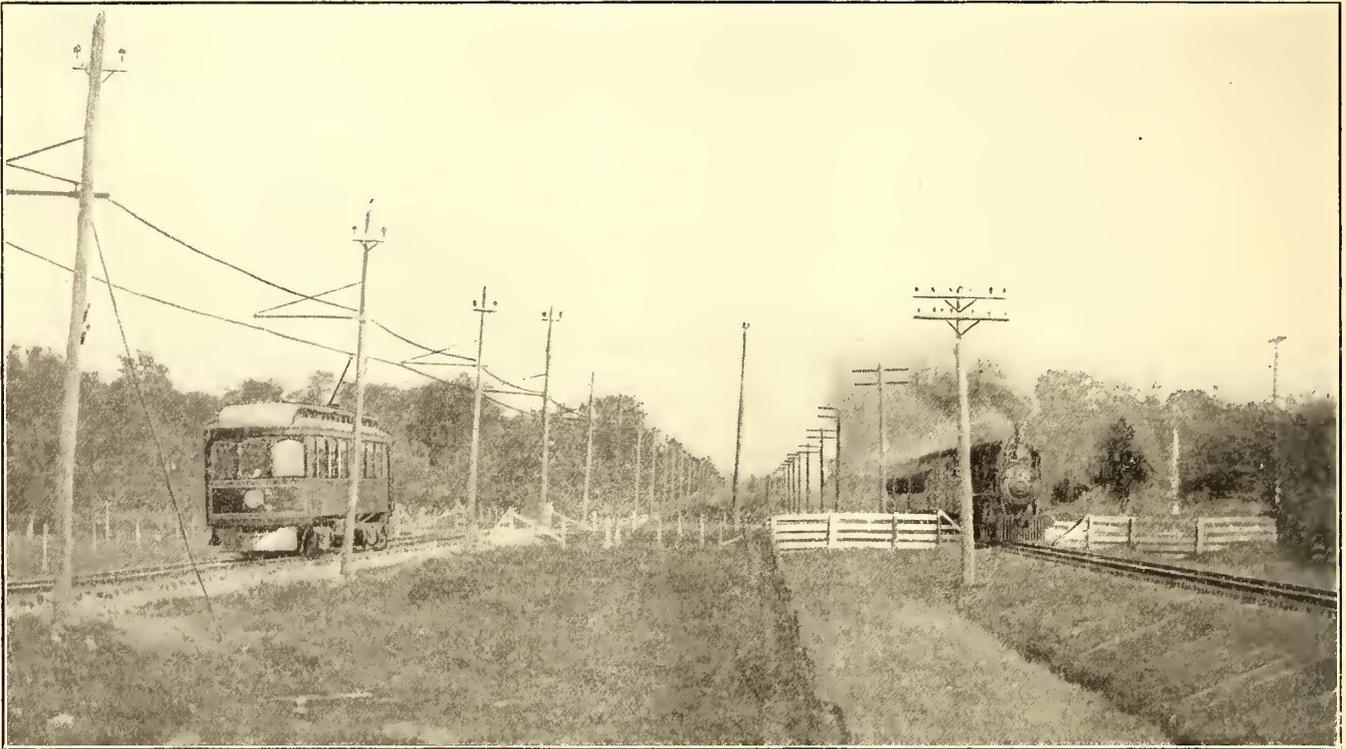
The St. Louis Transit Company is fitting to all its cars on the World's Fair lines bar window guards extending the full height of the open windows. The change was deemed advisable after several severe accidents had happened to people who, through curiosity, had put their head out of the window, notwithstanding the protection offered by the ordinary four-bar guards. For any but World's Fair crowds these high guards would not be so necessary.

### RACING ON THE ROCHESTER & EASTERN

The Rochester & Eastern Rapid Railway Company recently offered a series of prizes for photographs taken along its line by amateur photographers. These prizes were recently awarded, and the accompanying engraving is a reproduction of the photograph which took the first prize. The view is taken at a point about 2 miles west of Victor, where the tracks of the Rochester & Eastern Rapid Railway Company run parallel with the Auburn branch of the New York Central Railway for over a mile. Racing between the steam trains and electric cars occur almost daily, and the photographer was fortunate in being able to snapshot one of these competitions of speed. As the view shows, the electric car was leading at the time that

to Friday, inclusive, leaving Moorestown at 7:01 a. m., 8:01 a. m., 8:44 a. m. and 9:31 a. m.; also at 4:31 p. m. and 6:14 p. m. Returning they leave the ferry terminal in Camden at 8 a. m., 8:50 a. m., 3:50 p. m., 4:30 p. m., 5:20 p. m. and 6 p. m. On Saturdays four express trips are run in the morning from Moorestown and two from the Camden terminal. There are no express cars on Saturday afternoons and none on Sunday. After leaving Moorestown the platform gates are shut and no one is allowed to board the car until Camden is reached. The time saved by not making intermediate stops is about fifteen minutes for each trip. Two cars are required for the service, and these cars make the round trip in ninety minutes.

To secure this service the Moorestown Rapid Transit Club guaranteed the railway company that the receipts should not



SPEED COMPETITION BETWEEN STEAM TRAIN AND ELECTRIC CAR NEAR ROCHESTER

the photograph was taken. The result of this race is not mentioned, but it is understood that the electric cars are often winners in these contests.

### CHARTERED CARS ON THE CAMDEN & SUBURBAN RAILWAY

The suburban traffic on some of the long lines of the Camden & Suburban Railway Company has always been large, but the running time has necessarily been somewhat low on account of the legal requirement for the cars to stop and take on passengers at all crossings where passengers desire to board the cars. One of the largest suburban towns in the neighborhood of Camden is Moorestown, and the business men in Camden who live in Moorestown have been for a long time anxious to have the company institute an express service between Moorestown and Camden. As this could not be done satisfactorily under the existing ordinances, some of the residents in Moorestown decided to form a club and charter cars, which would of course not be required under the law to take local passengers. As a result, the Moorestown Rapid Transit Club was organized, and arrangements were made with the Camden & Suburban Railway Company to supply to the members of the club an express service between Stanwick Avenue, Moorestown, and the ferry terminal in Camden, a distance of about 11 miles. Express cars are run from Moorestown on Monday

be less than \$2 per car-hour. The service was started on Aug. 8, and the receipts have already risen from 50 cents per car-hour to \$1.60 per car-hour. No cash fares are received and no tickets are sold on the cars. Passengers can ride only on tickets issued by the club or its representatives in Moorestown, and which are sold in books of ten for \$1. These tickets carry no transfer privileges in Camden. The constitution of the club provides for two classes of members, executive members and participating members. Any one can become a participating member by purchasing a package of tickets. As the organization of a club of this kind is very novel, it may be of interest to state that the secretary of the club is H. C. Heulings, a prominent business man of Camden, whose office is in the Masonic Temple of that city. The club has been regularly incorporated under the laws of the State of New Jersey.

"Trolley Talk" is a little flyer which the Pittsburg, McKeesport & Connellsville Railway Company distributes to its patrons. It contains some sound advice to the public about traveling on the cars, interesting points traversed by different branches, and in other ways does good work in making for a better understanding between the railway company and its patrons. J. M. Brown, the company's superintendent of transportation, states that this publication is giving very good results in the way of increasing regular and special car traffic.

**COMBINED RUNNING BOARD AND WHEEL GUARD**

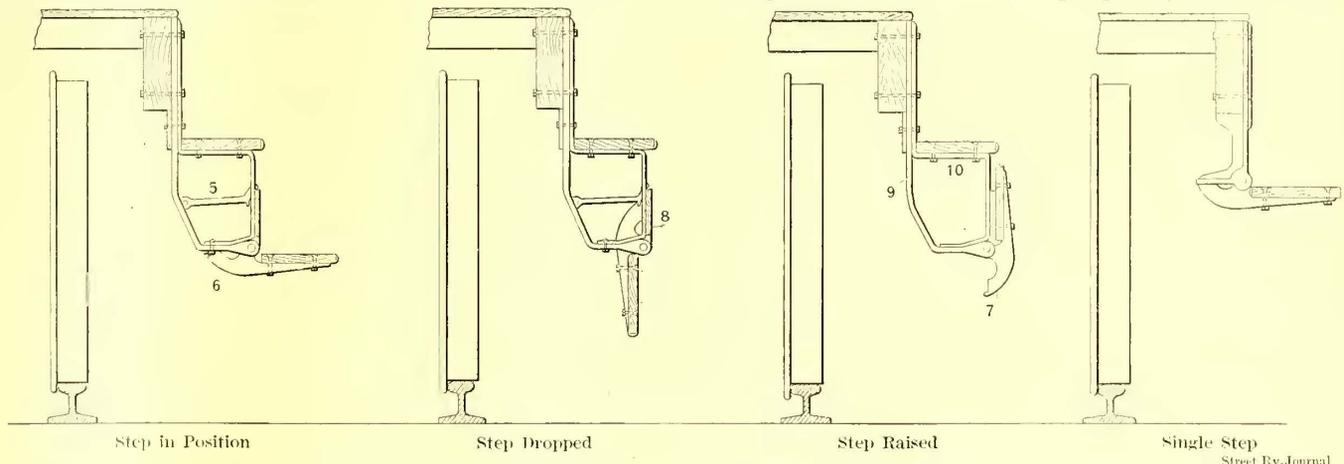
The Boston Suburban Electric Companies has recently allowed to be demonstrated on one of its Wellesley cars the folding running board shown in the accompanying illustrations. This running board, which is the invention of M. S. Nolan, of Waltham, Mass., does not project beyond the line of the foot guard when folded, and when lowered it serves to act as a wheel guard.

The views presented in Figs. 1, 2, 3 and 4 show respectively the running board with double step, one step dropped to form a wheel guard, the manner of folding up the lower step, and the appearance of the running board when adapted for a single step. The side beam or body of the car is faced by the upper foot guard, to which are bolted the foot board and hangers. The upper step is fixed upon these hangers, which are also arranged to receive a backing board for the lower foot guard. Bolts extending through the hangers, the backing and the guard securely fasten together all these parts. The manner of dropping the lower folding foot board for use as a wheel guard is shown in section in Fig. 2.

To drop the board for compactness or for use as a wheel guard, the step is raised so that the stud or projection 7 is disengaged from its recess in the horizontal support. Then the whole section slides longitudinally about 12 ins., which disengages all the foot-board extensions from the said horizontal supports. When the folding step is vertical it is engaged as shown in sections in Fig. 2. It is kept from endwise movement by the projection being recessed in the foot guard 8.

When the board is in position for use as a step it is supported by the hanger 9, terminating horizontally, and is bolted to the hanger 10, which supports the top step. Both of these hangers are fastened by the same bolts to the sill

To raise the foot board for use as such, it is swung up until its extensions pass under the horizontal terminals of the hanger 9, and is then moved lengthwise on a rod until the extensions



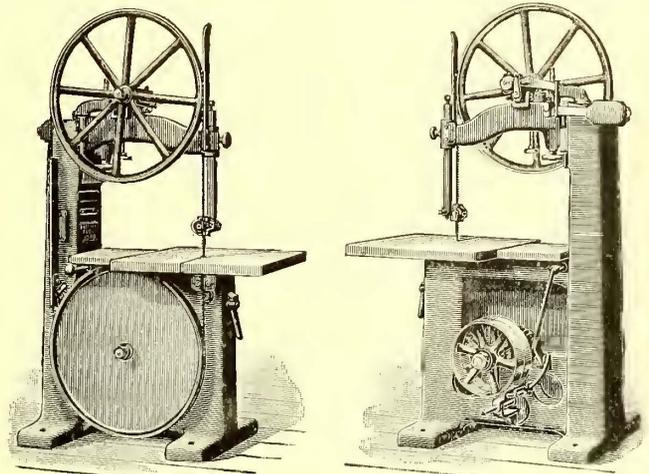
FIGS. 1, 2, 3 AND 4.—COMBINATION CAR STEP AND WHEEL-GUARD

are opposite the said horizontal terminals. When lowered to horizontal position, the extensions about the lower side of the hanger and support the foot board as a step. The projection or stud 7 being recessed in the lower side of hanger, acts as a stop, serving to prevent the board slipping back and dropping. The device may be used as a wheel guard on closed and convertible cars regardless of its use as a step.

The scheme of forming a trolley base ball league, instituted by the Cleveland & South Western Traction Company, is being imitated by other Ohio traction lines. The Cleveland, Painesville & Eastern Railway, the Cleveland, Painesville & Ashtabula Railway and the Pennsylvania & Ohio Railway have been largely instrumental in the recent formation of the Northeastern Ohio Trolley League. Eight towns touched by these roads are represented by teams.

**A NEW SCROLL SAW**

The scroll saw is an absolutely indispensable tool in most woodworking shops and factories that have scroll sawing to do, and heretofore the tool used has been of the jig type familiar to all woodworkers; but this kind is being rapidly displaced by the band saw, for, although the jig has many points that enable it to do the work required in a satisfactory way, the band saw has all these points and, besides, many others, which are readily appreciated by all woodworkers having a variety of difficult work to do that must be done with speed, economy and effi-



FRONT AND REAR VIEWS OF SCROLL SAW

ciency. It is by putting the band scroll saw to this severe test that its superior ability is better understood.

The band scroll saw presented herewith is said to represent the latest developments in this type of machine as made by the J. A. Fay & Egan Company, of Cincinnati, Ohio. In its construction the upright column is made very stiff and strong, enabling the machine to run at high speed, yet without vibra-

tion. The iron table can be tilted and clamped to any angle; while the new straining device on the saw is very sensitive, the top wheel hanging solely on a knife edge balance, thus maintaining at all times a perfect tension on the saw blade and adding materially to its life: something so necessary to prolong the life of the blade and yet so seldom found.

The lower wheel is solid, instead of having spokes, this preventing the circulation of sawdust and increasing the momentum. As the lower wheel is heavier than the upper wheel, it controls the movement of the latter—there being thus no possibility of overrunning. The upper wheel can be raised or lowered while the machine is in motion, and all the different adjustments, stopping of feed, etc., are easily made. The claim is also made that it will do the work or cutting of at least two of the ordinary machines, and especially so where fine intricate scroll work is desired, in either light or heavy wood.

### MORE SEMI-CONVERTIBLE CARS FOR PUNXSUTAWNEY, PA.

The semi-convertible passenger and baggage car shown herewith has lately been delivered to the Jefferson Traction Company, of Punxsutawney, Pa., by the J. G. Brill Company. The railway company operates 25 miles of lines in Jefferson County, in the west central part of Pennsylvania, through a populous and prosperous country. Several cars of the Brill semi-convertible type have been in use on these lines for the last two years. The service is chiefly of an interurban character, to which this type of car is particularly well adapted. The road has lately ordered additional cars from the same company, one of which will be a 29-ft. body semi-convertible passenger and baggage car.

The car shown in the engraving measures 26 ft. 4 ins. over the body, and 25 ft. 9 ins. over the vestibules. The platforms



COMBINED SEMI-CONVERTIBLE AND BAGGAGE CAR FOR THE JEFFERSON TRACTION COMPANY

are 4 ft. 8½ ins.; width over the sills, 7 ft. 8½ ins., and over the posts at the belt, 8 ft. The side sills are 4¾ ins. x 6¾ ins., with 6-in. x ½-in. sill plates on the inside. The end sills are 5¼ ins. x 6⅞ ins. The car is seated for twenty-eight passengers and the baggage compartment furnished with folding seats for the use of smokers. The passenger compartment is finished in cherry, with ceilings of decorated birch. The baggage compartment is 5 ft. 6 ins. long and has 30-in. doors on either side. The trucks are the builder's 27-G-1 type, with 4-ft. wheel base, 33-in. wheels, 4-in. axles, and are equipped with 45-hp motors.

### AN ARTISTIC WASTE RECEPTACLE

One of the most important problems in connection with the operation of a street railway park is that of keeping the grounds



WASTE RECEPTACLE, COMO PARK, MINN.

clean and free from waste paper, fruit skins and miscellaneous rubbish. The attractiveness of all such resorts depends in no small degree upon their neatness, and in cases where picnic parties make use of the grounds added care is necessary to prevent the accumulation of debris. To this end waste receptacles are now installed at convenient points in all well-managed parks, but as a general thing these receptacles are not designed with much regard to their influence upon their surroundings. Ugly wooden or tin boxes are frequently used, the only concession in the way of appearance being one or two coats of green paint, if indeed any paint at all is used.

A notable instance of an artistic waste receptacle is shown in the accompanying illustration of an arrangement used at Como Park, St. Paul, on the lines of the Twin City Rapid Transit Company. Here an ordinary galvanized iron can about the size of a domestic ash barrel is corrugated slightly and coated with the bark of a tree, a hole being bored in the bottom for drainage. The receptacle is then attached to a tree by an iron loop connecting with a hoop around the top. The arrangement is so inconspicuous that it resembles a tree trunk in the woods, and harmonizes perfectly with the landscape of the park, instead of constituting an ugly blot in the scenery. As an illustration of what a landscape gardener may do to free from offense a rather ordinary detail of a street railway park, the receptacles used at Como are suggestive.

### TEST OF MAGNETIC ADHESION IN KANSAS CITY

An 11-ton car of the Kansas City Railway & Light Company was recently equipped with a device for increasing traction by magnetism, designed by the Magnetic Equipment Company, of Chicago, and a test was made under the supervision of Charles Fritz, of the railway company. The car equipped with this device is shown in Fig. 1, and a top view of the idler wheel which carries the arm which forms the electro-magnet is shown in Fig. 2. The idler wheel rests on the rail when current is flowing in the coil to energize the magnet. The other end of the magnetic arm has a bearing on the car axle, and thus a magnetic circuit is completed from the car axle through the car wheel and rail to the idler wheel and back through the core or arm on which the coil is wound. The test at Kansas City showed that under the most unfavorable conditions an increase in traction of 22 per cent was obtained. The average was considerably higher than this. The amount of traction between wheels and rails was measured by noting the amount of current required to spin the wheels with and without the magnetic device.

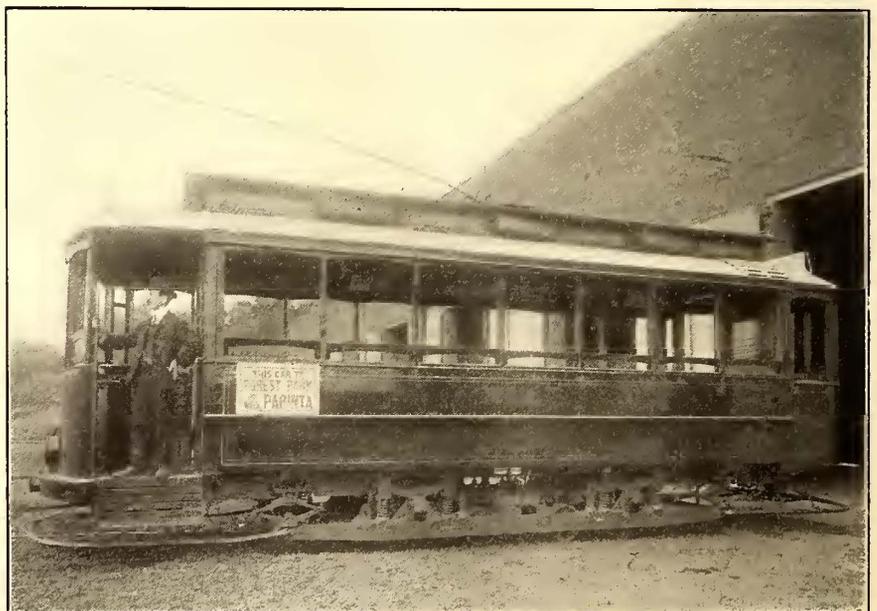


FIG. 1.—CAR WITH MAGNETIC ADHESION EQUIPMENT AT KANSAS CITY

Since this test, improvements have suggested themselves which are now being carried out. Charles Grover, who was for a number of years chief electrician of the Metropolitan Street Railway at Kansas City, is now chief engineer of the Magnetic Equipment Company, and is working on the development of this apparatus. The amount of current required to energize the magnetic adhesion devices on the single-

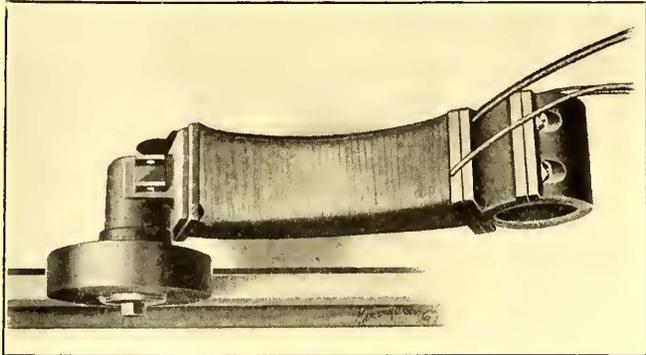


FIG. 2.—VIEW LOOKING DOWN ON MAGNETIC ADHESION ATTACHMENT

truck 11-ton car which was tested was 6 amps. A test was also made letting the car run away down a steep hill and attempting to stop it, first with the ordinary hand brakes, and next with the hand brakes and the magnetic adhesion device. In the first case, the car practically ran away beyond control, and in the second case was stopped within a short distance.

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**AURORA, ELGIN & CHICAGO BUFFET CAR**

The Aurora, Elgin & Chicago Railway Company recently added to its equipment a parlor and buffet ear, two views of which are shown herewith. The "Carolyn," although commonly called a dining ear, is not by any means exclusively such, being in reality a parlor car on which buffet lunches can be served. It can be employed for any of the uses to which a parlor ear is usually put either for special parties or for regular high class extra fare service, and has the added advantage over the majority of parlor ears that a kitchen of sufficient size is provided so that simple meals can be served to a part of the



INTERIOR OF PARLOR AND BUFFET CAR

passengers. The company has considerable patronage from the members of the golf clubs near Wheaton, and it is intended not only to be in a position to supply a buffet car for special parties, but to accede to a demand that has been made for reg-

ular buffet parlor car service, morning, noon and evening and late at night.

The "Carolyn" is of the same standard dimensions as the company's other ears, viz: 51 ft. 8¾ ins. over bumpers, 43 ft. 2¾ ins. over end sills, and 8 ft. 6 ins. wide over all. Like the other cars, it was limited by the necessity of passing over the Metropolitan Elevated Railroad with its curves and platforms. At one end of the ear is a smoking compartment. Between



EXTERIOR OF PARLOR AND BUFFET CAR FOR THE AURORA, ELGIN & CHICAGO RAILWAY COMPANY

compartments is the kitchen, where cooking is to be done by electric heaters. Both compartments are supplied with comfortable wicker chairs and removable tables. The interior finish is of oak, stained green, waxed and polished so as to produce a soft satin-like surface, which is very pleasing. Carving and corners have been avoided as far as possible, and the only decoration is in the shape of plain inlay lines. The finish is unusual, but very pleasing. The car is not equipped with motors, but has a type M controller on one platform and train-line wiring so that it can be operated in connection with a regular motor car without switching at terminals. The ear is mounted on Peekham trucks of the M. C. B. type. The ear body is the work of the Niles Car & Manufacturing Company.

Acknowledgment is due to General Manager E. C. Faber, of the Aurora, Elgin & Chicago Railway, for the facts concerning this innovation.

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**PROSPEROUS SEASON FOR BOSTON SUBURBAN ELECTRIC COMPANIES**

Despite the unfavorable industrial conditions in the territory in which it operates, the Boston Suburban Electric Companies reports one of the most prosperous seasons in its history. Each week and each month has shown a marked and gratifying increase in the returns over the corresponding dates last year. Both Norumbega Park and Lexington Park have done remarkably well, and the management believes that the large expense to which it went in building the new steel theater and in spending more money than at any previous season, has been fully justified. By placing the very best attractions in the parks and running them on an absolutely clean and refined basis, traffic has been drawn regardless of the fact that the tendency this summer has been not to use the electricies to as great an extent as in past summers. Even during G. A. R. week, when there were so many attractions in Boston, the parks were well patronized, and the number of passengers carried exceeded expectations. On Wednesday, Aug. 17, the day the river carnival was held at Waltham, approximately 100,000 people were handled with absolutely no friction or delay, and with no accidents of any description. This record, of course, stands to the credit of the operating force, to whom the management gives full credit.

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 A movement is now on foot to organize a company for the building of an electric railway at Rosario, a city of about 122,000 inhabitants, in the Province of Santa Fé, Argentina.

### COASTING THROUGH SWITZERLAND

The application of the highest artistic and technical skill toward the production of vast scenic panoramas is exemplified at its best in the remarkable entertainments offered to visitors to Coney Island, New York. The public no longer cares for simple amusements, and when visiting a pleasure ground demands something more than the merry-go-rounds and swings which were so popular in former days. Amusement purveyors have not failed to recognize this trend, and while some have endeavored to satisfy it by originating shows which would draw on account of their grotesque or nerve-racking features, others have chosen the wiser course of furnishing something refined and pleasing. An entertainment of the latter kind is



ENTRANCE TO "COASTING THROUGH SWITZERLAND"

the beautiful panorama presented in "Dreamland," Coney Island, known as "Coasting Through Switzerland," which was installed by Thomas J. Ryan, of Philadelphia. In conceiving and carrying out this novelty, Mr. Ryan has certainly found something that delights the public, so it is not surprising to learn that duplicates will soon be installed in a number of electric railway parks.

Fronting on "Dreamland's" West Avenue, a picture of snowy peaks indicates the pleasures to come as the visitor steps into the little red sleigh. There are no dips, no heart-breaking shocks in the mile of railway that carries one over this interesting trip. The first striking feature to meet the eye is a scene familiar to all who have visited the Alps and one written about by all authors who have ever dealt with Switzerland. Roped climbers in their dangerous ascent of the mountain have met with that grave occurrence—the snapping of the guide rope—and the climbers seem to be falling through space. Down past the valley, seemingly teeming with Swiss life, goes the little sleigh, and the pang of the falling scene is lost in the opening vista of the famous Mt. Blanc. The valley below is an exact copy of a Swiss village. Freakish little houses standing on snowy peaks, pine trees loaded with the beautiful white snow, and the rude bridge thrown across the village mill stream make a pleasing view.

Adding spice to the pleasure trip, Mt. Cenis tunnel is next approached. Plunging into utter darkness the sleigh rolls merrily along for a distance of 500 ft., and breaks out again upon the view of the beautiful Matterhorn. Picturesque, indeed, is this glorious mountain, tipped with the virgin snow, the evening sun and reflected shadows from the valley below vieing with each other in tinting its majestic peak.

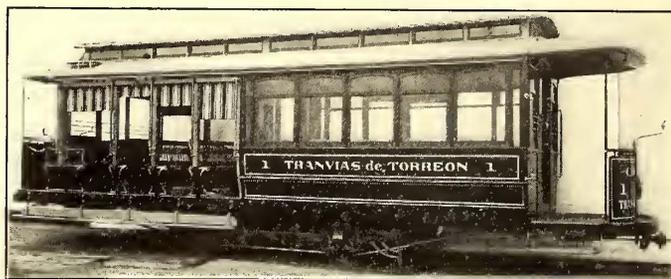
In the matter of construction, "Switzerland" is a model for amusement venturers. With a front of 85 ft. and a depth of 584 ft., it comprises over a mile of rail, twenty-five distinctive

scenes, and thirty sleighs in use. A notable feature is the cooling apparatus, which diffuses iced air throughout the whole structure. Deftly concealed pipes with openings in the various snowbanks emit the air from the cooling apparatus, while the suction ventilators in the roof make a draft that keeps this artificial "Switzerland" as cool and full of as sweet, pure air as can be found among the picturesque Swiss mountains.

### NEW CARS FOR TORREON, MEXICO

Cars lately built by the American Car Company, of St. Louis, for the Tranvias de Torreon, Mexico, include the type shown in the accompanying illustration. Torreon is one of the principal cities in North Central Mexico and about 200 miles south of the United States. The cars are operated in and about the city and to the Plaza de Gomez, a short distance to the north.

This type of car is mounted on Brill No. 27-E trucks, with 7-ft. 6-in. wheel base, and equipped with motors of 35-hp capacity. The closed compartment is furnished with spring cane upholstered seats, placed transversely, and the entire seating capacity of the car is forty-five. The windows are composed of two sashes each, the lower arranged to drop into pockets in



COMBINATION CAR FOR THE TORREON TRAMWAYS

the side walls. The curtains of the open part may be drawn completely to the floor and, together with the sashes in the bulkhead, furnish complete protection to this compartment.

The length of the car over the end panels is 24 ft. 7¼ ins., and over the crown pieces, 32 ft. 7¼ ins. The length of the closed compartment is 13 ft. 5 ins., and of the open compartment, 15 ft. 2¼ ins. The width over the sills, including the



INTERIOR OF COMBINATION CAR

sill plates, is 7 ft. 5 ins., and over the posts at the belt, 8 ft. 2 ins. The sweep of the posts is 5 ins.; centers of posts, 2 ft. 5 ins.; length of seats in closed compartment, 33 ins., and width of aisles, 18½ ins. The side sills are 3¾ ins. x 7 ins., with 8-in. x ½-in. steel plates. The corner posts of the closed compartment are 3½ ins. thick, and those of the open compartment, 3½ ins. The side posts are 1¾ ins. and 2¾ ins.

## FINANCIAL INTELLIGENCE

WALL STREET, Sept. 7, 1904.

**The Money Market**

Extreme dullness continues in all branches of the local money market. The demand for funds, and especially for fixed periods, is practically at a standstill, despite the increased activity and strength in the securities market, but at the same time there is a general disposition on the part of lenders to ask higher rates, in view of the heavy shipment of currency to the South and West to facilitate the movement of crops. The tone is called firmer, but so long as call money is offered in volume at around 1 per cent, the banks and trust companies are likely to experience considerable difficulty in placing time contracts at the present level of rates. Currency continues to be shipped in large amounts to the interior, but these shipments are partly offset by the constant arrival of gold at San Francisco from Japan and the Klondike. A feature of the week was the statement of the associated banks published on Saturday, and which was very unfavorable. Loans expanded \$18,185,400, while the cash loss sustained by the local institutions amounted to \$7,426,700. There was an increase in deposits of \$9,781,200, and the net result of their changes was a decrease in the surplus reserve of \$9,872,000. Mercantile paper continues quiet, specialists reporting a limited supply of the choicest grades. The inquiry, however, is good and all offerings are readily absorbed. Rates remain unchanged at 4 per cent as the minimum. Time money is quoted at  $2\frac{1}{2}$  per cent for sixty days,  $2\frac{3}{4}$  per cent for ninety days, and  $3\frac{1}{2}$  to  $3\frac{3}{4}$  for four to six months on good mixed collateral. Sterling exchange is heavy under the liberal receipts of commercial bills, and the tendency of rates is toward a still lower level. The European money markets show no particular change. At London call money rules at 1 to  $1\frac{1}{2}$  per cent, while the open market discount rate for short bills is unchanged at  $2\frac{1}{2}$  per cent. At Paris the discount rate is unchanged at  $1\frac{1}{8}$  per cent, and at Berlin the rate is  $2\frac{7}{8}$  per cent.

**The Stock Market**

There was no change in the position of the stock market this week. It was generally expected that prices would suffer moderate reaction at the close of last week, in view of the triple holiday, but instead the volume of business increased materially and prices generally continued to move upward. As has been the case for some time past, the bulk of the activity was furnished by the professional element, but in the absence of any unfavorable new developments over the three holidays, they became more aggressive, and succeeded on Tuesday in marking up prices for a number of issues to the highest prices of the year. Commission house business, although somewhat larger than heretofore, continues light, but the opinion is held in most quarters that a moderate reaction from present prices would induce the outside public to take a keener interest in the market. At the close the announcement was made that the Colorado & Southern Railroad had deferred the payment of the dividend on the first preferred stocks, but neither this nor the announcement of reduction of \$4 to \$6 per ton in the price of steel plates had any effect upon values. At the close sentiment was distinctly bullish, and prices in most instances closed at about the highest.

The market for the traction stocks was moderately active, and with the exception of Metropolitan Securities prices rule substantially above those ruling at the close of last week. It is stated, on what appears to be excellent authority, that negotiations are still in progress for the merging for the various traction companies, but it is not expected that any definite arrangement will be concluded for some time to come.

**Philadelphia**

A steady upward movement attended the dealings in the Philadelphia specialties during the week. Interest centered largely in Consolidated Traction of New Jersey, which sold at 72 for 439 shares, an advance of 2 points over the previous high record price for the year. Philadelphia Traction maintained all its recent advance to 99, but the volume of business was quite small. Philadelphia Company common rose  $\frac{1}{2}$  on moderately active trading to  $40\frac{1}{2}$ , while odd lots of the preferred sold at  $44\frac{1}{2}$ . Philadelphia Electric scored a slight advance to 6 11-16 on fairly active trading. More interest was manifest in Union Traction, which

scored an advance of  $1\frac{1}{2}$  points to  $55\frac{3}{4}$  on the exchange of about 1400 shares.

**Chicago**

Interest in the local traction issues this week centered exclusively in the report that a syndicate of New York financiers had been formed with \$36,000,000 for the purpose of ending the present muddle by bringing about a consolidation of the Chicago Union Traction Company with the Chicago City Railway Company. It is understood that this plan is progressing satisfactorily, but that no plan will be announced until the decree of Judge Grosscup is handed down. As a result of this announcement, and the continued good traffic returns, there was a substantial gain in prices for all the local traction issues. Chicago Union Traction sold as high as 8, and the preferred at 41, but later on there was a reaction of a point in each issue. Chicago City Railway sold up to  $186\frac{1}{2}$ , while odd lots, aggregating 65 shares, brought 184. South Side Elevated sold at  $91\frac{1}{2}$  and 91, and Northwestern Elevated advanced from 17 to 21, at which price it closed. West Chicago advanced from  $49\frac{1}{2}$  to 55, and closed at the highest.

**Other Traction Securities**

The feature of the Boston dealings was the continued weakness in the Massachusetts Electric issues. At the close of last week, the preferred sold at  $62\frac{1}{2}$ , but on Friday the price declined sharply to 60, and subsequently recovered a point. The common, which closed at 15 dropped down to 12 under fairly heavy pressure, but at the close there was a rally to 13. Boston Elevated was conspicuously strong, the price advancing  $1\frac{1}{2}$  points to 153, on moderate purchases. West End ruled practically unchanged, all the transactions taking place at  $92\frac{1}{4}$ , while the preferred ranged between  $111\frac{3}{4}$  and 112. In Baltimore only a very moderate business was transacted, and prices showed some irregularity. United Railway incomes, which closed at  $47\frac{1}{2}$ , sold down to  $46\frac{1}{2}$ , while the 4s declined from  $93\frac{3}{4}$  down to  $90\frac{3}{4}$ , where they closed. North Baltimore 5s sold at 120, and Washington City and Suburban 5s brought 100 and  $100\frac{1}{2}$ . Norfolk Railway & Light 5s sold at 85. In the week ending yesterday about 10,000 shares of Interborough Rapid Transit was dealt in on the curb, as against 27,000 shares in the previous week. The price fluctuated widely, and was influenced almost entirely by the differences between the company and the labor leaders. At the close of last week, the price of the stock stood at 149, from which it declined on yesterday to 141. Subsequently the price advanced sharply to 148, on the announcement that the company's lines would not be tied up by a strike. St. Louis Transit sold at 10 for a few hundred shares. Washington Railway Electric common and preferred were decidedly strong, 500 of the first-named selling at 18, an advance of  $2\frac{1}{4}$ , while 100 of the preferred brought 69, an advance of 2 points, as compared with the last previous sale. The 4 per cent bonds rose  $1\frac{3}{4}$ , \$24,000 changing owners at  $83\frac{1}{2}$ .

Last week was one of the heaviest weeks on record with the Cincinnati Exchange, and traction issues figured largely in the movements. Cincinnati Street Railway and Cincinnati, Newport & Covington featured in the activity. Nearly 6000 shares of the former changed hands with a steady upward movement, the range being from  $143\frac{1}{2}$  to  $145\frac{3}{4}$ . Cincinnati, Newport & Covington preferred sold to the extent of about 5500 shares, opening at  $89\frac{1}{2}$  and closing the week at  $92\frac{1}{2}$ . The common did not participate in the activity, only two small lots selling at 31. The first 5s of this company brought  $109\frac{7}{8}$  and 110 for \$18,000 worth, while the second 5s sold at 107. Detroit United had a few small sales at  $67\frac{1}{2}$ . Columbus Railway preferred sold at 108 for a small lot. The 4s of this company sold at  $96\frac{1}{2}$  and the 5s at 108. Thirty-one thousand dollars' worth of Indianapolis Street Railway 4s sold at  $85\frac{3}{4}$ . Northern Ohio Traction 5s sold at 98 to  $99\frac{1}{4}$ . The greater portion of this activity was due to the redemption of C. H. & D. (steam) bonds which were held largely in Cincinnati.

The purchase of bonds for investment purposes was again the feature of the week in Cleveland. Fifty thousand worth of Detroit Citizens' 5s sold at  $100\frac{1}{4}$ . Eighteen thousand worth of Northern Texas Traction 5s sold at 82 to  $83\frac{1}{2}$ . Twenty thousand of Northern Ohio Traction & Light 4s sold at  $59\frac{1}{2}$  to  $59\frac{3}{4}$ . These bonds are in good demand, owing to the sale of large blocks of these securities by the Everett-Moore syndicate. One small lot of Cleveland Electric sold at 72 and a small lot of Northern Texas Traction at  $38\frac{1}{4}$ .

The Everett-Moore syndicate of Cleveland has sold to a Cincinnati syndicate \$200,000 of Northern Ohio Traction & Light 4 per cent bonds. It has also given an option to the same parties on its entire holdings of these bonds, aggregating \$800,000 worth. In giving the option the Everett-Moore people agreed to ask other holders of these bonds to either give an option upon their holdings until Jan. 1, 1905, or to agree not to dispose of their holdings until that date. The syndicate agrees to pay 60 and interest on bonds called for before October; 65 for those called for between that date and December, and 67½ for those called for during December. The option includes \$260,000 worth of the bonds held in the treasury of the company, and if these are sold, the company will be enabled to clear up its floating debt of \$95,000. The syndicate which has obtained the option on these bonds is composed of well-known bond houses of Philadelphia, New York, Boston, Cleveland, Louisville and Cincinnati.

### Security Quotations

The following table shows the present bid quotations for the leading traction stocks, and the active bonds, as compared with two weeks ago.

|  | Closing Bid |         |
|--|-------------|---------|
|  | Aug. 23     | Sept. 7 |
| American Railways .....                          | 49          | 48¾     |
| Aurora, Elgin & Chicago .....                    | a12         | a15     |
| Boston Elevated .....                            | 150         | 153     |
| Brooklyn Rapid Transit .....                     | 53%         | 55%     |
| Chicago City .....                               | 170         | 183     |
| Chicago Union Traction (common).....             | 4¾          | 7       |
| Chicago Union Traction (preferred) .....         | 30          | 31      |
| Cleveland Electric .....                         | 70          | 71      |
| Consolidated Traction of New Jersey .....        | 69½         | 72      |
| Consolidated Traction of New Jersey 5s.....      | 108½        | 108½    |
| Detroit United .....                             | 66%         | 67      |
| Interborough Rapid Transit .....                 | 147         | 144½    |
| Lake Shore Electric (preferred) .....            | —           | —       |
| Lake Street Elevated .....                       | 3½          | 3½      |
| Manhattan Railway .....                          | 155         | 155¼    |
| Massachusetts Electric Cos. (common) .....       | 15          | 13      |
| Massachusetts Electric Cos. (preferred) .....    | 63          | 61      |
| Metropolitan Elevated, Chicago (common) .....    | 19          | 21½     |
| Metropolitan Elevated, Chicago (preferred) ..... | 52½         | 60      |
| Metropolitan Street .....                        | 121¾        | 120¼    |
| Metropolitan Securities .....                    | 90%         | 87%     |
| New Orleans Railways (common) .....              | 9½          | —       |
| New Orleans Railways (preferred) .....           | 29          | —       |
| New Orleans Railways, 4½s .....                  | 73          | —       |
| North American .....                             | 89          | 92%     |
| Northern Ohio Traction & Light .....             | 13          | 14      |
| Philadelphia Company (common) .....              | 39%         | 40½     |
| Philadelphia Rapid Transit .....                 | 13          | 14¾     |
| Philadelphia Traction .....                      | 99          | 99½     |
| St. Louis (common) .....                         | 11          | —       |
| South Side Elevated (Chicago) .....              | 89½         | 91      |
| Third Avenue .....                               | 122         | 122     |
| Twin City, Minneapolis (common) .....            | 98½         | 98¼     |
| Union Traction (Philadelphia) .....              | 54½         | 55%     |
| United Railways, St. Louis (preferred) .....     | 54          | 55¾     |
| West End (common) .....                          | 91½         | 92½     |
| West End (preferred) .....                       | 111         | 111½    |

a Asked.

### Iron and Steel

The "Iron Age," in its weekly review of the iron trade, says that the blast furnace statistics make a very encouraging showing. The productive capacity increased during August from 246,000 tons on the first of that month to 292,000 tons on the first of September. By far the greater part of this increase is due to resumption of work on the part of the steel companies, which is a clear indication that demand for steel itself has largely increased. This movement is still under way, a large number of United States Steel furnaces having blown in since Sept. 1. Consumption has overtaken production. The output of the steel companies increased from 695,000 tons in July, to 747,500 tons in August, thus showing that the resumption which started in that month did not obtain full sway in August. At a meeting of beam and plate associations a compromise was reached between those big interests who urged a reduction to a 1.25 cent base at Pittsburg. Quotations are as follows: Bessemer pig \$12.75, Bessemer steel \$19, steel rails, \$28.

### Metals.

Quotations for the leading metals are as follows: Copper 12½ cents, lead 4¼ cents, tin 27½ cents, and spelter 5 cents.

## COMPROMISE AVERTS STRIKE ON NEW YORK ELEVATED

Fear of a strike of the employees of the Interborough Rapid Transit Company, operating the elevated lines in New York, is entirely removed. Concessions from both sides brought about this result. The principal point at issue between the Interborough management and the labor organizations comprising the employees on the elevated system, the bitterly contested question of motormen's wages in the subway, was settled by compromise, on Tuesday, Sept. 6. It was agreed that the wages of the motormen in the subway shall be \$3.50 a day, the rate demanded by the men. On the other hand, the latter have agreed to a ten-hour working day in the tunnel instead of one of nine hours, which they had been holding out for. A number of minor details of the agreement were arranged Wednesday, Sept. 7, at a conference between the national representatives of the unions and Vice-President E. P. Bryan of the Interborough Company, and a contract embodying the terms of the agreement was then drawn up. This agreement will remain in force for three years.

## CONSOLIDATION AT WHEELING

The purchase a few days ago by foreign capitalists of the controlling interest in the Wheeling & Elm Grove Railway Company is said to presage the consolidation of all the lines in the city, including the Wheeling City Railway, the Wheeling Traction Company and the Pan Handle Traction Company. The details of the purchase of the Wheeling & Elm Grove Company are not made public, but as the company includes in its properties a light and water company as a subsidiary, it is evident the purchasers are going into public service on an extensive scale. Already the new owners have organized, electing John A. Howard, William C. Handlan, George Baird and William C. Carle to the board of directors of the Wheeling & Elm Grove Company, and John A. Howard, president; William C. Carle, secretary and treasurer.

## INVESTIGATION INTO COST OF CARRYING PASSENGERS IN TOLEDO STOPPED

The investigation of the books of the Toledo Railways & Light Company to determine the cost of carrying passengers, which was started last week by the Cleveland Audit Company, was suspended later by the action of the Chamber of Commerce committee withdrawing as a party to the investigation. The action was due to the fact that it was claimed that the committee representing the City Council was not carrying on the investigation in accord with the desires of the Chamber of Commerce. The matter of granting an extension of franchise to the Toledo Company is now back practically to the point where it started.

## THE MIAMI & ERIE CANAL SETTLEMENT

The committee which has charge of the work of settling the affairs of the Miami & Erie Canal Transportation Company reports that satisfactory progress is being made towards a final settlement. In the meantime, however, Attorney Harry Probasco, of Cincinnati, who represents several small creditors, has been endeavoring to take depositions before a notary public to discover the names of the stockholders. They attempted to force testimony from D. J. Ryan, one of the promoters of the canal company. Mr. Ryan refused to testify and the notary ordered him sent to jail. Mr. Ryan then appealed to Judge Dissette, of Cleveland, who issued an injunction providing that testimony in the canal case be taken only before the referee appointed by the court or a notary especially delegated by the referee. After the order was issued a subpoena was served upon Governor Herrick to compel him to tell what he knew about the affairs of the Canal Company. Mr. Probasco has created an immense amount of discussion in legal circles by threatening to bring mandamus proceedings to compel the Cleveland judge to reopen the investigation before the referee. It is the general opinion that Mr. Probasco is not so much interested in securing the claims he may have against the company as he is of giving the widest possible publicity to the internal affairs of the company since its inception. In this Mr. Probasco is supposed to represent the Cincinnati, Hamilton & Dayton Company, a steam road which parallels the canal and is opposed to the electric line on the canal banks; also the mule canal boat men, who are fighting the electric-mule scheme.

**ANNUAL REPORT OF THE NEW YORK CITY RAILWAY COMPANY**

The New York City Railway Company has issued its annual report for the year ended June 30, 1904. The following are the figures for the entire property:

The income account shows as follows:

|                                     |              |
|-------------------------------------|--------------|
| Gross .....                         | \$21,485,006 |
| Operating expenses .....            | 12,127,856   |
| Net .....                           | \$9,357,150  |
| Other income .....                  | 408,998      |
| Total income .....                  | \$9,766,148  |
| Taxes, rentals, interest, etc. .... | 11,162,919   |
| Deficit .....                       | \$1,396,771  |

The balance sheet as of June 30, 1904, shows as follows:

**ASSETS**

|  |               |
|--|---------------|
| Construction, equipment, leases and franchises.....  | \$145,583,380 |
| Additions and betterments, leased lines.....   | 23,049,958    |
| Investments .....  | 5,244,687     |
| Materials and supplies .....   | 1,231,188     |
| Current assets—  |               |
| Cash .....   | \$2,047,260   |
| Cash on deposit to pay coupons and rentals.....  | 1,136,178     |
| Cash on deposit to redeem bonds .....  | 160,000       |
| Cash on deposit with city of New York as security for construction work.....                     | 2,500         |
| Notes receivable .....   | 88,725        |
| Accounts receivable .....  | 592,934       |
| Metropolitan Security Company's subscription to New York City Railway Company's securities ..... | 8,052,000     |
| Accrued accounts: Dividends on stock owned.....  | 12,079,598    |
| Prepaid and undistributed accounts: Insurance, track rentals, etc. ....                          | 13,893        |
| Totals .....   | \$187,612,568 |

**LIABILITIES**

|  |               |
|--|---------------|
| Capital stocks .....   | \$72,111,800  |
| Funded debt .....  | 92,332,000    |
| New York City Railway Company's ten-year notes....                             | 660,000       |
| Central Crosstown Railroad Company's two-year notes .....                      | 2,250,000     |
| Real estate mortgages .....  | 950,000       |
| Metropolitan Securities Company (securities due them under subscription) ..... | 9,556,800     |
| Current liabilities:   |               |
| Notes payable .....  | \$850,000     |
| Accounts payable .....   | 1,483,209     |
| Coupons and rentals due and unpaid .....                                       | 1,136,177     |
| Employees' deposits .....  | 28,294        |
| Unclaimed wages .....  | 5,770         |
| Service liabilities: Transfer tickets outstanding.....                         | 3,503,450     |
| Accrued accounts:  | 2,489         |
| Interest and rentals .....   | \$1,896,370   |
| Taxes .....  | 1,296,023     |
| Wages, etc. ....   | 86,689        |
| Profit and loss (surplus) .....  | 3,279,082     |
| Total liabilities .....  | 2,966,947     |
| Total liabilities .....  | \$187,612,568 |

In this statement of the assets and liabilities of the system as a whole the securities, real estate mortgages, etc., which are owned by other companies in the system are omitted.

In his annual report to stockholders, President H. H. Vreeland, of the New York City Railway Company, says:

"In order to secure a more descriptive name, as well as to avoid confusion with another railway company having a somewhat similar name, the company has by appropriate proceedings changed its name to the New York City Railway Company.

"The accounts of the company for the year have been audited by Haskins & Sells. Charles S. Ludham, one of the principals of the firm of Haskins & Sells, has been appointed comptroller of the company.

"The form of income account of the constituent companies necessarily differs somewhat from that employed in the annual report of last year. The distinction between the Metropolitan lines and the Third Avenue lines is no longer preserved, as the necessity of keeping separate income accounts of the Third Avenue Railroad Company ceased in April last, when the fixed rental of 5 per cent per annum upon the Third Avenue stock began to accrue and the

same became true of the Central Crosstown Railroad Company on April 1, when its lease to the Metropolitan Company became effective.

"The lines of the Central Crosstown Company having been converted to electric traction, and it having become desirable to use some of them in connection with the lines of the Metropolitan system, a lease of its property to the Metropolitan Company was made as of April 1, 1904.

"The gross earnings from operation of the entire system, amounting to \$21,485,006, show a slight decrease (\$64,539) from the previous year. This is due in large part to the unfavorable weather conditions of the past winter, which were without parallel for severity and long duration. During the winter months these conditions decreased the earnings and increased the operating expenses of every line in the system. Repeated heavy falls of snow, which the city's street cleaning department were unable to remove for weeks at a time, forced the vehicle traffic on to the company's tracks, thus greatly impeding the movement of cars and discouraging travel. The substantial increase of earnings in the Bronx, due to new and extended lines and to the growth of population, was not sufficient to overcome the decrease in the borough of Manhattan.

"The large increase in operating expenses, like the decrease in gross earnings, is due chiefly to the length and severity of the winter, as the result of which extraordinary expenses for the removal of snow were incurred and nearly every item of the transportation and maintenance accounts expanded to abnormal proportions.

"The increase over last year in the aggregate expenditures of the accident and claim department, which constitutes the only considerable increase in general expenses, is due to the great increase in the number of claims settled before trial. Substantial economies have, however, been accomplished in the administration of the department.

"The only new mileage added to the system has been in the borough of the Bronx and in Westchester County, where miles of track equipped with the overhead trolley has been built.

"A franchise has been granted to the Union Railway Company for an extension across the McComb's Dam Bridge to the One Hundred and Fifty-Fifth Street terminus of the Sixth Avenue and Ninth Avenue elevated roads. This will provide an entrance to the borough of Manhattan for a number of important lines of the Union system now terminating on the north side of the Harlem River, and is expected to prove a valuable aid in developing traffic of the west side of the borough of the Bronx.

"Because of the unsettled labor situation in New York, the season's programme of electric construction was considerably curtailed, and no work undertaken that was not imperative of such a character that it could be accomplished with certainty. This consisted of short extensions of existing lines and the completion of work previously inaugurated.

"One hundred new closed cars and ten electric sweepers with motor equipment were received during the year for service in the borough of Manhattan, and 100 closed cars have been ordered for delivery during the fall, and 25 open cars were received during the year for use in the Bronx, and 50 closed cars have been ordered for delivery this fall.

"All the predictions of the last annual report in relation to the new power system for the territory north of the Harlem River have been realized and the company is now in a position to increase its service as traffic develops, and at a cost which allows a margin of profit upon the comparatively low earnings per car mile realized in that district. As the improvements have only recently been completed, the benefits are not fully reflected in the year's results.

"The company is advised by counsel that, under the recent decision of the Court of Appeals in the case of Heerwagen vs. Central Crosstown Railroad Company, of Buffalo, the company will be entitled to deduct from the gross special franchise tax, as fixed by the State Board of Tax Commissioners, the amounts which the company is required to pay to the city by way of compensation for its franchises. Prior to this decision, the municipal authorities of the city had refused to allow these deductions, claiming that it was entitled to collect the gross tax. It is expected that the company's appeal to the United States Supreme Court, involving the constitutionality of the special franchise tax, will be heard during the current year."

Postmaster Roberts of Brooklyn will soon have in commission a specially constructed trolley car for the distribution of the mails to the outlying stations. At present this mail is forwarded on the regular passenger cars. Under the new system the mails will be sorted on their way to the stations and be ready to deliver to the carriers on reaching their destination.

## NEW TRANSFER ARRANGEMENTS IN LOS ANGELES

A transfer order which will mean the saving of much time and money to those who patronize the Los Angeles Interurban Railway Company went into effect on Aug. 26. It is now possible to obtain transfers from the green and yellow cars of the old Traction lines to all other cars of the system, as well as to many of the cars of the Pacific Electric Railway Company. Passengers who use the University, the West Adams Street and the Westlake Park lines of the Los Angeles Interurban Railway Company can now be carried much further—in many cases more than five times further—for a single fare than heretofore.

This is the first time H. E. Huntington, who controls both lines, has issued such a far-reaching transfer order. Transfers are not only given to the Pacific Electric Railway lines, but also the Glendale and Tropic branch. The Los Angeles Railway Company, the Huntington urban system, which operates more cars than the other lines, is not included in the order.

The suits brought against Mr. Huntington to compel him to issue transfers from the Los Angeles Railway Company's cars to those of the Pacific Electric Railway Company on East Ninth Street, are still in the courts. They are now on appeal. In the lower court the company was defeated.

W. E. Dunn, attorney for Mr. Huntington, states that the transfer order which has been authorized has been under consideration for six months.

"The same men," says Mr. Dunn, "are not interested with Mr. Huntington in the ownership of the three roads. It would, therefore, be impossible for us to grant universal transfers. We are glad, however, to be able to facilitate travel by granting transfers between the Los Angeles Interurban lines—commonly called the Traction lines—and those of the Pacific Electric Railway Company. These transfers are a stimulus to business."

It is generally conceded that this latest transfer order has no direct bearing on the city's campaign for universal transfers.

## NEW YORK VISIT OF DELEGATES TO INTERNATIONAL ELECTRICAL CONGRESS

The delegates to the International Electrical Congress, to be held in St. Louis next week, spent Sept. 4 and 5 in New York City. The visitors from abroad were comprised chiefly in two main bodies, one consisting of the members of the Institution of Electrical Engineers of Great Britain and the other the members of the Associazione Ellettrotecnica Italiana. After spending Sept. 3 in Boston, they reached New York Sunday morning, and that afternoon were given a trip on the Hudson and to Dreamland, by invitation of J. G. White. On Monday they took a special train through the subway and then visited by boat a number of the power stations on Manhattan Island. In the evening a banquet was given by the American Institute of Electrical Engineers at the Waldorf-Astoria. Sept. 6 was spent at Schenectady, and Sept. 7 and 8 at Montreal.

## INTERCHANGEABLE COUPON BOOKS TO BE ON SALE

The long-talked-of interchangeable coupon books adopted by the Ohio Interurban Railway Association are now being printed and will be placed on sale by a number of roads within a very short time. The matter has been unavoidably delayed, owing to the inability of finding a bonding company that would insure the payment of the coupons by the various roads, the question of a bond being one of the points insisted upon by some of the roads at the last meeting of the association. The bonding companies declined to take a bond of this kind, claiming it would simply be insuring the credit of the various roads. At a recent meeting of the transportation committee it was decided to drop the clause providing for a bond and insert in the agreement a clause making the person or official who signed the agreement for each road a trustee who should be personally responsible for the money due the various companies for the coupons collected by a road. The relations existing between a company and the trustee signing the agreement is a matter which each road will decide for itself. In any event, the company is liable for the acts of its authorized agent, and the various companies that are parties to the agreement have the added assurance that the trustees are personally liable for the money received for the coupons. Different plans have already been decided upon by different roads for working this out. One road will turn over to its trustee all the money collected from the sale of coupon books, and the trustee will settle each month with his own road as well as with the other roads. Another company will create a coupon

fund, and will pay into this fund the actual value of the coupons as they are collected, and settlements with other roads will be made from this fund.

This plan was presented to the various roads and twelve of them have signed the agreement as follows: Western Ohio; Dayton & Troy; Toledo, Fostoria & Findlay; Dayton & Northern; Dayton, Covington & Piqua; Springfield, Troy & Piqua; Springfield & Xenia; Dayton & Western; Cincinnati, Dayton & Toledo; Cleveland & Southwestern; Lake Shore Electric, and Dayton & Xenia. Eight other roads have agreed to sign, the action being left to the directors, so that in all probability the first issue will be good on twenty roads. J. H. Merrill, of Lima, secretary of the association, is now making a trip through Ohio to induce the other roads to enter the agreement. Efforts will also be made to secure the co-operation of roads in Michigan, Indiana and other States of the Central West.

The officers of the Ohio Association aim to make the organization something more than a State association. Roads of Michigan, Indiana and Pennsylvania are being connected with those of Ohio, and the problems encountered and the advantages to be secured through co-operation can not be limited by the State lines. It is understood that the roads in Indiana are planning an interurban association with the object of interchangeable transportation primarily in view, and it is probable that at the next meeting of the Ohio Association, to be held Thursday, Oct. 27, a special effort will be made to induce the Indiana roads to combine with the movement already started in Ohio. Indiana men will be offered representation on the executive and other committees, and if thought desirable the name of the association will be changed so as to denote the wider field which it aims to cover.

## FAST PASSENGER SERVICE ON SUBURBAN LINE OUT OF NEW YORK

The new trolley express service was begun by the Union Railway Company, of New York, Sept. 1, between New Rochelle, Mount Vernon, and the Bronx Park elevated station. The service has appealed to shoppers and commuters, and the cars are crowded all day.

The cars make the run from New Rochelle to Mount Vernon in twenty minutes, and from that city through to the elevated connection in New York in twenty-five minutes, establishing a schedule of forty-five minutes between New Rochelle and Bronx Park, instead of an hour, as formerly. It is hoped to reduce the running time to forty minutes, which is the present running time of the New York, New Haven & Hartford Railroad local trains between New Rochelle and the Grand Central Station, New York.

## PITTSBURG CAPITAL WILL BUILD LINES UP ALLEGHENY

The contract for the construction of the Pittsburg & Allegheny Valley Railway has been awarded to W. A. Smethurst, Rodney D. Allen and H. C. Baker, of Philadelphia. It is understood that McCann, Smith & Bennett, of Greensburg, will do the grading. The general contract amounts to between \$500,000 and \$750,000.

The Allegheny Valley line is to extend from Hyde Park, Apollo and Leechburg, to Oakmont. At Oakmont it will connect with the new line of the Pittsburg Railways Company. The line now being built by Keeling & Ridge and financed by William A. Stone and other Pittsburgers, to run from Indiana to Latrobe, will ultimately be connected with this line, so that the present project serves as an important link in a system that will connect Pittsburg with many large towns to the east.

The first part of the line to be built will be the section between Leechburg and Apollo. The rights of way have been secured. The Leechburg Electric Light Company has been absorbed by the new railway company, as has also the Apollo Electric Light Company. The power plant will be built either at Leechburg or at Hyde Park. The company has secured 100 acres of coal land near Hyde Park and desires to locate its plant near the mine, so that it can most economically secure its fuel.

Leaving Oakmont, the route of the line will be through Parnassus, New Kensington, Arnold and Valley Camp to Vandergrift, Leechburg, Hyde Park and Appollo. The entire length of the new line will be about 40 miles and the population through that section will average 5,000 per mile. To increase still further the travel, a park will be established near Leechburg.

O. W. Kennedy is president of the company. The other officers are: Vice-President, Hon. John Q. Cochran, Appollo; treasurer, W. J. Ward; secretary, Dr. J. D. Orr; directors, Hon. S. M. Jackson, Appollo; J. Klingensmith, Leechburg; William Gibson and William W. Staub, Pittsburg, and Messrs. Kennedy, Cochran and Orr. The general manager is Blake A. Mapledoram, whose office is in Leechburg.

## CHICAGO TRACTION SYNDICATE

The report is confirmed that a syndicate of New York, Philadelphia and Chicago capitalists has been formed to supply \$36,000,000 cash for the acquisition of the stock of the Chicago City Railway Company and the consolidation of all the surface car companies of Chicago. Absolutely nothing definite or authentic is as yet available about the plans of the syndicate for carrying out the merger. H. J. Hollins & Company, J. P. Morgan & Company, Kuhn, Loeb & Company, Speyer & Company, the P. A. B. Widener interests of Philadelphia, and the Whitney interests are all interested in the new deal.

## 200-MILE MEXICAN TRACTION PROJECT

Advices from Mexico City state that the Mexican Railway, the oldest steam railroad in the Southern republic, proposes to convert its extensive system into electric motive power, subject to the British stockholders—it being controlled by British capital—sanctioning the change. The line runs from Mexico City to Vera Cruz, and is about 200 miles in length. The price of coal in Mexico City exceeds \$20 a ton, and the change of power will, it is estimated, result in a saving of some \$500,000 (Mexican currency) annually.

## CURTIS TURBINES FOR NEW ORLEANS

A contract was let last week to the General Electric Company for three 1500-kw Curtis turbines to be installed in the new power house about to be constructed by the New Orleans Railways Company. The ultimate capacity of this plant will be 60,000 hp. Some details of this plant were given in the *STREET RAILWAY JOURNAL* of Aug. 6. Sanderson & Porter, of New York, are the consulting engineers for the New Orleans Company.

## STREET RAILWAY PATENTS

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

### UNITED STATES PATENTS ISSUED AUG. 23, 1904

768,040. Car Fender; George H. Fraser, Brooklyn, N. Y., and James N. Weikly, Jersey City, N. J. Application filed Dec. 31, 1897. The fender is automatically raised and lowered in opposition to the oscillation of the car body to preserve it at a predetermined distance from the track, and the truck is tilted laterally of the body to cover curvatures of the track.

768,134. Car Fender; Lowell M. Maxham, Boston, Mass. App. filed Dec. 12, 1903. The fender is supported at its rear edge by the car, and is constructed to be swung horizontally through a semi-circle to a housed position beneath the car platform.

768,176. Car Fender; Sylvester S. Hawley, Odín, Ill. App. filed May 21, 1904. Details of construction.

768,187. Railway Switch; Frank L. Maurer, Johnstown, Pa. App. filed Jan. 29, 1904. The invention resides in an attachment for switches whereby the latter may be used as a spring-switch with either right or left hand throw, or whereby the switch tongue or point may be locked in either of its thrown positions against accidental displacement.

768,198. Step Motion for Controller Levers; Irving B. Smith, Philadelphia, Pa. App. filed Dec. 9, 1903. The purpose of this invention is to insure, where one element of a current-carrying device moves with respect to one or more other moving or stationary elements, that the first element shall only come to rest in a predetermined position with respect to the other moving or stationary element, and the invention consists of a switch lever adapted to move uninterruptedly and to be brought to rest at desired points and automatic means adapted to adjust the final points of rest of said lever to predetermined positions.

768,199. Rheostat; Irving B. Smith, Philadelphia, Pa. App. filed Dec. 9, 1903. The rheostat comprises a plurality of switch segments, a plate to which said segments are attached, each by a tongue and groove connection and a plurality of resistance units connected to said segments.

768,245. Trolley; Francis C. Sullivan, of McKeesport, Pa., and Louis S. Harris, of Pittsburg, Pa. App. filed July 22, 1903. A hood is supported upon the shaft of the trolley-wheel and extends around the trolley-wheel, and wheels or rollers are journaled in the hood and adapted to extend across the trolley-wheel. Means are also provided for permitting the hood and the wheels to be

opened and closed over the trolley wheel, the said means being actuated by the trolley rope.

768,260. Automatic Brake and Take-up Device for Trolley Cords; Edward H. Amet, Waukegan, Ill. App. filed June 6, 1904. Means are provided to which the lower end of the trolley cord may be attached, and which operates to keep the cord taut during the movement of the trolley along the feed wire, which means operate automatically to lock the trolley cord against paying out the instant the trolley leaves the wire.

768,277. Fender for Cars or Other Vehicles; William L. Green, Waltham, Mass. App. filed Jan. 26, 1904. The fender is so constructed that when a person standing on the track is struck, the impact of the fender causes its parts to immediately embrace, partially surround and grasp the body of the person at a point below the shoulders, and hold him in an erect position until the car has been stopped.

768,325. Trolley Restorer; Edward L. Calahan, Clifton, N. J. App. filed Nov. 6, 1903. The trolley pole is provided with a restorer operated by a rope which extends to the front of the car within easy reach of the motorman, so that the trolley may be restored to the feed wire from the front of the car instead of from the rear.

768,350. Electro-Magnetic Switch & Signal; Samuel B. Stewart, Jr., Schenectady, N. Y. App. filed May 20, 1902. The invention consists of an arrangement of signals in connection with the electro-magnetic switch, which signals serve to show when the sectional working conductor is alive or energized. A signal or semaphor is provided which is mechanically connected with the switch, and which is actuated in one direction when the switch is opened and in the opposite direction when the switch is closed. An electric signal is also provided, which is connected in shunt to the switch-actuating coil.

768,357. Electric Track Brake; Fred B. Corey, Schenectady, N. Y. App. filed Sept. 27, 1902. The purpose of this invention is to provide for the separation of the brake-shoe from the track as soon as current is drawn to the motor. The car is provided with the usual propelling motors and with a track-brake having a brake-shoe. A solenoid is employed for lifting the brake-shoe, the same being energized by motor-current derived from the circuit of the motor, which is in circuit whenever power is supplied to the car.

768,411. Block Signal and Track Switch Operating Device; Charles R. Van Trump, Wilmington, Del. App. filed April 30, 1904. When a car enters any block, electrically operated signals at each end of the block, and under the control of the motorman within the moving car, will be displayed or switches operated, and as the car leaves the block from either direction, signals and switches will be restored to their normal positions. Mechanism is also provided which is included in the same circuit and operated by the same current for operating track switches and the like.

768,480. Safety Guard; Wilson K. Page, Olean, N. Y. App. filed March 23, 1904. The purpose of this invention is to prevent in a positive manner the stalling of a car at a crossing, by providing a guard to bridge the crossing, the guard constituting a perfect conductor for the current should the trolley-wheel leave the wire. The guard has an open-work body or conducting portion and trolley-wire hangers are combined with the crest thereof.

### UNITED STATES PATENTS ISSUED AUGUST 30, 1904

768,606. Suspension of Trolley Wires; Martin T. A. Kubierschky and Paul E. Herkner, Berlin, Germany. App. filed March 7, 1902. A clip which clamps the wire in such a manner as to afford it free movement.

768,610. Electric Controller; John Lindall, Boston, Mass. App. filed Jan. 13, 1904. The contact pieces are provided with detachable portions which are subjected to the greatest wear and which can be renewed at less expense than the renewal of the entire contact would entail.

768,634. Electric Railway Brake; Levi L. Stamm, Almond, N. Y. App. filed Dec. 8, 1903. A motor acts mechanically on the brake rigging of the car.

768,661. Automatic Switch Lock for Railways; William E. Harris, New York, N. Y. App. filed Oct. 29, 1903. Comprises a member adapted to be actuated by a passing car, and which is to be disposed in continuity with the switch-point, a latch adapted to retain the point in one position or another, means to cause the latch to project out beyond the switch-point, means to withdraw said latch from the switch-point and a train of mechanism operable at a suitable distance from the switch-point and adapted to operate the lock.

768,989. Trolley Pole Controller; Martin O. Dolson, Los Angeles, Cal. App. filed Dec. 23, 1903. Pneumatic means for raising and lowering the pole, a trip-lever on the pole and connected with the moving means and an arm on the trip-lever for engaging the trolley wire and tilting the trip-lever when the trolley wheel leaves the wire.

768,863. Hanger for Trolley Wires; Augustus Beubert, Elizabeth, N. J. App. filed Dec. 10, 1903. Details.

768,864. Crosstown Arch for Intersecting Trolley Wires; Augustus Neubert, Elizabeth, N. J. App. filed Dec. 10, 1903. An arch for crossed trolley wires having wings for the several wires and means to support the wires at different elevations.

769,869. Railway Car; Charles Fleischman, Brooklyn, N. Y. App. filed Jan. 20, 1904. A seatless car having a plurality of rest-rails for the support of standing passengers and a plurality of openings in the sides of the car.

768,920. Railway System; Constantine B. Voynow and George B. Taylor, Philadelphia, Pa. App. filed Feb. 17, 1904. Comprises vehicles having double tread wheels, tracks having rails arranged to engage one of the treads of the wheels, other rails arranged to engage the other treads of said wheels.

768,933. Brake Mechanism for Vehicles; Harry Dixon, Toronto, Canada. App. filed July 23, 1903. Details of an anti-friction brake-actuating drum and gear.

768,959. Trolley Wheel; Frederick Strail, Rochester, N. Y. App. filed June 1, 1903. The inner faces of the flanges are concaved to admit bends of the wire and prevent displacement thereof when rounding curves.

768,969. Railway Switch; William S. Weston, Chicago, Ill. App. filed March 30, 1903. Details.

768,973. Railway Switch; Milo Barnes, Syracuse, N. Y. App. filed Nov. 19, 1903. Comprises two switch points divergent from their pivotal points, a bar pivotally connected to the two switch-points and a lever extended from the bar and adapted to be moved by a device carried by a car for shifting the points and shunting the car in any one of three directions.

768,991. Car Brake; Henry Hoffmann, New Rochelle, N. Y. App. filed May 14, 1904. A drum is provided for the brake chain having a pinion adapted to mesh with a gear mounted on a sleeve carried by the brake shaft.

769,009. Automatic Trolley Controlling Device; Horace W. Nichols and Samuel Briggs, Folcroft, Pa. App. filed Jan. 4, 1904. Details of a spring drum and ratchet retriever.

769,070. Trolley; Lindey F. Forrester, Foxboro, Mass. App. filed Jan. 16, 1904. The trolley wheel rolls upon two other wheels mounted in the harp, thereby reducing friction.

769,085. Trolley Retriever; William W. Hoffman and Francis W. Powers, West Lafayette, Ind. App. filed Oct. 19, 1903. Details of a ratchet and drum arrangement.

769,086. Trolley Harp; William W. Hoffman, West Lafayette, Ind. App. filed March 24, 1904. A trough-shaped portion at the base of the trolley harp for conducting water away from the rope.

769,094. Electric Lighting System for Cars; Herman Kreisler, Brooklyn, N. Y. App. filed Nov. 28, 1903. A switch for throwing in a battery for lighting purposes whenever the trolley leaves the wire.

## PERSONAL MENTION

MR. C. W. KING having resigned, Mr. R. R. Norton has been appointed train master, car accountant and superintendent of telegraph of the Colorado Springs & Cripple Creek District Railway Company.

MR. E. H. HUGHES, formerly in charge of the repair shops of the Montreal Street Railway Company, of Montreal, Canada, has accepted the Montreal agency for the H. W. Johns-Manville Company, of New York.

MR. EDWARD HUBER, a prominent manufacturer of Marion, Ohio, died a few days ago. Mr. Huber was president and founder of the street railway lines of Marion, which were recently sold to the Columbus, Delaware & Marion Railway Company.

MR. T. C. CHERRY has resigned as general superintendent of the Saginaw Valley Traction Company, of Saginaw, Mich., to go with the Columbus Railway & Light Company. Mr. Cherry formerly was superintendent of the Lorain Street Railway, of Lorain, Ohio.

MR. WATSON W. APGAR, who has been superintendent of the Northport Traction Company, of Northport, N. Y., ever since the road was started, two years last April, has retired. Mr. Tillot, superintendent of the Huntington Railroad, will succeed Mr. Apgar, combining the superintendency of both roads.

MR. H. S. KNEEDLER, an old-time newspaper man, has been appointed advertising agent for the Pacific Electric Railway Company at Los Angeles. Mr. Kneedler has been in Los Angeles about three years. Prior to that time, he was for twenty years engaged in journalism in Iowa, and before that was in Philadelphia. The office of advertising agent of the Pacific Electric Railway Company

has just been created, and is designed to keep the public informed on what to expect from the great Huntington systems. Mr. Kneedler was for a time advertising agent for the Southern Pacific in New Orleans, and in that capacity issued much of the literature of that road still in circulation.

MR. W. O. MUNDY, formerly master mechanic of the St. Louis Transit Company, has become connected with the Westinghouse Electric & Manufacturing Company, at Pittsburg, with the title of commercial engineer. Mr. Mundy is recognized as one of the brightest men in his branch of electric railway work in the country.

MR. F. SEJERSTED, manager of the Holmenkollen Electric Railway, of Christiania, is on a visit to this country as the representative of the Norwegian Government Railways for the purpose of studying the application of electricity to railway service here as bearing on the proposed conversion of the government roads of Norway from steam to electricity.

MR. A. S. PALFREY, of the auditing department of the Connecticut Railway & Lighting Company, of Bridgeport, Conn., has been appointed auditor of the Ferrocarriles del Distrito Federal, of the City of Mexico. Mr. Palfrey will leave for his new position shortly. Mr. Palfrey was formerly connected with the Lynn & Boston Company and later with the Syracuse Rapid Transit Company.

MR. J. S. HAMLIN has severed connections with the National Electric Company, taking effect Sept. 1. Mr. Hamlin has been with the Christensen Engineering Company since its existence, with the exception of two years, one of which he was master mechanic for the Union Traction Company at Anderson, Ind. During the following year he was sales manager of the Neal Duplex Brake. Later he returned to the employ of the National Electric Company, successor to the Christensen Engineering Company.

MR. JAMES W. LYONS has announced his resignation as manager of the power department of the Allis-Chalmers Company. His resignation took effect on Aug. 13. Mr. Lyons has taken this step to accept the appointment as consulting engineer to the Elgin Watch Company, of Elgin, Ill., which will erect new and extensive works under his supervision. He will also engage in other consulting works; the headquarter will be at Chicago. Mr. Lyons takes with him the good wishes of all his former associates in the Allis-Chalmers Company.

MR. N. C. SMITH, superintendent of the Newton division of the Boston Suburban Electric Companies' system, has been appointed superintendent of the Groton & Stonington Street Railway, now nearing completion. The system of which Mr. Smith now has charge comprises about 50 miles of track. He has been superintendent of the division for about seven years, working up from driver of a horse car about eighteen years ago. Mr. Smith is about forty years old. The position of engineer for the road has been given to Mr. John Barry, formerly of New London, but now of Groton.

MR. HENRY E. HUNTINGTON, the street railway magnate of Southern California, is now in Los Angeles after an absence of two months in New York. Mr. Huntington says he has no new plans for that section of the State, in addition to those he outlined before he went away. He is convinced Los Angeles will continue to grow and that the winter season will be up to expectations. Plans for the extensions of his lines on the coast are still in embryo, so far as information for publication is concerned. Mr. Huntington says his present stay in Los Angeles will not be lengthened beyond "a few weeks."

MR. NELSON GRABURN has been appointed master mechanic of the Montreal Street Railway Company, of Montreal, Que. Mr. Graburn's latest achievement was the reorganization and electrification under his supervision of the Alexandria & Rameh Railway of Alexander, Egypt. Mr. Graburn's experience has extended to both steam and electric railroads, also electric lighting. He served an apprenticeship with the Canadian Pacific Railway as mechanical engineer from 1881 to 1887, when he joined the Edison Illuminating Company, of Brooklyn. He remained with this company until 1889, when he went to the Thomson-Houston works at Lynn, Mass., to take a student's course in electric railway work. After completing this course he was sent to Canada by the General Electric Company to look after contracts. Mr. Graburn resigned this position to join the Montreal Street Railway Company as assistant electrical engineer. In 1894 he was promoted to the position of electrical engineer and assistant superintendent. He resigned from this company in 1899 to accept the position of consulting engineer of the Compagnie Générale de Traction, of Paris.