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*During 1907 the Street Railway Journal printed and circulated 427,250 copies, an average of 8216 copies per week. Of this issue 7500 copies are printed.*

## The Meetings in New York

The meeting of the executive committees of all of the street railway associations, held last week in New York, was accompanied by enthusiasm which augurs well for a good series of conventions next October. In all, six associations were represented, including the Manufacturers' Association and the newly organized Transportation and Traffic Association.

In a brief survey of the results of the meetings it seems as if all of the associations this year are taking the opportunity to devote especial attention to the subject of economy of operation. For some five years past the country has been undergoing a period of tremendous development. Important consolidations involving extensive plans for financing and reconstruction have been frequent; new lines have been built in all parts of the country and many of the old lines have made expensive extensions and improvements. It is the general opinion that the existing financial conditions will affect electric railways to a less extent than almost any other important industry. As their business is almost exclusively that of the transportation of passengers, they are not affected by the reduction in freight caused by a cessation in industrial activity, and the riding on the electric lines is more of a necessity and is less dependent upon the prosperity of the country than with the steam railroads. As it is difficult to raise capital for further improvements it would seem a most appropriate time to give attention to questions of economical operation. There has been no such opportunity for a number of years, as every energy has been exercised in other channels. This condition was recognized by the delegates at the meeting and, as will be seen from the outline of the proceedings published elsewhere, the subjects assigned for the programs of the October conventions are based largely upon this idea.

For the reasons outlined above the new Transportation and Traffic Association should have an especial field of usefulness. As its name and constitution indicate, it will cover the entire operating field. Its membership will not be confined to managers, but will include advertising, passenger and freight agents—in fact all officials who are connected with the promotion of traffic and the direction of car movements. In some cases it may not be practicable to draw a hard-and-fast line between the activities of this and the other associations, just as it is now impossible to delimit the fields of each of the older bodies, but cases of this kind can be taken up by joint action as they have been in the past.

The question of meeting place was not decided, although the usual invitations were received from the business interests of Atlantic City and Saratoga, and one of an especially cordial character was extended from Denver. The invitation from Denver was presented directly by the officials of the local street railway company, and was accompanied by letters asking the association to come, written by the Mayor of the city and the Governor of the State. The subject of the selection of a meeting place was very properly referred to a committee of the main association, but it might be said that a great deal of enthusiasm was displayed in regard to the proposition to meet in Denver, and Messrs. Evans and Beeler, of the Denver Consolidated Tramway Company, received the cordial thanks of those in attendance for their proffered courtesy to the association.

## Interpole Railway Motors

One of the important commercial developments of the past year has been the extended adoption for railway work of the interpole motor. This machine has attracted the attention of railway companies not only in this country but abroad, as articles in recent issues of this paper indicate. The account of the Siemens-Schuckert machine of this design, published last week, casts an interesting sidelight on the merits of the scheme. The long suit, so to speak, of the interpole motor is precisely the thing which the supplementary pole was intended to effect, i. e., the improvement of commutation. Beyond this it has no direct function, but it is tremendously useful for this and just in so far as it applies to conditions under which commutation is ordinarily difficult. It cannot help a motor to carry continuous overloads unless that motor is otherwise so designed that its limit of capacity is due to sparking rather than heating. So far as ordinary traction motors are concerned, heating is the ordinary limiting factor in load, so that the interpole can help only in preventing flashing over on overloads. As the article in question points out, this ability to stand overload on occasion is paid for by slightly decreased efficiency at normal loads. Similarly the ability to use a smaller air gap with the interpole construction is compensated for by the fact that the air gap is practically determined by mechanical and not by electrical considerations. The long and the short of it is that in the existing state of the art of design the commutating pole is far more limited in its sphere of usefulness than it would have been a decade since.

On the other hand its introduction may serve to open a field of activity in which the art of motor design, especially in America, has as yet made small progress. That field is high voltage direct current traction, to which some attention has been given in this country but more abroad. In passing upward in voltage one soon reaches the point where the commutator conditions are critical, especially if motors of large output are sought. If one could build say a 250-hp motor for 2000 volts it would be easy enough to construct a locomotive for a working pressure of say 4000 volts which would be very serviceable in general railway work. Mr. Sprague, than whom no one has had a richer experience in electric railroading, stands in favor of d. c. motors for such service, and it looks as if the commutating pole had appeared just about in time to aid in their construction. Another important question is its applicability to dynamos for high voltage work on the Thury system. One of the most serious practical difficulties of that system is the small capacity of the individual units, at present something like 500 kw, as a maximum. If this output could be doubled by doubling the voltage the usefulness of the system would be greatly increased.

The reports from the interpole railway motors now in use are excellent, and the construction seems one that has come to stay, not perhaps in all the places where it has been tried, but at least in cases where it is most useful. The judgment of the Siemens-Schuckert Company is illuminating in its bearing on both the limitations of the scheme and on its proper field of usefulness. It is at least refreshing to hear cheerful recognition of d. c. motors at 1000 volts or so, as things for which a good construction is now available.

## Engineering Education

The discussion on the subject of engineering education at the last meeting of the Institute of Electrical Engineers was one of the most active of the year, a fact significant of the interest taken in the subject. The opinions expressed as to the proper studies to be pursued by the electrical engineering student were most diverse. On one point, however, practically all were agreed, namely, that it is impossible to crowd into a four-years' course all of the instruction which the young electrical engineer will find useful after graduation. If this is true at the present time it is evident that as the art advances year by year it will be necessary still further to circumscribe the number of subjects included in the required courses. This will involve yearly additional sacrifice of instruction in those branches which were classed by one speaker as cultural and scientific rather than purely technical.

Another point brought out clearly at the meeting was that the engineering schools are now attracting many men whose fields of activity after graduation are almost as varied as those of the graduates in the academic or arts department. These men would formerly have matriculated in the older college course, but the inclusion into so many lines of industry now of engineering principles makes an engineering education a desideratum. At the same time a knowledge of the purely technical branches of the subject is not so important for many of these students as a good acquaintance with such topics as business-law, rhetoric and modern languages and ability to meet the political and economic questions which are apt to arise in the administration of engineering undertakings.

The technical educator is then face to face with a serious dilemma. Should he confine his curriculum to the purely technical studies which experience has shown require the entire time of the undergraduate to master, or should he subordinate some of them to those cultural and scientific branches desired by a large number of men entering the technical schools yearly? The answer to this question is really dependent upon a decision whether it is possible to introduce electives in an engineering school to the same or nearly the same extent as in the arts course. One reason advanced for not following this plan is the expense of supplying the varied instruction, but this hardly applies in universities, where these outside courses are taught in other departments. Another objection has been the question of degree, because the title of engineer, civil, mechanical or electrical, awarded at the end of the course, is generally considered to imply familiarity with certain prescribed studies. This objection may be valid and may not. Certainly, however, the tradition is not as venerable as that which limited the degree of B.A. to a college course which should include at least two years of study in Latin and Greek. This requirement is no longer in force in many leading universities. If necessary, the engineer's degree could be reserved for a post-graduate course along certain well-defined lines. The chief point is that the electrical engineering industry is now calling for many men whose training should primarily be along engineering lines, but who also require certain instruction which the technical schools cannot give unless they incorporate into their curricula a liberal system of electives.

## Calibration of Instruments

Modern power station, power transmission and substation practice calls for a liberal use of indicating, recording and integrating instruments. Although not so remote, the day is passed when steam and water gages, a voltmeter and some sort of current indicators were all that were considered necessary in the line of instruments in the electric power station. The engineer in charge of the operation of to-day's station, even if it is of moderate capacity, is not content without a large number of instruments, indicators and recorders that but a few years ago found no place except in the laboratory, if, indeed, they existed at all. It is only proper that he should desire to have these facilities available, as without their intelligent use it is impossible to operate with that extreme economy which is so constantly demanded.

The list is a long one. Of electrical instruments it comprises voltmeters, ammeters, wattmeters, frequency and power factor meters, ground detectors, ohmmeters and bridges to suit any particular service. Other than electrical instruments, the pressure and vacuum gages, speed counters, tachometers, thermometers, draft gages, calorimeters water meters, etc., might be enumerated, and even the field of chemistry has been entered by the introduction of the valuable $CO_2$ indicators and recorders.

The indicating instruments furnish an indispensable guide for the actions of the operating force. As to whether or not such action is taken as is demanded by the conditions at all times, the recording or curve-drawing instruments furnish a most valuable record to the management. Finally, the total amount of the work done is presented by the integrating wattmeters. Conversely, if totals as furnished by the wattmeters indicate a possibility of betterment in economy, the curves from the various recording meters are looked to for an indication as to the part of the plant in which improvement may be made, and as to the exact nature of the reform to be instituted. Instructions as to certain changes in operation, even though possibly small, are given, and the operating force looks to its indicating instruments as the most valuable aid in accurately carrying out the plans outlined.

The best economy with any plant, no matter how refined the apparatus, is not possible without the use of many of these instruments. In fact, it is generally the case that the introduction of refinements for better economy makes the various instruments of precision more and more indispensable. Designing engineers and operating engineers have realized this necessity, as the large amount of such apparatus in use testifies. It is, however, doubtful if a sufficient number of operators realize the importance of a periodic calibration of their various instruments. With electrical instruments, especially so-called "station instruments," any one of a considerable number of causes may suffice to throw off their indications. The loosening of an electrical or mechanical connection, the development of flaws or roughness in minute bearings or moving parts, the changing of permanent magnets, may be responsible for inaccuracies. Nor are the electrical instruments the only ones to be watched and cared for. Those used in the steam end of the plant are also subject to changes and should be periodically calibrated. Gages and engine indicators frequently give wrong indications, due to changes in springs, and especially recording temperature and pressure gages should be checked frequently with standards.

If the measuring and weighing scales used in proportioning the component parts of a manufacturer's output, or in calculating such output for sale, were subject to such changes without notice as are the instruments which are relied upon by the power engineer, how unfortunate would the manufacturer consider himself! The power station is a manufacturing concern, and it is undoubtedly unfortunate that its various instruments are not all as constantly reliable as the foot rule or the balance scales, but it is still more unfortunate that so many operators do not realize and act on this fact. Such realization would lead to periodic calibration, the service time between calibrations depending, of course, not only upon the type of instrument, but also upon its conditions of service.

A refusal to adopt the use of the full quota of instruments reminds one of the man walking along the street holding a finger of each hand in front of him, who asked the stranger not to jostle him as he was carrying the measurement for a pane of glass in the distance between his fingers. Absurd, certainly, but would the operator who does not consider calibration important go for a pane of glass with a piece of cotton string for the measurement?

## Kicks on Small Railway Systems

Some managements govern their policy in dealing with the public on the principle that to invite criticism of the service is to spoil the former satisfied patron and make him a constant seeker for trouble, so that what were before merely negligible inconveniences appear to him as flagrant impositions on the part of the operating company. This is no doubt true to a certain extent. The manager who advertises too extensively that he is anxious to listen to complaints will very frequently find that the victims of fancied wrongs are ready to monopolize all his time in giving their version of unpleasant incidents.

But it cannot be denied that there is a class of patrons who, if given a little encouragement, could, from time to time, report things that the manager would be very glad to know. Schedules worked out theoretically in the office sometimes don't work out practically. Trainmen frequently know when an inspector is around and conduct themselves accordingly. It is the time the inspector is not on the car that little defects in the operating system which increase the cost of operation and inconvenience to passengers are apt to occur. They are evident only to the patrons of the company. Unless they are reported, the company will never become acquainted with them.

This difficulty can often be overcome if the manager and other officials of the company diplomatically suggest to their personal friends that the latter report any errors of omission and commission which may come under their observation. The selection of such amateur inspectors would have to be made with discretion and among the regular patrons of the road, as it might invite a host of impracticable suggestions. But if the manager knew that the criticisms came from persons upon whose judgment he could rely, they would frequently bring to light some real grievances and defects which otherwise would not be discovered.

# NOTES ON THE BLACK RIVER TRACTION COMPANY OF WATERTOWN, N. Y.

BY A. H. LEFEVRE,
General Manager Black River Traction Company.

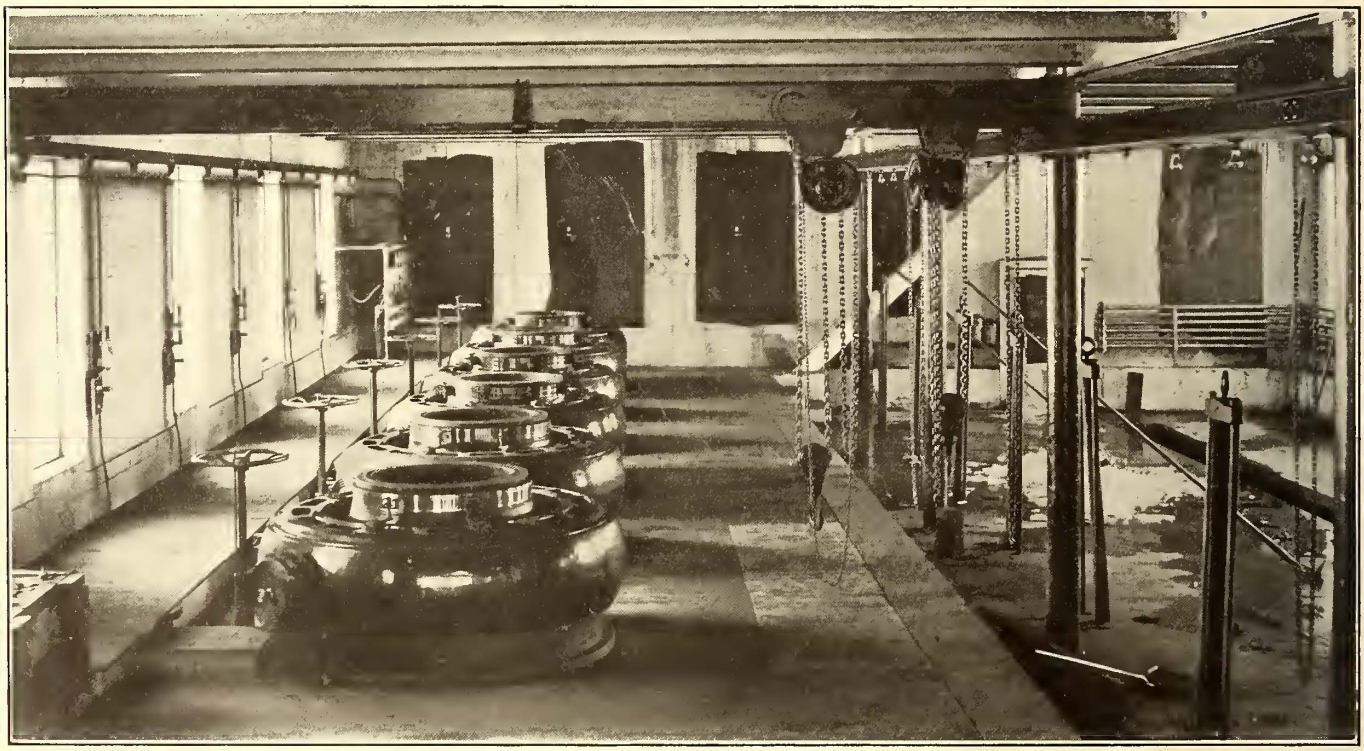
Many of your readers have had experience with properties purchased from a receiver at a nominal price, after the original promoters had worn out the equipment and failed to meet the fixed charges. Very few possibly have enjoyed the pleasure of being placed in charge of such a property with money enough to put it in good shape and the services of a man able to originate such devices as the successful operation of a small electric railway requires. This has been my good fortune and as we have gone through some interesting experiences I would like the privilege of describing them for the benefit of your readers and to give credit to Edward A. Barber, our superintendent since 1901, for the improvements he has made and which are described in detail below.

The road runs through the City of Watertown about two miles, thence westerly through the villages of Glen Park and Brownville to Dexter, a total distance of ten miles. When the present superintendent was put in charge, early in 1901, the road had no steam plant. It was operated from rented water-power which was inadequate for the service and had a happy faculty of going out of commission whenever it was specially needed.

The track consisted of old 4¼-in. girder rail in the city and 56-lb. T relayers outside. There were eleven steam crossings at grade completely worn out and the overhead work had to be picked up daily. The car equipment consisted of an assortment which included two types of Steel motors and some G. E. 800's. All had been purchased second hand and had been poorly kept up so that a car seldom left the barn to stay out all day without being towed in. Much more could be said regarding the poor condition of this property, but I will pass on to more cheerful ground, beginning with the fact that the road serves a heavy manufacturing district due to the splendid water-power of this Black River Valley and that the service of the road was well patronized, so that there was no doubt of the wisdom of making the investment required.

### CAR HOUSE AND POWER STATION.

The first move was the building of a car barn 70 ft. x 300 ft., where a 500-hp steam plant was installed. Following that a water-power station was built where six 100-kw generators direct-connected to six 150-hp vertical-shaft wheels were installed. Attention could then be directed to the rolling stock and the operation of the railway itself. While mentioning this water-power station it may not be amiss to describe it briefly as it is probably the only water-power station in the country generating current for a railway without attendance and giving uniform voltage without a governor or any regulating device. This is



INTERIOR OF THE POWER STATION OF THE BLACK RIVER TRACTION CO., IN WHICH NO ATTENDANTS ARE REQUIRED

accomplished by providing each generator with a very strong series field and comparatively weak shunt field. When the turbine is running at its maximum speed of 200 r. p. m. with full gate and no load, the generator, working on shunt field alone, has a voltage of 550. As the load goes on, the speed, and consequently the current in the shunt coils, drops off, but the current in the series coil increases, and the winding of the series coil is so proportioned that the total flux increases with the load, that is, inversely with the speed. In this way the decrease in speed of the armature is compensated for by an increase in the strength of the series field and a practically constant voltage is assured. This station has operated continuously for several years with practically no attendance except that required to renew brushes. Visitors are always welcome.

### TRACK CONSTRUCTION.

The tracks have been relaid over the entire line with Pennsylvania Section 85 in all public streets and 60-lb. A. S. C. E. T outside. All crossings are manganese steel. The line between Brownville and Dexter contained origi-

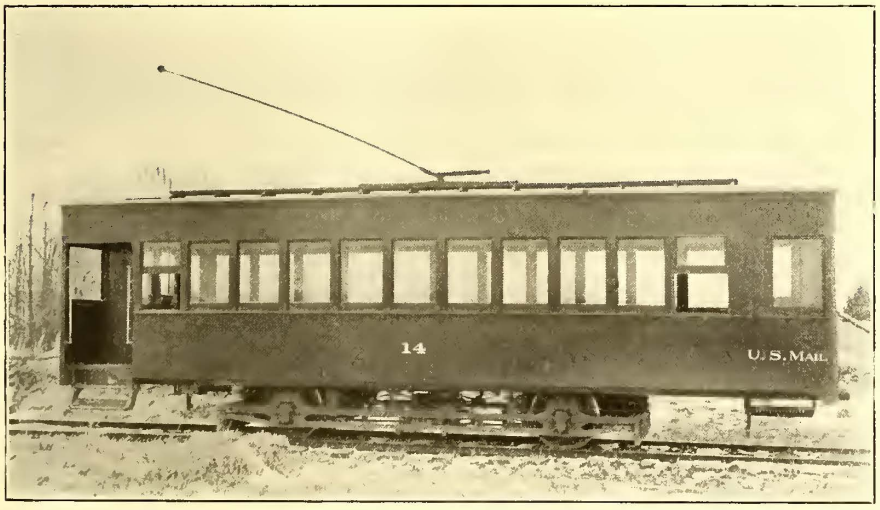
nally three wooden tresties aggregating 800 ft. in length, but these have been replaced by earth embankments.

Considerable trouble was experienced with broken bonds under the angle bars of the 60-lb. rail and as thieves harvested the long copper bonds around the joint the latter have been replaced by an iron strap bond, 2 ins. x ⅜ in. x 36 ins. This bond spans the angle bars and is connected to the rail webs with expansible copper plugs; it has been used several years with great satisfaction. It is inexpensive, not valuable enough to be worth stealing and is applied by the track gang as fast as the concealed bonds give out.

### MANAGEMENT OF CAR CREWS.

Early in his work Mr. Barber adopted a system which called for the simplest form of construction and operation possible. For instance, the conductors and motormen were disciplined by serving time on the extra list, but the extra list was kept small so that men were never thrown out of work entirely. The large amount of bookkeeping or reports usually exacted from the conductors was dispensed with. Secret registers were installed, so that after the day's work is finished the conductor counts out the change he started with, places the balance with his tickets and transfers in the envelope and goes home. This plan has been found much more satisfactory to both company and men than the open register. It might not prove so desirable elsewhere, but with the high-class men we employ we would not think of changing.

Cars in one direction always have the right of way if two accidentally meet between switches, but the signal lights employed are so simple that they are always in order and it is very rare for two cars to enter the same block. The man who makes a mistake in running by a block gets the extra list for three days, and a man does not like to lose his run. Extra men are disciplined by being moved back from the position they occupy on the extra list, which is quite serious, as the man at the head may be called any day to a steady run.




SIDE VIEW OF THE STANDARD CAR OF THE BLACK RIVER TRACTION COMPANY

### SNOW SWEEPER.

The snow sweeper as ordinarily arranged sweeps with one brush; result, trouble with two clutches. In our sweeper the motor is connected with both brushes. The forward brush is raised about 2 ins. above the track so as to take off the top of the snow, while the rear brush clears the snow to the rails. We believe that this takes less power than the old way and certainly reduces the complications of having two clutches.

### STEEL WHEELS.

Some street railways like to use a fair proportion of flat wheels on their cars, so they pay out about twice as much for cast wheels, which will give the desired amount of flats, as they would for solid forged steel wheels. The Black River Traction Company adopted steel forged wheels as soon as they were put on the market and we have not had a flat wheel in over three years. Why blame the motorman?


END VIEW OF CAR. THE SQUARE END ASSISTS IN VENTILATION

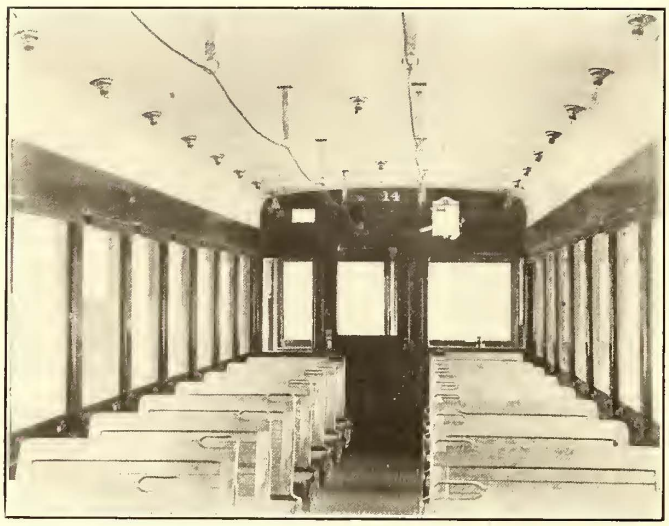
### LIGHTNING ARRESTERS.

It is usual to buy some lightning arresters, distribute them on the line and lead an upright life in hopes that lightning will spare your armatures and fields. Mr. Barber figured that if lightning struck churches, which never offended Providence, it would be better to prepare to be struck by lightning now and then, so he made a lightning arrester for each car and each feed line as it enters the power house, and in four years we have never lost a machine, never pulled down the trolley and never taken the power off the line. We start 600 ft. above sea level and have lightning storms all summer. People like the cars when it rains and we like their money. The lightning arresters are simple lead-foil condensers, connected across the line. One is installed in each car and one of large size for each feeder at the station. They are not distributed along the line, as it doesn't hurt the feed nor trolley wire to carry lightning—the apparatus is all that needs protection.

### TRUCKS AND CARS.

After relaying the whole 10 miles of track we felt we could begin to enjoy the result of the money and time expended on the road, but we had forgotten the other public

utilities in the city. New houses were being erected along the line, so that gas, water, sewer, telephone and other conduits had to cross and be laid parallel to our tracks, which soon began to look and ride rough. This brought home the question of cars, trucks and wheels. The cars were the usual 20-ft. bodies on 7-ft. base single trucks. After closed vestibules were added the extra weight pulled



INTERIOR OF CAR, SHOWING HIGH WINDOWS AND ABSENCE OF MONITOR

the bodies out of shape, so that we decided to begin the building of a new type of car, with a steel frame supporting the vestibules as well as the body.

This rigid construction brought out the defect in the support afforded by a single truck connected at the corners with the car body when passing over low joints. Mr. Barber then designed an original single-truck which carries the car on two bolsters located on cross beams at the ends of the truck side frames. In other words, the body is supported on the single truck exactly as it would be if it were carried on two trucks.

The truck bolsters consist of five 2-ton elliptic springs for each end, mounted in a rocker plate which allows the car to roll a foot either side of the vertical line, this rolling being limited by four elliptic springs on the side frames midway between the front and rear wheels.

This construction permits the car wheels to pass low joints of any degree without affecting the car body, which responds so slowly, owing to its own inertia, that the wheels are back to the proper track level before the body moves out of its regular upright position. It also eliminates the galloping motion common to single trucks.

The first truck of this kind designed by Mr. Barber had a 10-ft. wheel base in order to give room for the rigid motor suspension, the air brake cylinders, the two elliptic side springs and the air compressor, all these being mounted on the truck to keep the car body free from the noise of their operation. The long truck worked its way through the switches and around 45-ft. radius curves so well that, after using it under ten cars for over two years, we decided to take advantage of the long wheel base to design a single truck with a 12-ft. base and a car body which would seat forty people and practically make the use of double-truck cars unnecessary. This radical departure in truck construction accomplishes so many desirable things that a few of them will be enumerated, even if it makes this article read like a patent medicine advertisement.

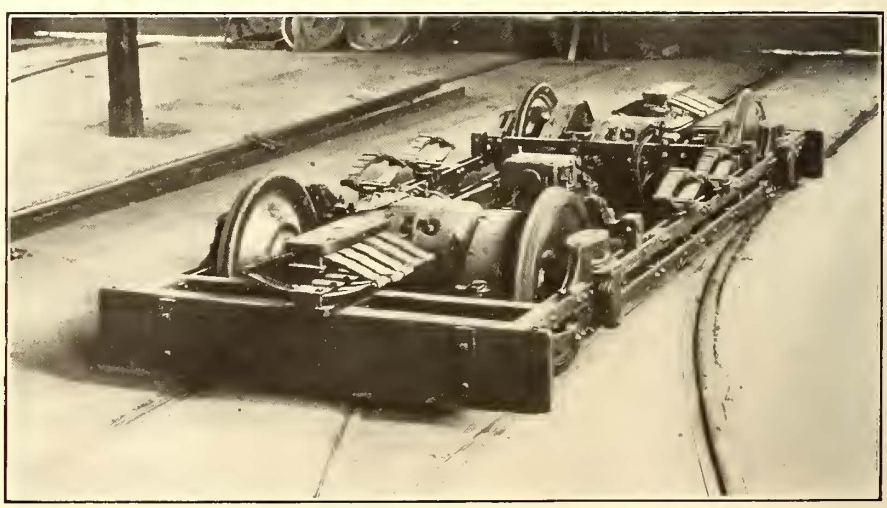
First, by making the car so that the windows rise above the average person's head, it becomes a good summer car. In our case we have sold our old open cars after trying to run them alternately with the new cars last summer. The latter were so much more comfortable for the ladies that they carried much the larger share of the traffic and the old cars were practically neglected.

The adoption of the high windows made it necessary to sacrifice the monitor deck, for which we had no love anyway, but produced a roof which was 1200 lbs. lighter than the old one and much stronger. It also gave us room for the two red marker lamps and the head-lights at each end of the car—way up out of reach of the mud spattered by the horses' feet and where the light from the headlight does not blind the motorman. Incidentally, these cars are free from step accidents. The open cars, to our sorrow, were not. The double Stanwood steps used are 15 ins. above the rail.

A locked compartment is provided for the motorman, so the people never enter it, and as the car is a double ender the compartment in the rear of the car is utilized to carry U. S. mail on mail trips. This feature has been commended by the Postal Department. Sliding doors have been abandoned and plain swing doors with the ordinary latch within the comprehension of everyone have been substituted for them.

### VENTILATION.

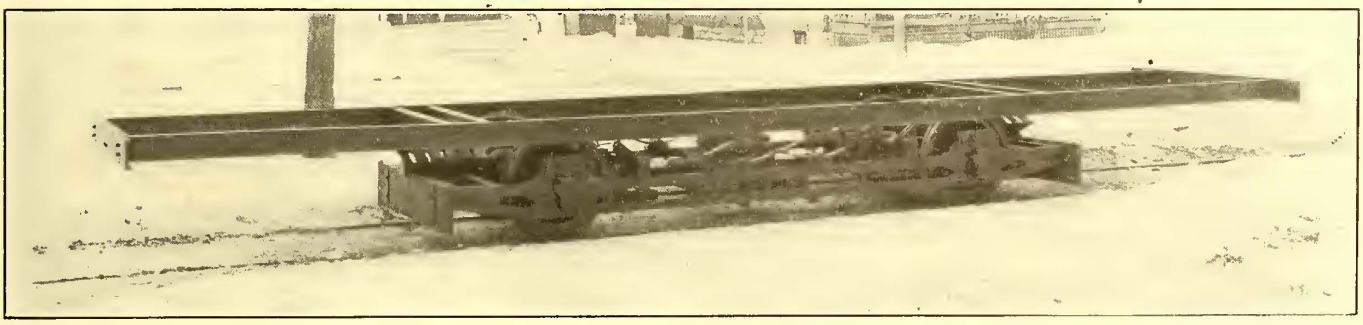
The square front, which gives the car a peculiar appearance, is the result of several years' experiments on ventilation. In passing through the air a partial vacuum is created in the front vestibule, which is open at the side as no vestibule doors are used. This vacuum draws the air from the car through a grated opening which is provided over the door between the car and the front vestibule. Experience has shown that this affords perfect ventilation even with the rear ventilator closed. The fresh air enters through the minute openings around the windows and rear door, which are purposely fitted rather loosely. No cold



END VIEW OF TRUCK, SHOWING METHOD OF MOUNTING MOTORS AND AIR COMPRESSOR ON TRUCK; ALSO ARRANGEMENT OF SPRINGS

drafts are perceptible and the foul air passes out of the front ventilator. When a large crowd of people boards the car the conductor opens the rear ventilator, which allows cold air to enter so rapidly that people at the rear portion of the car are subjected to a slight draft, but this has not been found objectionable, as it is not done except in a crowded car.

This method of ventilation does not seriously affect the heating of the car, which is comfortably maintained by ten



SIDE VIEW OF TRUCK CARRYING STEEL UNDER FRAME OF CAR BODY

electric heaters in spite of the fact that temperatures of 40 degs. below zero are not infrequent in Watertown. These heaters are located in the walls below the seats. The seats have the usual grab handles, but the ceiling is not provided with straps—it is painted white enamel and reflects the light from the twenty-five 16-cp lamps used so as to make it brilliantly lighted at night.

### CAR ADVERTISING.

Another novel feature of the cars is the fact that no advertising cards are carried in them. After considering the question carefully they were abandoned for the following reasons: Absence of advertising gives a better appearance to the interior of the cars; it permits the use of higher windows; the car can be kept clean more easily.

When the cost of changing the cards is considered, the profit is not sufficient to counterbalance the objections mentioned above.

### MOTOR SUSPENSION AND BRAKING.

No check plates are used on the axles which are fitted to butt loosely against the caps and are not reduced in size, the journal and axle bearings being the same, 3¾ ins. x 9 ins. in both cases. The rigid suspension for the motors obviates the necessity of thrust collars, which are, therefore, left out, and provides support for the brake shoes, so that no brake beams are employed. The four plungers of the two air brake cylinders operate directly on each shoe, so that practically each wheel has a braking system of its own. Even if two shoes were entirely worn out and inoperative, the system would still allow perfect control of the car by the air brake. There are no adjustments to be made as the wheels and shoes wear down, and the quantity of air required is so small that the smallest compressor is entirely ample for the work.

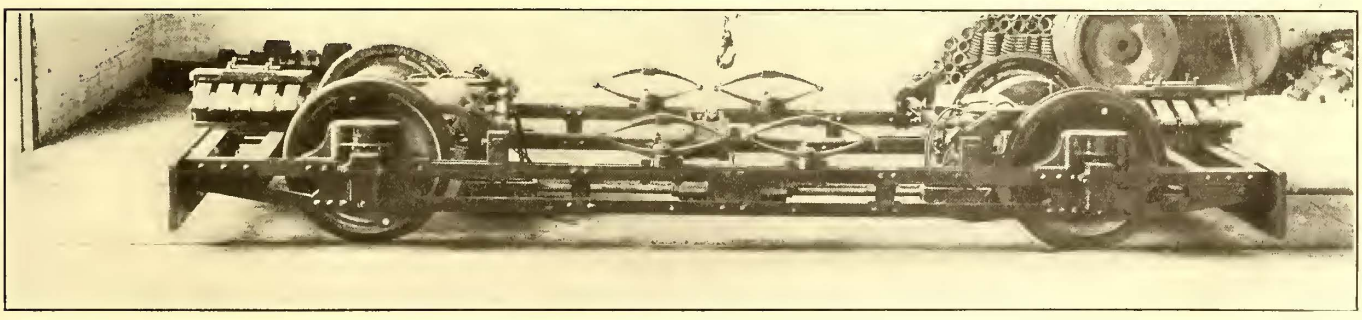
The air brake governor is located in the motorman's cab and is simple, consisting of a 2-in. diameter piston with air pressure on one side and a long coil spring on the other, operating a quick-break switch.

### MOTOR SUSPENSION.

The equipment consists of two K-10 controllers, two GE-54 motors with 17:64 gears, forged steel wheels 33 ins. diameter, 2¼-in. treads, pressed on cold rolled axles 3¾ ins. diameter. As the weight of the complete car is hardly half that of the average double-truck car with four-motor equipment, its consumption of power is small. A recent test on fairly level track showed 55 amps. to start, dropping to 20 amps. when running in series position, jumping to 75 amps. in parallel, and dropping to 35 amps. when a speed of 25 m. p. h. was attained. Our experience during the past three years would indicate that the motors are ample for the service and grades on our line.

### CONCLUSION.

In closing this article, I want to say that if any of your readers will come to Watertown we shall be pleased to prove to their satisfaction it is possible to operate a street railway successfully and not conform to many of the accepted practices usual on such lines. They should not condemn the homely car till they have ridden in it and seen how little it costs to keep it circulating over the road when only few people ride, compared with the rush-hour periods. They should remember, also, that while the single color used in painting does not afford much display of artistic taste, it is not difficult of application. This is convenient at three o'clock in the morning, when the repair man has to insert a few feet of weather boarding knocked off by a team a few hours previously, and allows the car to take its place promptly in the early schedule.



SIDE VIEW OF TRUCK, SHOWING NOVEL ARRANGEMENT OF SPRINGS

## EARNINGS OF MAINE ROADS FOR YEAR

The forty-ninth annual report of the Railroad Commissioners of Maine, covering the operation of the steam and street railways within the state for the year ended June 30, 1907, has just been made public. From it are reproduced herewith the comparative tables of mileage, gross earnings, etc., and the earnings, charges, income and dividends.

One of the most interesting tables gives the gross income from operation, the operating expenses, the percentage of operating expenses to gross income and the net income from operation for the years 1896 to 1907, inclusive. This table shows that in 1896 the gross income from operation of all the roads was $659,998, while in 1907 it was $2,214,269. The same source shows the operating expenses for 1896 to have been $482,492, while for 1907 they were $1,382,189. The income above operating expenses for 1896 was $187,506, while for 1907 it was $832,079. In all 383 miles of line are in operation, of which 36,550,087 passengers were carried the last year.

The passenger car mileage for the year varied from 86,640 to 3,313,387; the passenger car-hours from 4904 to 115,848, with three roads not reporting car-hours. The Portland Railroad Company carried more passengers than any other—14,656,599 fare passengers and 2,404,038 on transfers. The passenger earnings per car-mile of the roads reporting to the Commission varied from $0.1525 to $0.3148. The passenger earnings per car-hour varied from $1.18 to $4.37. The operating expenses per car-mile vary from $0.1240 to $0.49. Per car-hour the expenses varied from $1.03 to $4.08.

The number of men employed on the electric railways in Maine was 1549 and the wages paid during the year amounted to $902,065.52.

**The following table gives the mileage, gross earnings from operation, operating expenses, per cent. of expenses to income, net earnings from operation per mile of road operated to June 30, 1906, and 1907, of the street railroads doing business in Maine.**

| Railways. | 1906. Miles operated. | 1906. Earnings from operation per mile. | 1906. Expenses of operation per mile. | 1906. Net earnings from operation per mile. | 1906. Per cent of operating expenses to earnings from operation. | 1907. Miles operated. | 1907. Earnings from operation per mile. | 1907. Expenses of operation per mile. | 1907. Net earnings from operation per mile. | 1907. Per cent of operating expenses to earnings from operation. |
|---|---|---|---|---|---|---|---|---|---|---|
| Atlantic Shore Line | 73.91 | $3,841 28 | $2,255 11 | $1,586 17 | 58.73 | 73.71 | $3,933 39 | $2,177 95 | $1,815 44 | 54.50 |
| Augusta, Winthrop and Gardiner | 26.66 | 3,885 10 | 2,327 20 | 1,557 90 | 59.90 | 26.66 | *3,303 14 | 2,028 62 | 1,274 51 | 62.26 |
| Auburn and Turner Railroad | 8.50 | 1,639 32 | 1,042 46 | 645 86 | 61.70 | 8.50 | 1,971 32 | 1,618 28 | 353 04 | 82.00 |
| Bangor Railway and Electric Company | 56.03 | 4,430 03 | 2,604 62 | 1,825 41 | 58.87 | 56.04 | 4,678 97 | 2,835 61 | 1,843 36 | 60.60 |
| Benton and Fairfield | 4.12 | 2,472 24 | 1,982 46 | 489 78 | 79.00 | 4.12 | 2,817 87 | 2,459 94 | 362 93 | 87.00 |
| Biddeford and Saco Railroad | 7.61 | 8,342 96 | 5,752 33 | 2,590 63 | 69.00 | 7.61 | 8,880 70 | 6,496 38 | 2,384 32 | 73.00 |
| Calais Street | 7.00 | 3,979 28 | 3,271 57 | 707 71 | 82.21 | 7.00 | 4,066 57 | 3,845 62 | 220 95 | 94.56 |
| Fryeburg Horse Railroad | 3.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Lewiston, Augusta and Waterville Street ‡ | ..... | ..... | ..... | ..... | ..... | 79.56 | †821 51 | †565 01 | †255 50 | 70.00 |
| Lewiston, Brunswick and Bath Street | 52.90 | 4,644 29 | 3,102 51 | 1,532 78 | 66.82 | 52.90§ | *4,024 40 | *2,585 60 | *1,438 80 | 65.51 |
| Norway and Paris Street | 2.13 | 4,458 07 | 2,327 80 | 2,130 27 | 52.21 | 2.13 | 4,679 62 | 3,202 94 | 1,476 68 | 68.44 |
| Portland Railroad | 78.50 | 9,273 31 | 6,667 91 | 2,595 40 | 72.00 | 78.50 | 9,679 51 | 7,086 32 | 2,593 19 | 73.00 |
| Portland and Brunswick Street | 15.40 | 2,329 28 | 1,863 43 | 465 85 | 80.00 | 15.80 | 2,401 71 | 1,889 10 | 512 61 | 78.00 |
| Rockland, South Thomaston and Owls Head | ..... | ..... | ..... | ..... | ..... | 3.80 | 1,154 41 | 513 32 | 641 09 | 44.46 |
| Rockland, Thomaston and Camden Street | 21.28 | 4,981 92 | 2,917 61 | 2,064 31 | 58.56 | 21.17 | 4,984 18 | 3,095 36 | 1,888 82 | 63.83 |
| Somerset Traction Company | 12.20 | 1,757 12 | 1,159 24 | 697 88 | 60.00 | 12.20 | 1,636 82 | 1,215 02 | 421 80 | 74.00 |
| Waterville and Fairfield | 4.90 | 7,492 55 | 6,407 99 | 1,084 56 | 85.00 | 4.90 | 7,918 93 | 6,264 24 | 1,654 64 | 71.30 |
| Waterville and Oakland Street | 4.75 | 5,136 58 | 3,334 94 | 1,801 64 | 64.00 | 5.40 | 5,588 69 | 3,770 72 | 1,817 97 | 67.00 |

* Ten months' operation. † Two months' operation of the A. W. & G. Railway and L. B. & B. Street Railway.
‡ Formerly A. W. & G. Railway and L. B. & B. Street Railway. § Included in Lewiston, Augusta and Waterville Street Railway.

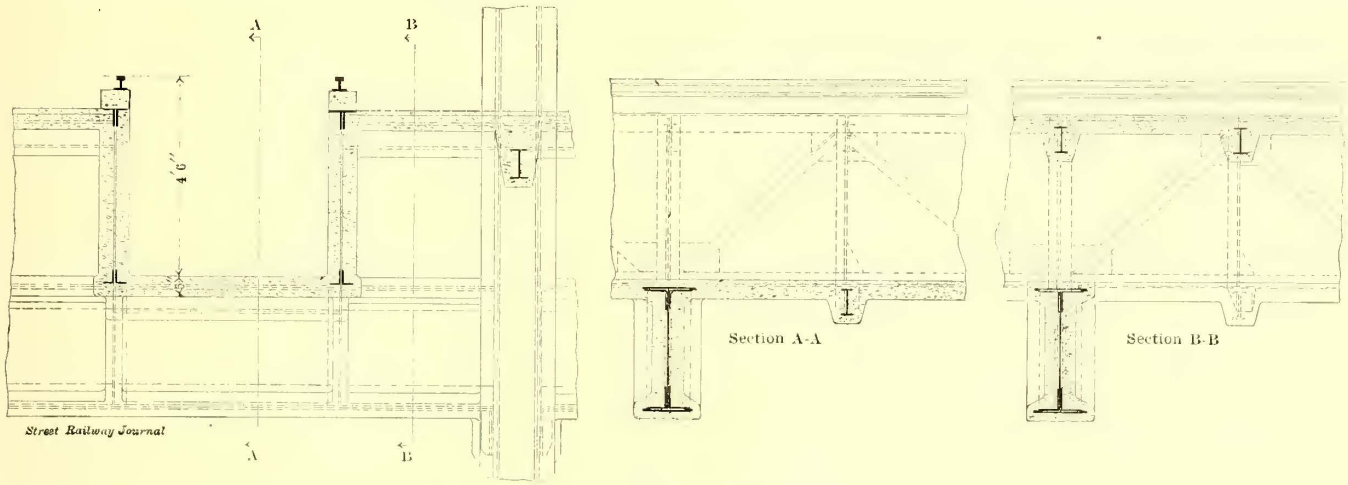
**The following table shows the transportation earnings, other earnings, charges, net divisible income, dividends paid, per cent., surplus or deficit from operations for the year ending June 30, 1907.**

| Railways. | Transportation earnings. | Other earnings | Miscellaneous income. | Gross income. | Operating expenses. | Interest, taxes and other charges. | Total charges. | Net income. | Dividends paid. | Surplus for the year. |
|---|---|---|---|---|---|---|---|---|---|---|
| ¶Atlantic Shore Line | $230,759 45 | $64,392 64 | $3,125 00 | $298,277 09 | $160,972 52 | $93,649 93 | $254,622 45 | $43,654 64 | ..... | $43,079 19 |
| Aub. and Tur. R. R. | 15,740 38 | 1,015 88 | ..... | 16,756.26 | 13,755 41 | 3,260 75 | 17,016 16 | **259 90 | $1,750 00 | **2,009 90 |
| Augusta, Winthrop and Gardiner | 86,368 97 | 1,192 79 | ..... | 88,061 76 | 54,083 28 | 18,043 39 | 72,126 67 | 15,935 09 | 3,000 00 | *12,935 09 |
| ¶Bangor Railw'y and Electric Company | 254,752 32 | 7,410 66 | 108,114 83 | 370,277 81 | 158,879 13 | 93,614 04 | 252,493 17 | 117,784 64 | 68,698 40 | 16,121 68 |
| Benton and Fairfield | 11,588 63 | 21 00 | ..... | 11,609 63 | 10,114 37 | 1,858 49 | 11,972 86 | **363 23 | ..... | **363 23 |
| Biddeford and Saco | 60,497 20 | 70 85 | ..... | 67,582 20 | 49,437 50 | 7,320 96 | 56,758 46 | 10,823 74 | 5,00 000 | 5,823 74 |
| Calais Street | 28,030 90 | 435 10 | ..... | 28,466 00 | 26,919 39 | 5,468 78 | 32,388 17 | **3,922 17 | ..... | **3,922 17 |
| Fryeburg H'se R. R. estimated | 600 00 | ..... | ..... | 600 00 | 600 00 | ..... | 600 00 | ..... | ..... | ..... |
| Lewistown, Augusta and Waterville St. | ‡65,280 07 | ..... | ..... | 65,280 07 | 44,952 38 | 14,407 45 | 59,359 83 | 5,920 24 | ..... | 5,920 24 |
| Lewiston, Brunsw'k and Bath Street | *202,733 57 | 10,157 69 | ..... | 212,891 26 | 136,778 45 | 48,533 55 | 185,312 00 | 27,579 26 | ..... | 27,579 26 |
| Nor'y and Paris St. | 9,867 63 | 99 96 | 5,753 73 | 15,721 32 | 6,822 78 | 6,144 36 | 12,967 14 | 2,754 18 | ..... | 2,754 18 |
| Portland Railroad | 750,607 00 | 9,234 84 | 30 00 | 759,871 84 | 356,276 61 | 110,880 42 | 667,157 03 | 92,714 81 | 79,944 00 | 12,770 81 |
| Ptld. and Brswk. St. | 37,547 16 | 400 00 | 7,500 00 | 45,447 16 | 29,847 77 | 12,584 50 | 42,432 27 | 3,014 89 | ..... | 3,014 89 |
| Rockland, S. Thomaston and Owls H. | 4,386 76 | – | – | 4,386 76 | 1,950 62 | 263 75 | 2,214 37 | 2,172 39 | ..... | 2,172 39 |
| Rockland, Thomaston and Cam'n St. | 103,427 64 | 2,072 70 | $27,932 25 | 133,432 59 | 65,519 67 | 37,422 29 | 102,941 96 | 30,490 63 | 20,000 00 | 10,490 63 |
| Somerset Trac. Co. | 18,658 47 | 1,310 76 | 154 92 | 20,124 15 | 14,823 37 | 5,593 43 | 20,416 80 | **292 65 | ..... | **292 65 |
| Waterv. and Fairfld. | 37,604 05 | 1,198 72 | 5,083 60 | 43,886 37 | 30,694 80 | 12,805 02 | 43,499 82 | 386 55 | ..... | 386 55 |
| Wat. and Oakl'd St. | 30,038 95 | 140 00 | 2.158 69 | 32,337 64 | 20,361 90 | 6,842 31 | 27,204 21 | 5,133 43 | 5,000 00 | 133 43 |
| Total | $1,948,989 15 | $106,167 74 | $159,853 02 | $2,215,009 91 | $1,382,789 95 | $478,693 42 | $1,861,483 57 | $353,526 54 | $183,392 40 | $136,594 13 |

* Ten months' operation. † One per cent. on $300,000. § Net earnings from gas plant and interest on deposits. ** Deficit.
‡ Two months' operations of A. W. & G. St. R'y and L. B. & B. St. R'y under above name, Lewiston, Augusta and Waterville Street Railway.
¶ Reserves and special charges Atlantic Shore Line, $575.45; Bangor Railway and Electric Co., $32,964.50; total reserves and special charges, $33,540.01.

## NEW CAR HOUSE CONSTRUCTION IN NEW YORK

Some months ago a disastrous fire occurred in the car house of the New York City Railway Company at 146th Street and Lenox Avenue, by which a considerable portion of the building and its contents were destroyed. Since that time the engineering department of the company has been engaged in preparing plans for the complete rebuilding of the structure along different lines than the original building, so that the new car house should contain more conveniences for the storage of cars than it possessed before and should also be as safe from the destruction by fire as it could be made. However, the design of the present four-story building will be followed out as far as possible in the construction of the new one.

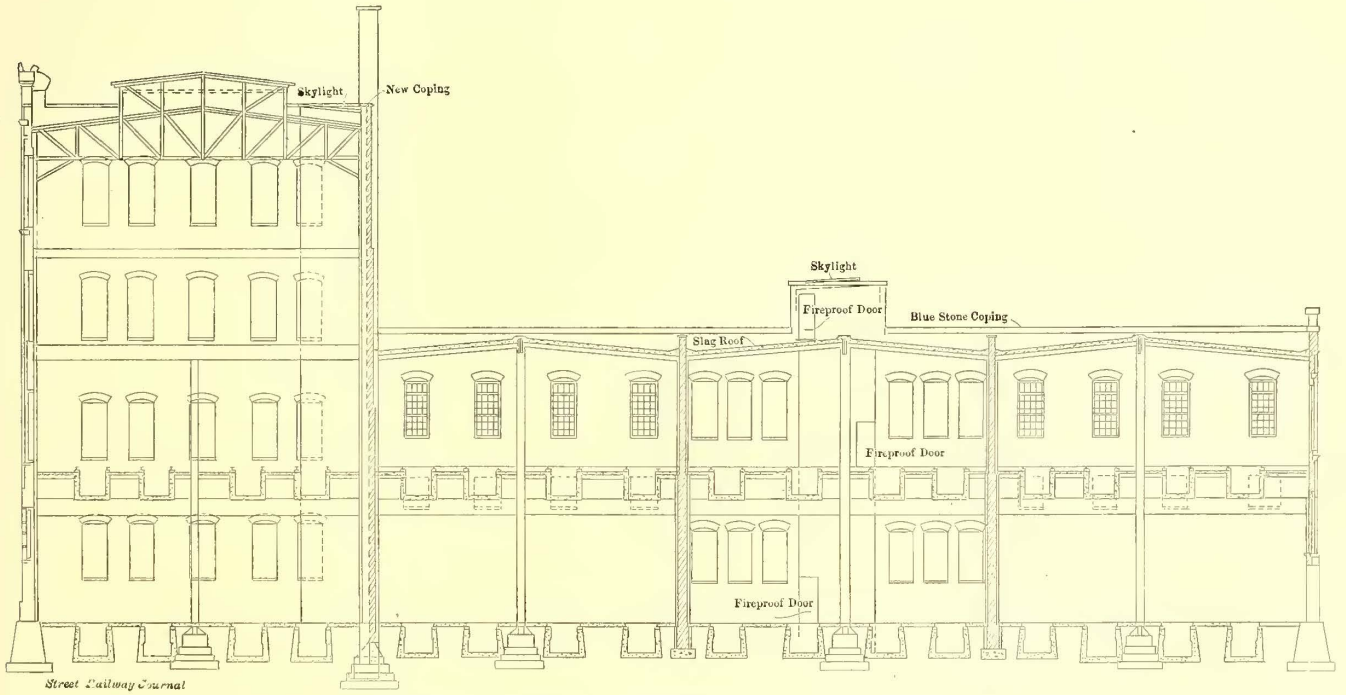



SECTION AND ELEVATION OF PITS

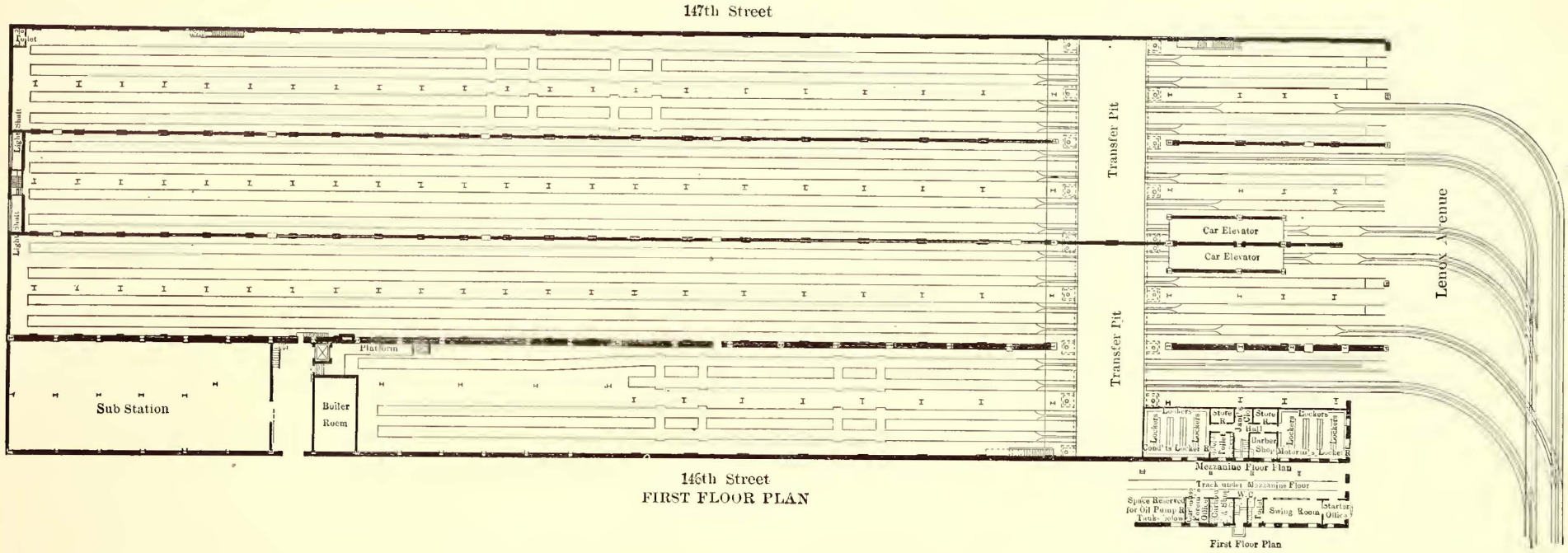
The problem was a rather complicated one because, owing to the high price of real estate in New York, it is necessary to store cars on two levels and also on account of the use of conduit plows to equip each track with a pit. Subsurface conductors are not used, however, in the car house, but current is taken from an overhead trolley with jumpers which are temporarily plugged into the cars when power is required to move them.

Plans of the first and second stories are presented on page 206. As will be noticed, the building, which is 199 ft. 10 ins. x 649 ft., is divided into four bays separated from each other by fireproof brick walls with double fire doors at all openings. These dividing walls are carried up in parapets 3 ft. above the roof. The walls are brick and the roof of concrete reinforced with the General Fireproofing Company's system of pin connected girder frames. All stairways are enclosed with fireproof partitions and fire doors, and all window frames are of metal, all sash glazing of wire glass.

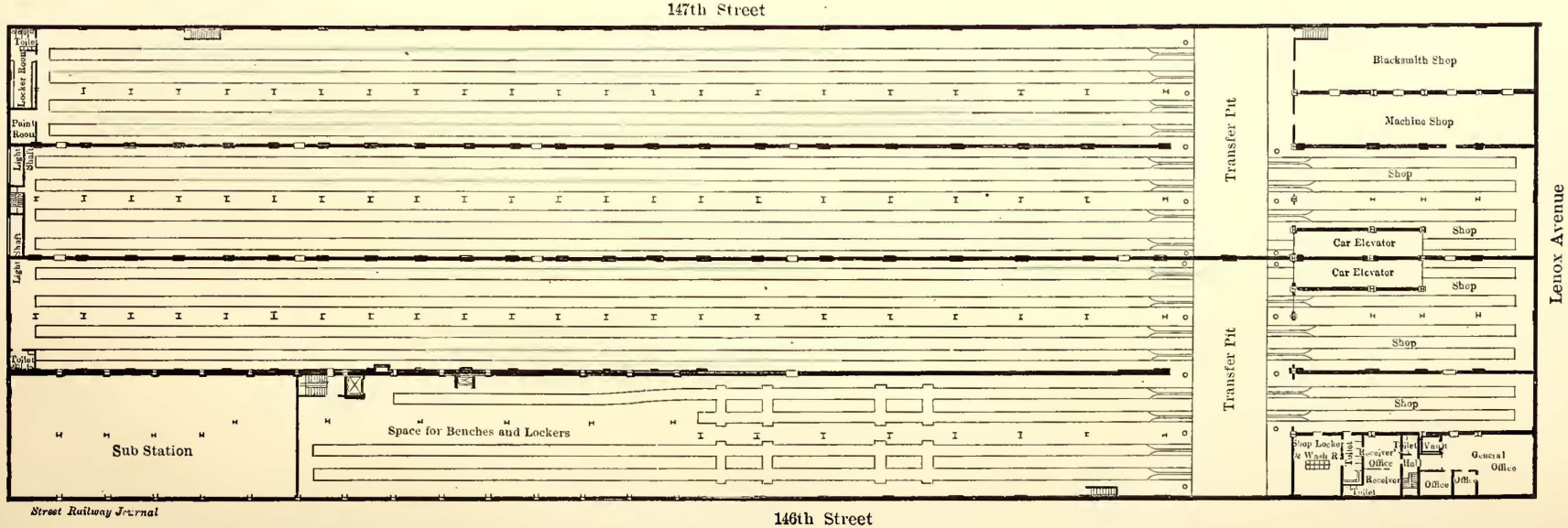
The cars enter from Lenox Avenue by six switches, two of which lead to two-car elevators. These elevators are inclosed in brick walls with automatic fire doors and have their machinery in fireproof inclosures. The transfer pit is 120 ft. back from the entrance, giving room on the entrance tracks and stub tracks for two cars between the transfer pit and the entrance. The oil rooms are on the ground floor and, like the paint room, will be equipped with the latest mechanical pumping and storage device to secure




SECTION OF 146TH STREET CAR HOUSE, LOOKING WEST, AND SHOWING PITS ON TWO FLOORS




FIRST FLOOR PLAN

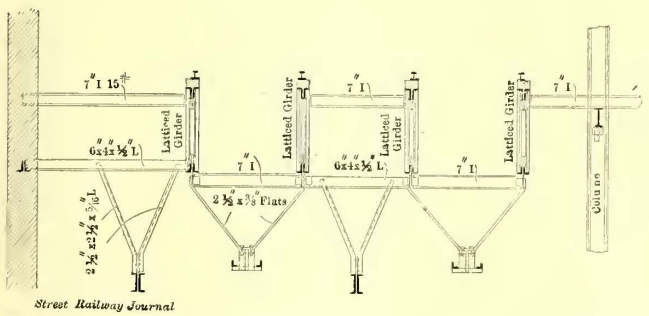



SECOND FLOOR PLAN

FIRST AND SECOND FLOOR PLANS OF THE 146TH STREET CAR HOUSE OF THE NEW YORK CITY RAILWAY COMPANY

economy, fire protection and cleanliness. The rooms for the starter, car house foreman, toilet for the car house and shop employees are also on the first floor. The store rooms and those for the conductors and motormen are on the mezzanine floor, where there are also a barber shop, toilet, locker-rooms, etc., for employees only. The second floor contains the general offices, receivers' offices, shop lockers, etc., as shown on the plan. The shops are on the second floor and in the tower. One corner of the building is given up for use as a sub-station.

A cross section of the car house is presented on page 205 and detail views of the second floor pit construction are




SECTION, SHOWING METHOD OF ATTACHING CHAIN-HOIST CHANNELS AND CONDUCTOR ANGLES TO SECOND-FLOOR GIRDERS

shown in the two smaller sections. As will be seen, the floor is supported on 33-in. cross girders which are spaced 20 ft. apart and are carried on longitudinal lattice girders 48 ins. high. The latter serve to form the sides of the pits. The upper ends of these girders are connected between pits by 7-in. I-beams on which a reinforced concrete floor between pits is laid. The bottom of the pits on the second floor is of concrete reinforced with expanded metal and cold-twisted slug bars, and supported on 7-in. I-beams which are connected to the lower part of the lattice girders. All of this structural steel work is embedded in concrete to a depth of 4 ins. and 8 ins., making an absolutely fireproof construction.

The small detail section on this page shows the method of attaching to the second floor girders the chain hoist channels and the conductor angles used for the cars on the first floor. The pits, in which ample provision is made for drainage, extend from the transfer table on each floor to the back of the building, except for a distance of 15 ft. on each side of the transfer pit. Here they are boarded over except for the plow slots, so that workmen can cross easily from one side of the building to the other. A slight change has been made in the arrangement of the pit tracks. The pit tracks instead of being placed on wooden stringers are laid on concrete and the angle plates shown in the cross section as being under the stringers have been placed beneath the beam shown in dotted lines under the devil strip.

The bays on 146th Street and 147th Street will be heated by steam pipes carried along the sides of the pit. The offices and shops are also to be heated by steam. Ceiling and aisle sprinklers will be installed, but the contract for this portion of the work has not yet been let.

The third and fourth floor in that portion of the building on 146th Street near Seventh Avenue will be used for light shop purposes, such as armature winding. The room for dipping and treating armatures will be located in the extension of the third floor at the west end of the building adjoining the armature shops and entirely cut off from the same. The armature shops will be fitted with elevators and hoists for handling material.

## THEATER TRAIN SERVICE ON THE INLAND EMPIRE

For some three years past the Inland Empire System running out of Spokane, Wash., has been operating a late theater train on its Cœur d'Alene division running between Spokane, Wash., and Cœur d'Alene, Idaho, a distance of 34 miles. This theater train, run daily, leaves the Spokane electric terminal at 11.20 p. m., and after a year of advertising and careful operation has become one of the best patronized trains on the road.

As previously stated in the STREET RAILWAY JOURNAL, the company on Dec. 21, 1907, began running a theater train service on the Spokane & Inland division of the Inland Empire System for Saturday nights only. The new train is made up of two motor coaches leaving Spokane electric terminal at 11.30 and running through to Spring Valley Junction, a distance of 40 miles, where the coaches separate, one going to Colfax on the western division and the other to Palouse on the eastern division. The distance from Spokane to either of the southern terminals, Colfax and Palouse, is 76 miles, and the running time is 3 hours. The fare charged on the S. & I. division is approximately 2½ cents per mile, the fare to Colfax and Palouse being $1.85 one way, $3.60 round trip.

This service has also proved very popular. In regard to patronage, on Jan. 4 the train carried on the outbound trip 54 passengers, on Jan. 11, 60, and on Jan. 18, 65, a very good showing for a starter. On the last named date there were two theater parties, one from Mt. Hope station numbering nineteen and one from Waverly numbering nine. The suburbanites appreciate the late train service and it is hoped that the patronage will be such the coming summer that this train can be run two nights a week and possibly more.

In view of the results attained it will be of interest to review how the company worked up patronage for the theater train. In December the company obtained a list of 500 names, from 25 to 50 in each town along its lines, of people who are likely to be interested in the theatrical attractions in Spokane. These names were furnished by the company's agents in each town and a copy of the list of 500 was sent to the managers of each of the five local theaters in Spokane in order that they might mail announcements and literature to the list from time to time in regard to their special attractions. On Jan. 1 an announcement was sent out from the railway company's office informing these people of the new theater train service on the Inland division and also giving a complete list of the attractions for the balance of the season in the theaters. By co-operating with the theaters in this way the company keeps its suburban patrons informed regarding the theatrical attractions.

An illustration of the results already attained by the company was furnished on Monday evening, Jan. 27, when a special theater train consisting of two parlor cars was chartered by the Bungalow Club, of Cœur d'Alene, Idaho, to bring a theater party of 80 to attend "Happyland" at the Spokane Theater. The parlor cars are only run on the Cœur d'Alene division as yet, an extra charge of 25 cents being made for each chair. The regular round trip fare between Spokane and Cœur d'Alene is $1.

The municipalization of the Tokio city electric railway has been agreed upon, the price being $38,750,000 gold, to be paid in municipal bonds bearing 6 per cent interest, and redeemed in installments within twenty-seven years. The line will be transferred on March 31.

## THE DE FLEURIMONT STREET CAR HOUSE OF THE MONTREAL STREET RAILWAY COMPANY

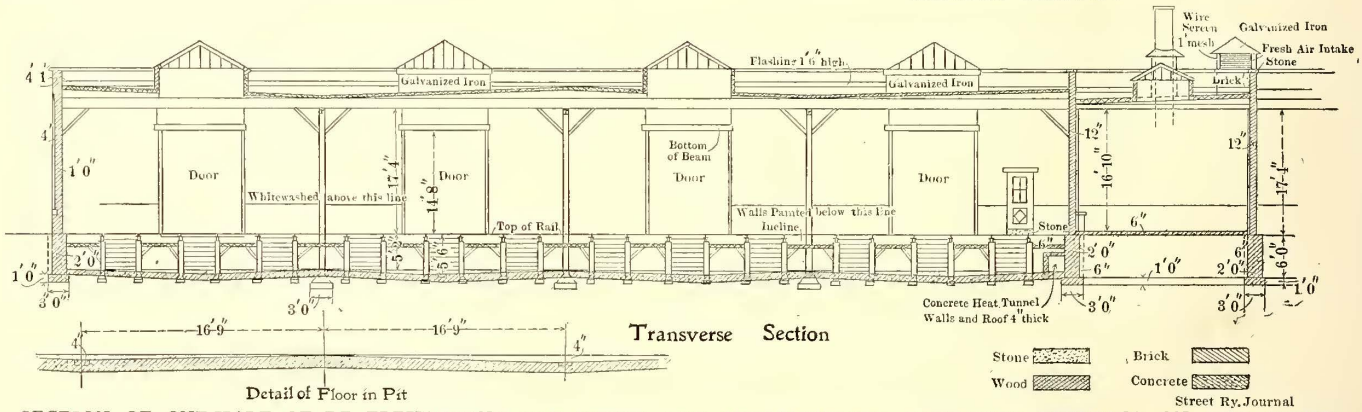
The Montreal Street Railway Company has lately placed in service its De Fleurimont Street car house, which practically is a structure composed of two twelve-track car inspection and storage sections with a general utilities section between. Details of the construction features of this installation were published in the Street Railway Journal of March 3, 1906, but the completion of the work has made it possible to add several interesting notes and photographs.

Each storage section is 140 ft. wide, 202 ft. long and has a clear height of 17 ft. 4 ins. above the rails. Each track is long enough to accommodate four 50-ft. cars, thus giving a total capacity of ninety-six cars. The small number of cars stored on each track would, of course, be an important factor in the rapid removal of rolling stock from the building in case of a fire.

The foundations are of concrete and the walls of brick, while steel is used for all the posts, including the roof supports, rafters, etc. The roof is of spruce covered with five-ply tar and gravel composition. Both light and ventilation are supplied by the skylights. All of the tracks have Kinnear steel rolling doors, which when rolled up carry a fiber section to fit the gap in the trolley, thus preventing the trolley wheel and pole from leaving the wire. Every track is provided with an open type pit for its full length. The rails are attached to channel beams carried on steel posts, and to prevent spreading they are secured on each side of the web by a clamp turned in under the supporting channel beam and bolted to the opposite clamp.

air to the pits are placed under these devil-strips, together with the loricated pipe conduit in which the light wiring for the lamps is conducted. Every other pit lamp has a flexible connection to permit its use as a portable.

CONTROLLER RACK IN STOREROOM OF THE DE FLEURIMONT STREET CAR HOUSE OF THE MONTREAL STREET RAILWAY COMPANY



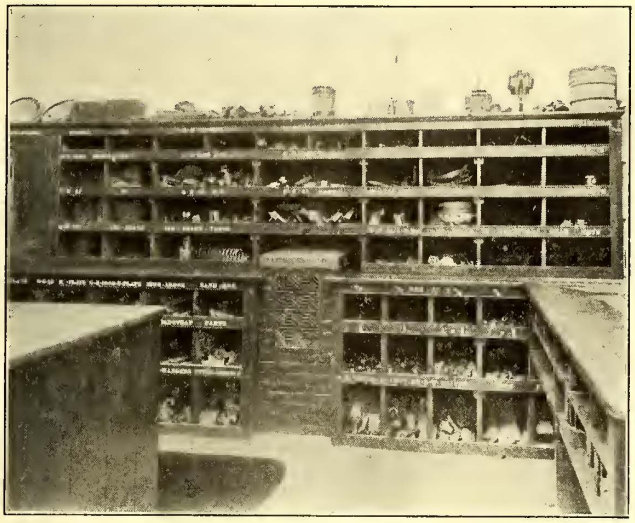

SECTION OF ONE-HALF OF DE FLEURIMONT CAR HOUSE AND INTERMEDIATE FACILITIES BUILDING ON THE RIGHT

THE COMPLETED DE FLEURIMONT DOUBLE CAR HOUSE OF THE MONTREAL STREET RAILWAY COMPANY

The devil-strips are made up of 3 in. x 4 in. spruce planks laid edge to edge but not nailed, so they can be easily removed when necessary. The metal ducts which carry hot

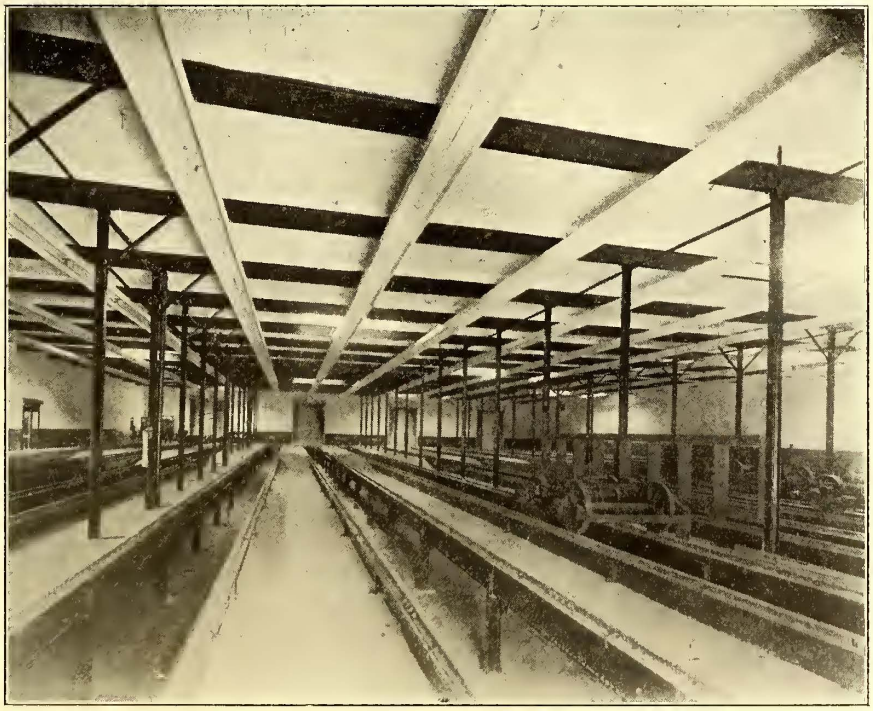
The Montreal Street Railway Company carries its own fire insurance and has always made it a point to take the best care to prevent fires on its properties. In this struc-

ture standard pipes and hose are located at frequent intervals together with numerous Childs portable fire extinguishers. The openings are protected by standard fire doors. As in all other car houses of the company, the fire-fighting apparatus is handled by a local fire corps, as mentioned in the article on the company's fire department published in the STREET RAILWAY JOURNAL of Oct. 5, 1907.



A PART OF THE STOREROOM, SHOWING THE LETTERED BOXES AND THE CHIMNEY DESIGN REGISTER

The central section, which has been referred to as the utilities building, is 24 ft. wide and contains a storeroom, heating plant, offices, etc. The storeroom contains only such parts as are required in a car house where no heavy repairs are made. All of the pieces are placed in sections, plainly marked in white letters on a brown background with the name of the piece of apparatus. A view of the shelving is shown in one of the accompanying illustrations. The storeroom also contains the compact and convenient controller rack, which is also illustrated.



INTERIOR OF DE FLEURIMONT CAR HOUSE, SHOWING THE TYPE OF OPEN PIT CONSTRUCTION

The heating system, which is in the rear portion of the utilities building, consists of a Sturtevant fan and engine outfit with Robb boilers fitted with automatic smokeless furnaces. The main hot-air ducts are of concrete with iron pipe branches to the pits, while the rooms in the utilities building are heated through the chimney-like registers, one of which is shown in the view of the storeroom.

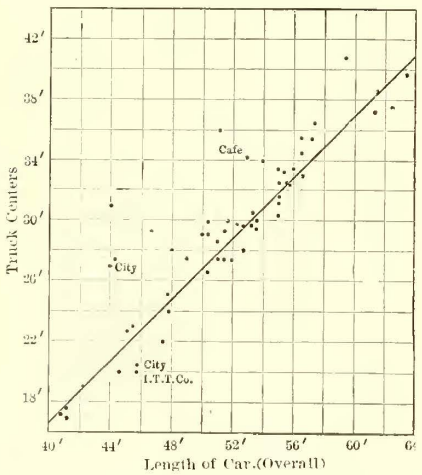
## AUSTRALASIAN TRAMWAY ASSOCIATION

The printed report has just been received of the inaugural meeting of the Australasian Tramway Officers' Association, held at the Royal Society's rooms, Sydney, New South Wales, Nov. 7-9, 1907. The meeting was convened by the officers of the New South Wales Tramways for the purpose of establishing a tramway officers' association in Australasia. John Kneeshaw, traffic superintendent of the New South Wales Tramways, was elected to the chair. Mr. Kneeshaw briefly explained the history of the movement for the organization of the association and the objects desired to be attained by it. Eligible for membership in the association are the chief officers, principal assistants in charge of departments, the secretaries and accountants of the Australasian tramways, each of whom is entitled to one vote. The association is governed by a president, two vice-presidents and an executive committee consisting of three members, and an honorary secretary and treasurer, who is ex-officio a member of the executive committee.

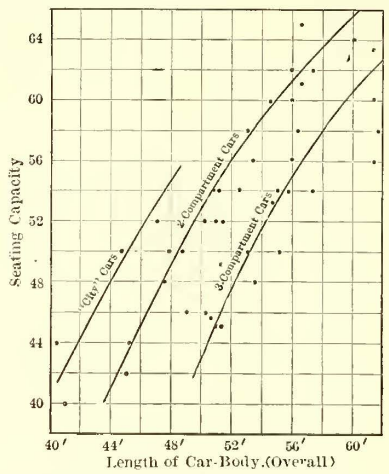
At the meeting at Sydney it was decided to hold the next annual meeting at the same place on Wednesday, Oct. 7, 1908. A motion was carried to the effect that a committee be appointed to consider a standard system of accounts for the Australasian companies and a report will be prepared and presented at the next meeting of the association by a special committee appointed to deal with this subject. Two interesting papers were read and discussed, one entitled "Thermit Welding," by G. R. Cowdrie, tramway engineer, New South Wales Tramways, and "Brakes," by O. W. Brain, electrical engineer, New South Wales Tramways. At the conclusion of the meeting the delegates proceeded to Ultimo, where they were shown over the power house by O. W. Brain, electrical engineer of the New South Wales Tramways. The officers of the association are: Mr. John Kneeshaw, traffic superintendent, New South Wales Tramways, president; O. W. Brain, electrical engineer, New South Wales Tramways, and J. S. Badger, manager and chief engineer, Brisbane Tramways, Queensland, vice-presidents; A. C. Parker, manager, Hobart Electric Tramway Company, Tasmania; B. Deakin, engineer and general manager, Ballarat and Bendigo Tramways, Victoria; F. Thompson, secretary, Christchurch Tramway Board, New Zealand, executive committee. George Macoun, accountant, Electrical Engineer's Department, New South Wales, was elected secretary and treasurer.

## TYPICAL ELECTRIC RAILWAY CARS

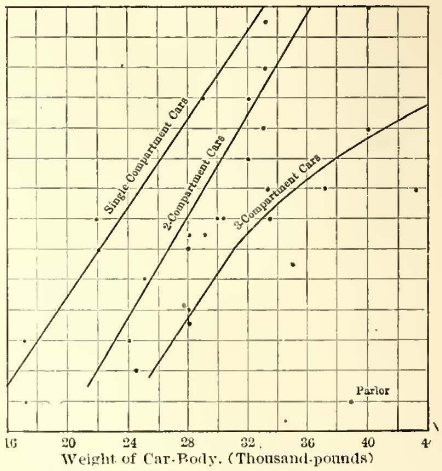
Under the title "Typical Traction Cars," Charles A. Heron presented a paper at a meeting of the Indiana Engineering Association, Jan. 18, analyzing the relations between the chief dimensions and data. The author collected statistics of length, weight, etc., of the latest types of cars used by seventy different companies, but built principally by the Niles Car & Manufacturing Company, the J. G. Brill companies, the St. Louis Car Company, the Jewett Car Company and the Cincinnati Car Company. These statistics were combined in the diagrams accompanying this article. The author also discussed the force required to turn a car while entering and passing around a curve, and concludes that this force is directly proportional to the distance between truck centers and inversely proportional to the radius of the curve.




COMPARISON OF LENGTHS OF CAR BODIES AND TRUCK CENTERS




COMPARISON OF LENGTHS OF CAR BODIES AND SEATING CAPACITIES




COMPARISON OF WEIGHTS OF CAR BODIES AND SEATING CAPACITIES

Truck Centers. (Feet.)

| Length of car. | Min. | Av. | Max. | Av. % Length |
|---|---|---|---|---|
| 40 | .. | 17 | .. | 42.5 |
| 45 | 20. | 22 | 27. | 49. |
| 50 | 26.5 | 27 | 30. | 54. |
| 55 | 30. | 32 | 33.5 | 58.2 |
| 60 | .. | 37 | .. | 61.6 |
| 65 | .. | 42 | .. | 64.6 |

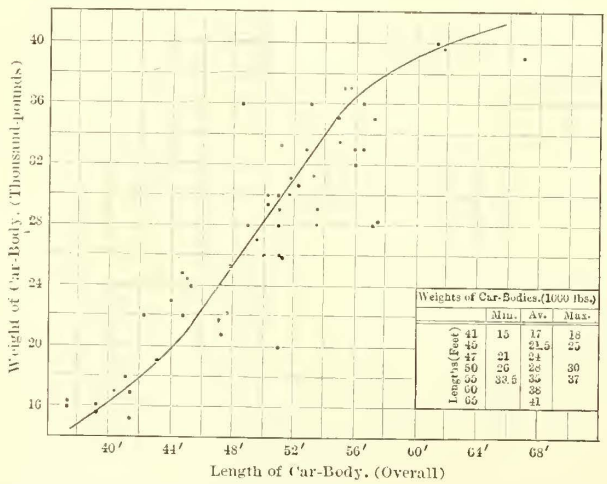
Minimum for 45-ft. car is for city use
Maximum is for express.

Seating Capacity.

| Length of car. (Feet.) | Min. | Av. | Max. | |
|---|---|---|---|---|
| 41 | 40 | 42 | 44 | City |
| 45 | .. | 50 | .. | |
| 45 | 42 | 43 | 44 | 2-Compartment. |
| 48 | 48 | 49 | 50 | |
| 50 | .. | 53 | .. | |
| 55 | .. | 60 | .. | |
| 60 | .. | 66 | .. | |
| 50 | .. | 43 | 52 | 3-Compartment. |
| 55 | 50 | 54 | .. | |
| 56 | 54 | 56 | 61 | |
| 60 | 58 | .. | .. | |

Seating Capacity.

| Weight of car-body. (1000 pounds.) | Min. | Av. | Max. | |
|---|---|---|---|---|
| 17 | 40 | 43 | 44 | City and Suburban cars. |
| 22 | 50 | 50 | 52 | |
| 32 | 60 | 65 | .. | |
| 36 | .. | .. | 72 | |
| 24.5 | 42 | 46 | 48 | 2-Comp. cars. |
| 28 | 50 | 52 | 60 | |
| 33 | .. | 61 | 65 | |
| 28 | 45 | 46 | 46 | 3-Comp. cars. |
| 32 | .. | 51 | 56 | |
| 34 | 52 | 53 | 54 | |
| 40 | 40 | 58 | 58 | |




COMPARISON OF LENGTH OF CAR BODIES AND WEIGHTS

## A CAMPAIGN AGAINST ACCIDENTS IN OMAHA

Early in 1907 the Omaha & Council Bluffs Railway Company began a campaign to reduce the accidents on its lines resulting in personal injuries and attained such excellent results that a brief review of the methods followed cannot fail to be of interest to street railway companies generally, especially as President G. W. Wattles, of the company, took occasion to call attention to the subject of accidents at considerable length in the recent annual report of the company. The carelessness of the public was not taken to be the only cause of accidents, it being realized that the company's own employes frequently were responsible for injuries to passengers. The aim, therefore, was to make both the public and employers more careful.

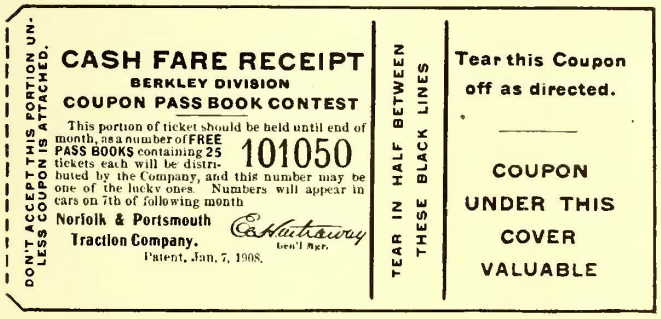
For the purpose of educating the public to greater care the company ran a series of talks in the newspapers, displayed in each of its cars a carefully gotten up picture illustrating the right and wrong way to get off a car, and enlisted the support of the probation officer of the Juvenile Court in keeping boys from jumping on cars and playing in the streets on which there were car tracks. The company also enlisted the aid of the instructor of physical culture of the Young Women's Christian Association in educating women in the proper way to get on and off cars. The city editors soon saw the news value of the campaign and utilized it in stories describing the methods and the results obtained. The display advertisements endeavored to be opportune. For instance, during and preceding the autumn Ak-Sar-Ben festivities the attention of the public was called to the need for special care while the city was entertaining thousands of visitors and there were daily assemblages of crowds downtown.

To make its employes more careful and give them a more thorough understanding of their work, in so far as it affected accidents, the company determined on a series of

talks, first to the road officers and next to the conductors and motormen themselves. The first of the series of lectures was given in November in the Vinton Street carhouse, the day men of the division to the number of eighty being present. A co-operative tone was given the gathering by turning it into a smoker, cigars being furnished by the company. Louis C. Nash, superintendent of transportation, opened the meeting by outlining the objects. Mr. Leussler, secretary and assistant general manager, followed with a ten-minute discourse showing the importance of the subject, Arthur W. Gross, general claim agent, spoke at length and specifically on accidents and their prevention, and William Musgraves, assistant superintendent of transportation, followed along the same lines, his first-hand knowledge of operating difficulties making his talk valuable. Each man was also supplied with a copy of Johnson's "Prevention of Accidents."

## CASH FARE RECEIPT IN NORFOLK, VA.

The Norfolk & Portsmouth Traction Company has recently adopted the plan of issuing to each passenger a receipt for cash fares paid on the car in addition to recording the fares on the usual type of register. The receipt is a very novel one, however, because it has a value,

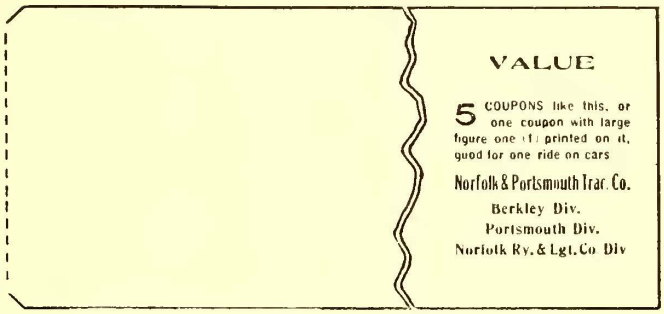



CASH FARE RECEIPT IN NORFOLK

making it an inducement to every passenger to see that he receives the receipt from the conductor and to preserve it. The form used is the joint invention of H. N. Brown, vice-president and general manager of the Railway Audit and Inspection Company, of Philadelphia, and of J. B. N. Cardoza, of Norfolk, and has proved eminently successful for the purposes for which it was designed.

The receipt is about the size of an ordinary transfer ticket, but instead of being a single slip it consists of two slips pasted together along the edges, so that it bears somewhat of a resemblance to an empty sealed envelope. The outside of this envelope or receipt is illustrated in the accompanying engraving. As will be seen, it consists besides the conductor's stub, which is not shown, of two portions; that at the left hand, which entitles the holder to an opportunity to secure a free pass-book, and that at the right hand, which the passenger is requested to tear off. The inside of this end coupon bears a notice that it is good, if accompanied with four similar coupons, to one ride on the cars. In other words, it is worth one cent. To obtain this coupon, however, the ticket must be torn in two, and when once destroyed, even if it is thrown on the floor, it cannot be reissued, for no passenger will accept a mutilated ticket.

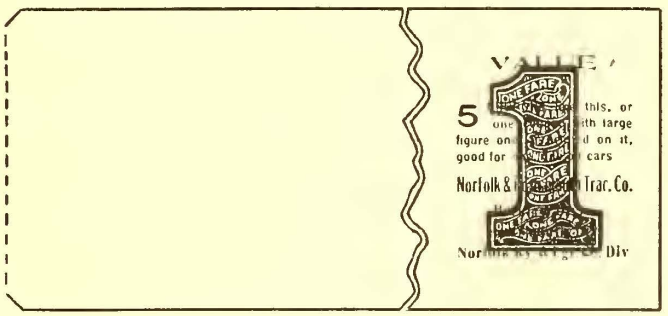
The system was placed in use on the lines of the Portsmouth division of the Norfolk & Portsmouth Traction Company as an experiment, on Nov. 15, 1907. It required about ten days to get the system working perfectly, but after that time the public began to take hold in such a manner that it surprised even the officials of the company. The receipts began to swell and the division is now showing an increase of from 10 to 12 per cent over the rebates given away and the normal increase per year. The division upon which the system was tried had three classes of fares, namely, a 5-cent straight fare, six tickets for 25 cents, and a book containing 100 coupons which was sold for $2.50. These book tickets, however, were issued only from the




INSIDE OF FARE RECEIPT, SHOWING COUPON

company's office and to a certain class of men who worked in a railroad shop. No one could secure them without first proving beyond a doubt that he was an employe of this particular shop.

The average ticket sales amounted to about 56 per cent of the gross receipts and the cash was about 44 per cent. The management of the property thought that by reducing the 44 per cent cash portion to a six-for-25-cents basis there would be little demand for the latter form of ticket; in other words, the company began giving a cash fare receipt to every passenger paying a 5-cent fare, and five of these receipts entitled the holder to a free ride, which practically put the cash fare on a six-for-25-cents basis. In addition in each pad of 100 cash fare receipts four receipts were placed which would give the passenger one free ride. These receipts had a big figure "1" over the face of the reading matter, so that they could be differentiated from the ordinary coupon. The company also held over until the end of the month two fares out of every 100, and for every 100 receipts issued two were taken out to be put in book




SPECIAL COUPON, WITH DESIGNATING NUMBER

form. These books contain 25 coupons each and are given away at the end of each month. The result of the system caused all people previously buying six rides for 25 cents to change over to the straight nickel basis, because they received the same value by accepting a receipt and had a chance of getting a free ride occasionally, as well as a chance of getting these free coupon books at the end of each month.

In a little over a month the receipts on this road changed

so that they averaged 86 per cent cash and 14 per cent tickets. Eight per cent of these tickets will always remain, as this is about the amount that is taken in on the 2½-cent fare belonging to workmen in the railroad shops, so in reality the ticket sales have now been decreased to 6 per cent. Of course, on other roads where tickets are not sold at a reduced rate the coupon could be made good for one-half cent in exchange for a fare or any other fraction of a cent desired. The ticket is printed by the Globe Ticket Company, of Philadelphia, and in addition to the line mentioned is also being used by the Berkley Street Railway Company, of Berkley, Va. Orders are also being filled at the present time for two other railways—the Norfolk & Atlantic Terminal Company and the Lexington Railway Company, of Lexington, Ky.

## AN AUTHORITATIVE STATEMENT ON THE NEW ENGLAND TROLLEY FREIGHT SITUATION

While the Trolley Express Company formed to take care of freight and express business on the New Haven Railroad's street railway lines in Connecticut has been dissolved, as has the similar company chartered some time ago in Rhode Island, the Electric Express Company, occupying the same relation to the New Haven system of electric railways in Massachusetts is still maintained, and President L. S. Storrs states that although its cancellation might result in an economy in the present stage of the electric railway freight business he still feels confident that it will ultimately justify its existence in relieving the operating companies of the handling and care of matter carried on the cars.

Mr. Storrs states that the past year of electric railway freight experience on Massachusetts companies controlled by the New Haven Railroad interests has been on the whole satisfactory. It was not intended to result in much besides experience; no attempt has been made to push the business yet around Springfield and the Berkshire district along the western boundary of the state, but there has been a manifest readiness to use the service as fast as it could be developed. The result of the initial year's experience has tended to convince the management that the profit in electric railway freight service lies in handling matter in bulk, that is to say, in wholesale lots, at charges that strike a balance between those for express matter and heavy freight on steam railroads. The management is convinced that there is no profit in a small package business; also, that it is a mistake for the electric railway companies to do a wagon business in the various centers along the line. This business, experience shows, should be left to the local expressman, the electric railway company merely undertaking the long haul from center to center without attempting to collect and deliver to and from its stations.

Business in and out of Springfield is being developed after this manner. The company is establishing stations in the various towns, with its own sidings at the stations. Matter is brought to and taken from the stations by expressmen or private parties. The rates cover the run merely from station to station, and a manufacturer or farmer can have a siding on his own property if he will pay construction charges. This is virtually steam road practice. Beer, groceries and to some extent farm products have so far been handled by the Springfield and Berkshire electric railways in considerable quantities. One instance of how the electric railway may be made to serve the wagon express interests is that of a Springfield expressman who has a wagon service there and at Palmer. His method is to box up the smaller parcels he collects at one end of the line, and ship them in a single consignment to himself at the other end, where the bulk package is broken and the separate parcels distributed by wagon. He thus gets the advantage of the lower rate allowed for bulk matter. Large quantities of ferns, raised in Westfield, have been shipped over the electric railways during the year on their way to market. About 10,000 barrels of apples were handled in the fall and in certain sections milk forms a considerable item.

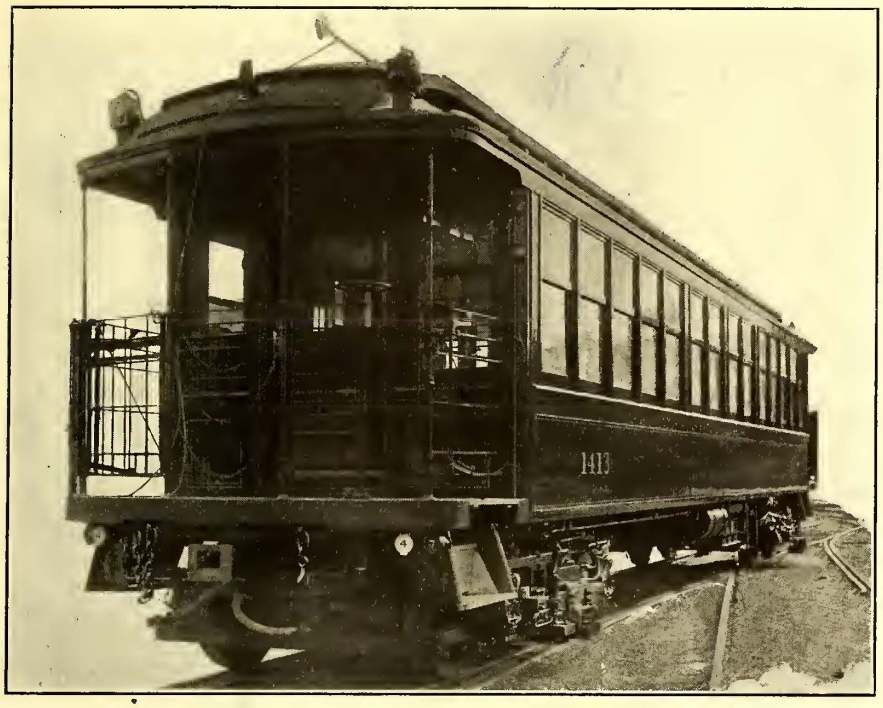
A feature of the Berkshire electric railway freight business is the shipment of heavy matter between the electric manufacturing plants at Pittsfield and Great Barrington. The electric railways connect with the works at each end, and in addition have given rather more reliable as well as quicker service than was formerly provided by the steam roads. Freight rights are yet to be perfected in North Adams. When that matter is attended to and the prospective purchase of the Bennington & North Adams Street Railway is put through a large expansion of electric railway freight north and south in the territory between Bennington, Vt., and New York City is practically assured. By closer union of the Berkshire and the Bennington & North Adams, Mr. Storrs states that the electric railways will be able to give more direct and very desirable service between the isolated towns of southwestern Vermont and Boston, the electric railways giving a direct route to North Adams, where passengers may get through express trains to the Hub over the Fitchburg division of the Boston & Maine Railroad. In the past the same trip has been made only by a detour into New York State from Bennington via the Rutland Railroad, connecting with the Boston & Maine at Petersburgh. The short cut afforded by the trolley will develop a good freight business.

While the statement has been made in print that the Springfield Street Railway Company was working out a plan to haul cars direct from the steam roads to various manufacturing plants in Springfield, Palmer, Westfield and other places in the district, at night, Mr. Storrs states that this is at present impracticable, for the reason that much of the special work laid down for the electric railways out of Springfield is not adapted to take the wheels of steam railroad equipment. This is the reason why the company has had to reject the proposal from the superintendent of the United States armory in Springfield that the Springfield company transfer steam railroad freight cars from the New Haven's Highland division to the so-called water shop of the armory, and handle freight from that point over the electric railway lines in its own cars to the main armory, by way of Alden Street, Eastern Avenue, King Street, Hancock Street and Walnut Street. In view of special work debarring railroad cars, the trolley company is now working out a plan for unloading all the armory freight from the railroad cars into its own cars at the railroad, handling it to the water shop, and from there to the main armory, entirely as a trolley freight proposition.

The only place where the Springfield system of electric railways will move cars from the railroad over its lines, Mr. Storrs states, will be around Brimfield, in the district between Springfield and Worcester. Here the electric railways parallel the Boston & Albany Railroad about seven miles distant from it; and the towns have recognized that it would be of advantage to have the cars from the steam road shifted by electric power to the various factories in the territory. They have limited the company to five-car trains of this sort.

## THE BROOKLYN RAPID TRANSIT COMPANY'S TYPE "1400" ELEVATED CAR

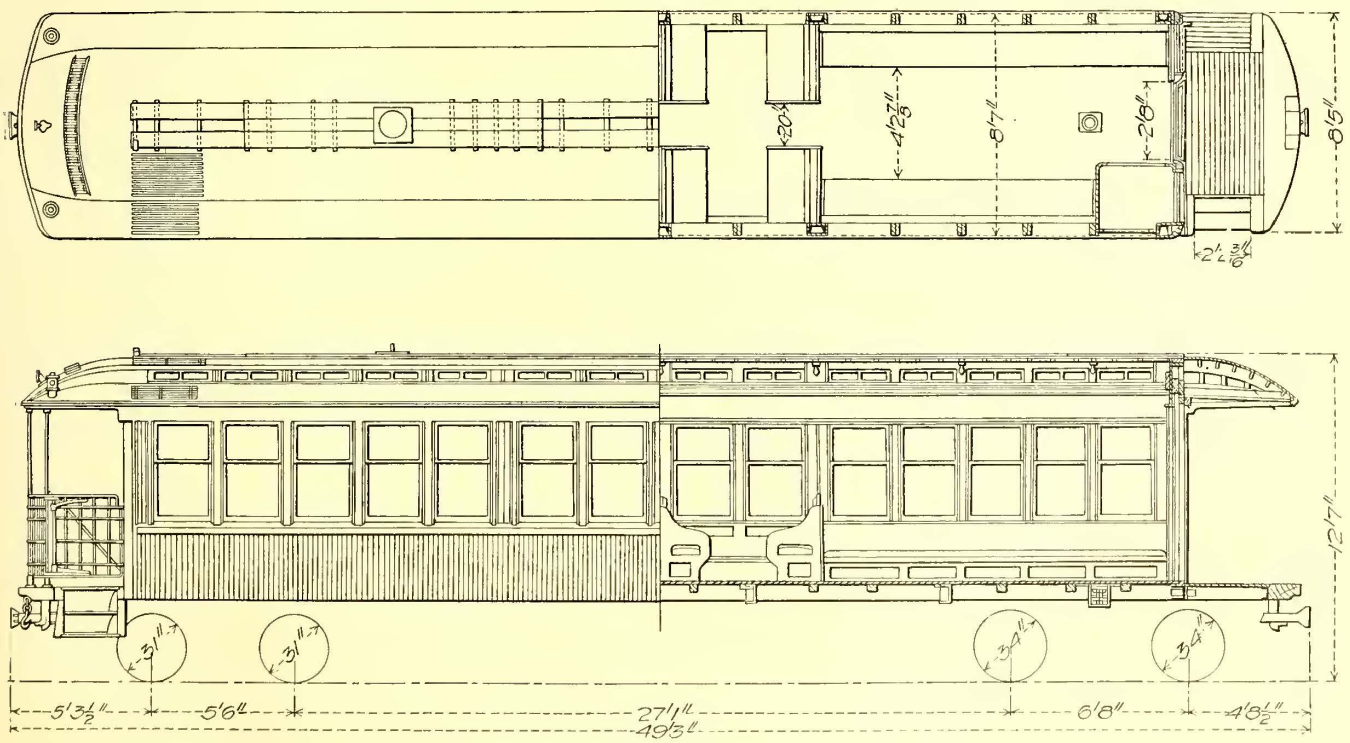
The Brooklyn Rapid Transit Company is now placing in service 100 elevated cars of its latest semi-convertible type known as the "1400." Fifty of these cars were built by the Laconia Car Company and fifty by the Jewett Car Company, but the installation of the operating equipment is being done in the Thirty-Ninth Street shop of the railway company's mechanical department. In general the dimensions and constructional features of the "1400" cars are based on the "1200" type which was described in the STREET RAILWAY JOURNAL of May 6, 1905. The "1200" style embodied many radical changes, practically all of which have been retained in the latest design. The important changes relate to trucks, motors, control and wiring.



EXTERIOR OF BROOKLYN ELEVATED CAR

Like all the other elevated rolling stock of this railway, the cars have trolley poles for surface operation on the outlying sections of some of the lines. In size the cars are 49 ft. 3 ins. over all, with a 40-ft. 5-in. body containing Hale & Kilburn longitudinal and center cross seats for 54 passengers and standing room for 85 more. It will be noticed from the dimensions given that the platforms, which are furnished with Pitt gates, are of liberal length, a feature which is believed more desirable and less dangerous than center door cars for handling heavy traffic. The car body is 8 ft. 9½ ins. wide over the drip rail and the height over all is 12 ft. 7½ ins. The dimensions given are practically the greatest possible under clearance conditions in Brooklyn.

The under frame, which was built by the Pressed Steel Car Company, is made entirely of steel except for the wooden fillers in the platform bearers. The center sills consist of two 5-in. I-beams extending from buffer to buffer; the end sills, four cross members and the bolsters are of pressed steel. The side sills are inverted fish-belly girders having an inwardly projecting lip at the upper edge, while at the lower outside edge a heavy 4-in. angle is riveted to form a stiffener against side bending. This form of construction originated on the "1200" car, where it has shown ample strength to keep the car body in alignment without truss rods to interfere with the under car apparatus.



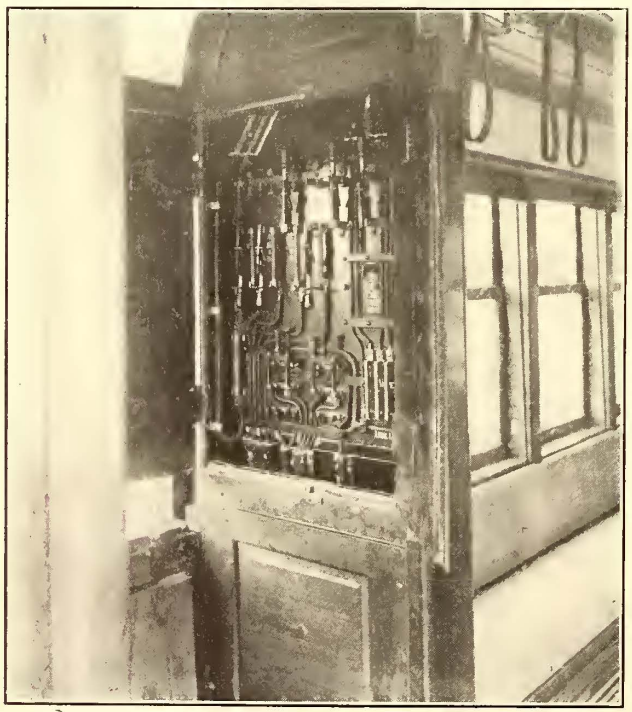

PLAN AND ELEVATION OF BROOKLYN ELEVATED CAR

The platforms are supported by the two center sills extending into the buffer and bolted thereto and two platform bearers, each consisting of one 4-in. 10.5-lb. I-beam with wood filler for fastening the platform floor. These bearers extend to the forward side of the bolster and are fastened to it by connection angles and 4 ins. into the buffer. The latter is of 14½-in. x 6-in. white oak faced with a ½-in. steel bar and is fastened to the platform bearers, center sills and end diaphragm with ¾-in. bolts. The two platform steps are covered with Universal safety tread. The drawbars are of the Van Dorn type.

MOTOR TRUCK

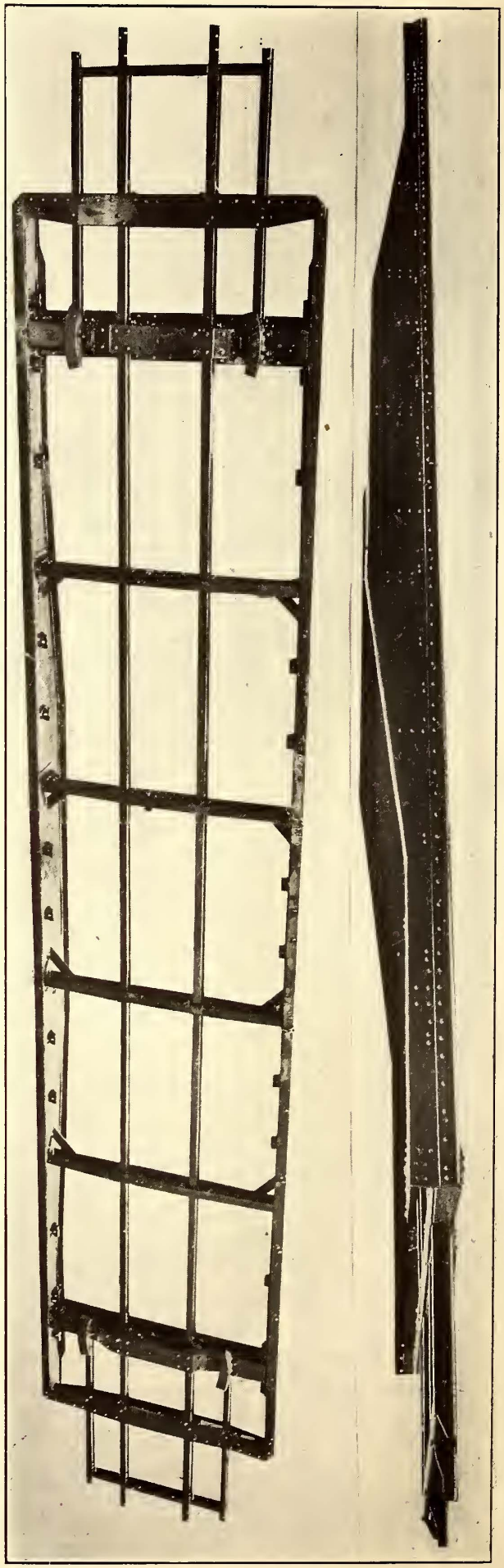
The side framing is primarily of wood construction, although the window posts are made comparatively light and are reinforced by ½-in. steel rods passing from beneath the heavy side sill girder members up to and through the forged foot of the steel carline above the plate. This construction is made possible by using steel carlines. The window post construction also follows the "1200" type in the use of 8-in. steel channels inserted vertically for frame stiffening at three points in the car corresponding to the position of the cross seat backs.

The roof, as shown in the section, is of composite construction. The steel carlines mentioned are sandwiched in ash, which is the wood used throughout for framing, except the yellow pine in the clear story sill and plate.



INTERIOR OF MOTORMAN'S CAB, WITH FUSES AND SWITCHES EXPOSED

The car floor is of 1¼-in. thick Southern pine covered with ⅝-in. x ⅝-in. maple strips, as shown in the section. The false flooring to which the wiring is attached is

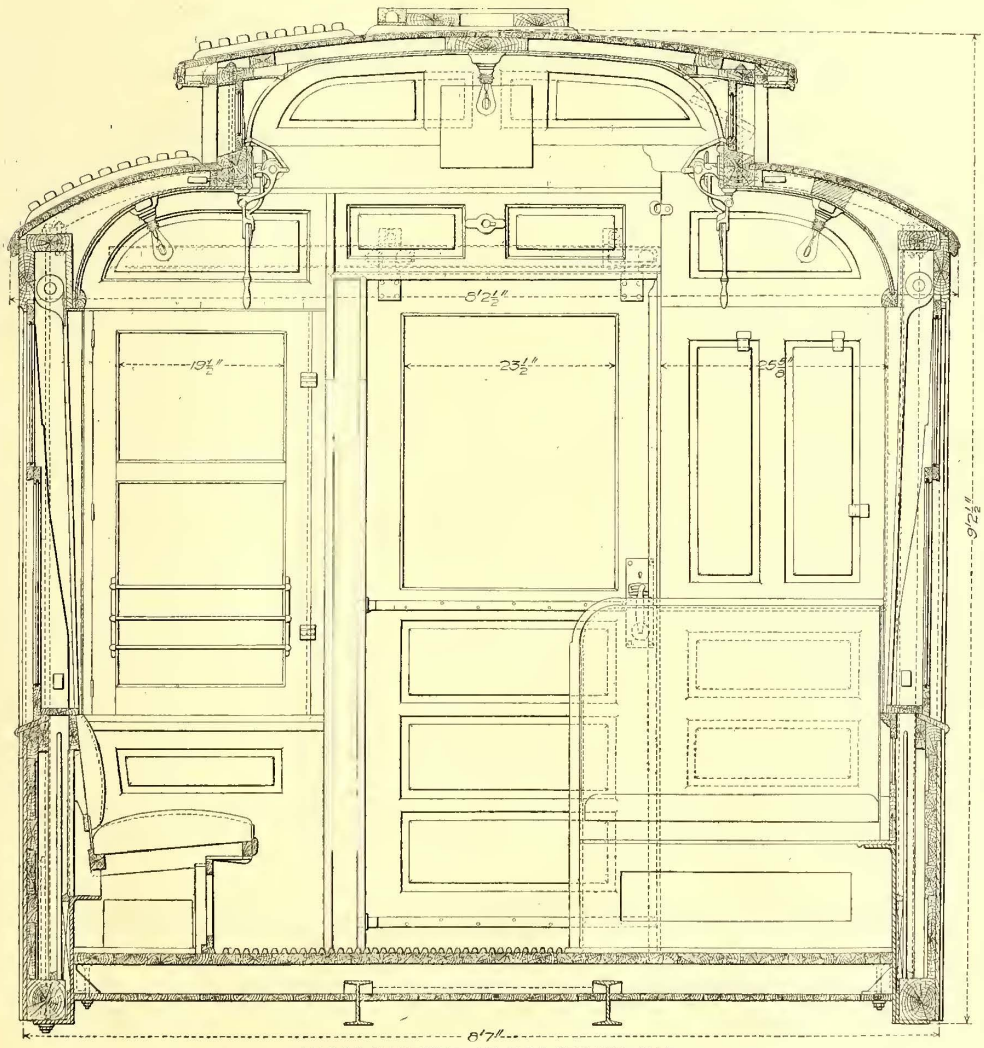


BOTTOM AND SIDE FRAMES

sheathed on the bottom with transite to secure fireproof construction. The platform flooring consists of 1-in. thick Southern yellow pine.

The interior finish is in cherry, natural color, and is extremely simple in its absence of moldings, carving and other dirt catchers. The windows are of the semi-convertible type arranged to drop into rubber-bottomed pockets. All curtains are of pantasote with morocco back and are mounted on Hartshorn tin rollers; the side curtains have Acme open car cable fixtures. The two end doors are of cherry 1½ ins. thick aranged to slide away from the cable. They are provided with Coburn round trough trolley tracks and anti-friction roller bearing carriers and the B. R. T. standard end door lock made by J. L. Howard & Co., of Hartford, Conn. The motorman's cabs, which are in diagonally opposite corners, have the curtains on the doors equipped with Forsyth roller tip fixtures.

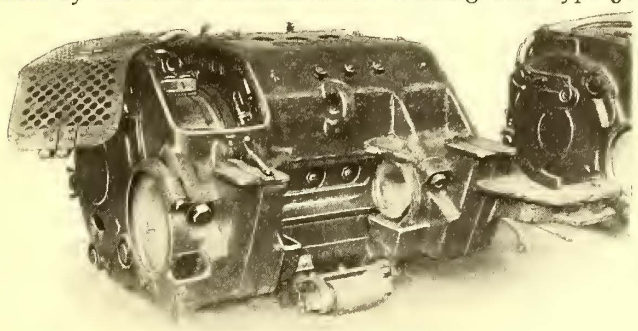
Following the regular practice on this company's elevated cars, the two motors on each car are carried on one truck, the other truck being a trailer. The motor trucks were built by the American Locomotive Company and the others by the St. Louis Car Company. Standard shapes have been used as much as possible in their design in order that the replacement of broken parts should be simplified.




CROSS-SECTION OF BROOKLYN CAR

The trailer and motor trucks differ little from each other in construction except that the latter have forged steel pedestals instead of cast steel. Both are equipped with Schoen solid forged rolled steel wheels. The trailer truck has 31-in. diameter wheels and 4¼-in. x 8-in. journals with M. C. B. boxes, while the motor truck has 34-in. wheels and 5-in. x 9-in. journals with Symington boxes.

An important change has been made in the motor equipment by the initial installation of Westinghouse type 300



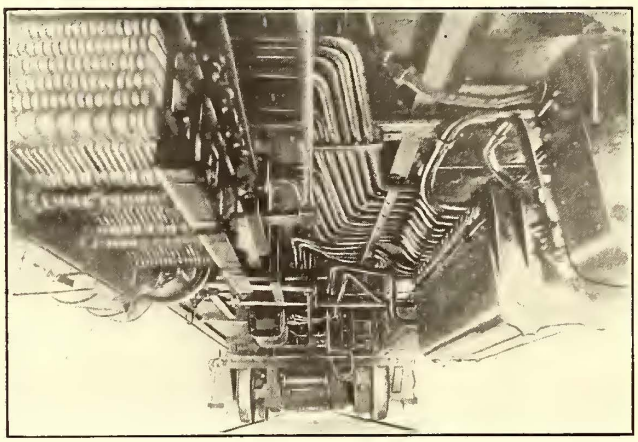
MOTOR SHOWING REMOVABLE END PIECE

interpole motors. These are rated at 200 hp and represent an increase of 100 hp per car over the equipment of the older cars which consist of Westinghouse 50 E, B or L types of 150-hp motors. While the motor is intended to operate regularly at 550 to 600 volts, it is guaranteed to run safely on temporary maximums of 800 volts. The motor has four main poles which are made up of soft sheet steel punchings. The interpoles are wound with copper strap and are insulated from each other by asbestos. The field coils are wound with flat copper strap. The armature core is built up of soft steel punchings assembled on a spider. The commutator also is pressed on a spider. The commutator bars are of hard drawn copper. Separate oil pockets are provided for the armature and axle bearings. The approximate weight of a motor without gears is 5450 lbs.; weight of malleable iron gear case and gears, 550 lbs.; weight of armature, 2000 lbs.; approximate weight of complete motor, 6000 lbs. The gear ratio is 19:64, and the schedule speed 14 miles an hour. The motor has no split shell, the armature being removed by unbolting an end piece, as shown in one of the illustrations.

There has also been a change in the control system. The "1200" cars carried the Westinghouse turret control, but for these cars the same company's type 251-I-3 has been adopted. The air brake system comprises the New York Air Brake Company's 12-in. cylinder, style "S" triple valve; National B. B. 4 compressor, 28 cu. ft. capacity, and the Westinghouse type "L" governor. All of the heaters were furnished by the Consolidated Car Heating Company

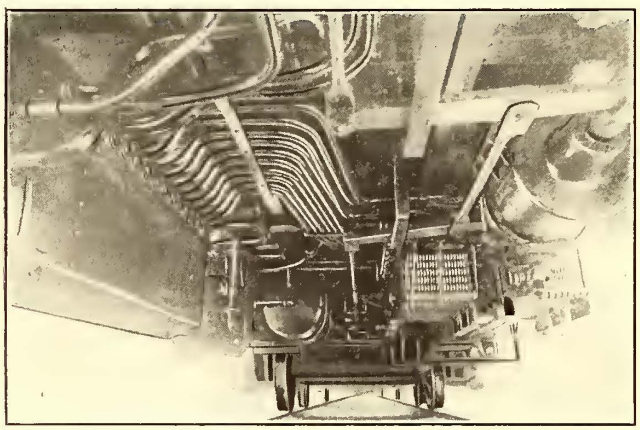
and are of type 146-X, except those in the cabs. The weight of a car without passengers is 71,755 lbs.; car body complete with foundation brake rigging, 27,080 lbs.; motor truck with contact shoes and gears, 12,700 lbs., and trailers with contact shoes, 9200 lbs.

The wiring practice of this company was described fully in an article published in the Street Railway Journal.



VIEW UNDER THE CAR, SHOWING PLAINLY CONDUITS AND RESISTANCES

of Aug. 20, 1904. For the "1400" cars there have been no important changes in this respect except the substitution of iron pipe conduit for electrobestos molding. The neat arrangement of these conduits will be noted in the accompanying views of the under side of one of these cars. The light wiring is carried in electrobestos and the heater wiring in conduit. The conduits are arranged to run through the end casting of the heater with T. & B. bushings screwed on the inside of the heater. All wiring is



ANOTHER VIEW UNDER THE CAR, SHOWING CONDUITS IN FOREGROUND AND RESISTANCES IN BACKGROUND

rubber covered and of the Okonite Company's manufacture. The rubber insulation is covered with one layer of braid impregnated with a preservative compound which will not soften at 120 degs. F.

The record run of an Inland train from Colfax to Spokane was made recently by a stock train of five cars of cattle. The train was reported in at the junction of Spokane just two hours and forty-five minutes after the conductor had given the "highsign" at Colfax, and three hours to the minute from the time the last animal was driven into the cars at the Inland stockyards at Colfax the last one was out of the train and in the slaughter pens in Spokane. The distance is seventy-six miles.

## EXECUTIVE COMMITTEE MEETINGS IN NEW YORK

The meetings of the executive committees of the American Street and Interurban Railway Association and its affiliated associations, announced in previous issues of the Street Railway Journal, were held last week at the office of the association, 29 West Thirty-Ninth Street, New York. Six associations were represented, namely, the main association, the Accountants' Association, the Engineering Association, the Claim Agents' Association, the Manufacturers' Association and the newly organized Transportation and Traffic Association. The meetings of all were well attended, satisfactory progress of the affairs of the associations was reported and comprehensive programs were prepared for the coming year. An account of each of the meetings appears below:

### AMERICAN STREET AND INTERURBAN ASSOCIATION

The meeting of the executive committee of this association is that which is always held at this time of the year. Those present were: C. G. Goodrich, president; James F. Shaw, W. Caryl Ely, A. W. Brady, F. R. Henry, T. N. McCarter, C. S. Sergeant, F. G. Simmons, H. R. Goshorn, B. V. Swenson, C. Loomis Allen, H. M. Littell, H. H. Vreeland.

The secretary, Mr. Swenson, presented a report upon association matters which had transpired since the executive committee meeting directly after the last convention, and also outlined the various lines of work that should be taken into consideration during the remainder of the year. The active membership on Jan. 30, 1908, was 244 street and interurban railway companies, and the associate membership on the same date consisted of 184 individuals. The estimated receipts for the year amount to $29,130 and the estimated total expenditures of the association, if it is to proceed along the lines already laid down, amount to $28,500.

The secretary stated it was absolutely essential, if the work of the association is to be effected in such a manner as to be of real value to its members, that not only should each and every member company continue in the support of the association this year, but that the active membership must be increased by at least thirty or forty companies and the associate membership to at least 500 individual memberships. This would give sufficient revenue to carry on the work in the most effective way.

The secretary also reported that the printing of the annual reports of all four associations containing the printed proceedings of the Atlantic City convention had been completed and that these reports had already been sent to the various member companies. He announced that a charge was made for the paper covered proceedings of the American and Engineering Associations of $1.50 each and that cloth bound copies of Volume No. 1 of the 1907 proceedings, containing the American and Engineering reports, are sold at $4 each.

As to the 1908 convention, the secretary reported that invitations had been received from the Asbury Park Convention League inviting the association to hold its 1908 convention at Asbury Park; from the Atlantic City Hotelmen's Association to hold the convention at Atlantic City, and from the Denver City Tramway Company, the Denver Convention League, the Mayor of Denver and the acting Governor of Colorado to hold the 1908 convention at Denver. The time and place of holding this convention was discussed at some length and it was finally decided to leave this matter in the hands of a committee with power to act,

subject to the approval of the president. The president appointed on this committee: James F. Shaw, chairman; Arthur W. Brady, Frank R. Henry and B. V. Swenson. It is expected that this committee, in conjunction with a similar committee from the Manufacturers' Association, will investigate this entire matter and make a report to the president some time between now and the first of April.

The organization of the Transportation and Traffic Association of the American Street and Interurban Railway Association was reported by C. Loomis Allen, president. The constitution and by-laws of the new association were ratified and the action of the organization committee in the formation of the new association approved. In accordance with the plan of having all the general work of the association performed by the various affiliated associations the organization of the new Transportation and Traffic Association will take over a large part of the work of the American Association. The latter will hold executive sessions, at which questions of broad public policy will be discussed. A tentative program of the American Association meetings was submitted and approved.

On the evening of Jan. 31 the members of the executive committees of the main and affiliated associations present in the city were entertained by the Manufacturers' Association at a banquet at the Imperial Hotel. By special arrangement with the Telharmonic Company, music was transmitted by wire to the banquet room from the central station of the Telharmonic Company, at Thirty-Ninth Street and Broadway, and added very much to the interest of the occasion. The dinner lasted until late in the evening. J. R. Ellicott, president of the Manufacturers' Association, acted as toastmaster. The other speakers included James F. Shaw, W. Caryl Ely, C. S. Sergeant, James H. McGraw, H. H. Vreeland, Charles C. Peirce, Frank Hedley, John A. Beeler and C. Loomis Allen.

### ORGANIZATION OF AMERICAN STREET AND INTERURBAN RAILWAY TRANSPORTATION AND TRAFFIC ASSOCIATION.

One of the most important actions taken at the meetings held in New York last week was the organization of the new association to take up transportation and traffic matters. The call for this meeting, issued by the committee apppointed for that purpose by President Goodrich, was published several weeks ago in the STREET RAILWAY JOURNAL. Pursuant to that call a number of representatives of the transportation and traffic departments of electric railway companies met Thursday morning in one of the assembly rooms of the Engineering Societies' Building, 29 West Thirty-Ninth Street, New York.

The meeting was called to order at 11 a. m. by Hon. W. Caryl Ely, one of the members of the committee on organization.

Among those present were: Calvin G. Goodrich, W. Caryl Ely, C. Loomis Allen, John W. Ogden, Eugene J. Ryon, C. Gordon Reel, G. O. Nagle, W. H. Blood, Jr.; D. MacDonald, Robert S. Goff, E. P. Shaw, Jr.; Newton W. Bolen, F. W. Bacon, Dana Stevens, Robert I. Todd, Fred G. Simmons, Frank P. Henry, W. H. Evans, F. J. Gerdon, J. W. Brown, W. W. Sargent, John E. Duffy, R. E. Danforth, H. H. Adams, L. S. Storrs, J. Leslie Hess, I. J. Muller, J. K. Punderford, E. F. Peck, J. N. Shannahan, B. V. Swenson.

Mr. Ely was elected chairman and B. V. Swenson secretary of the organization meeting.

The first order of business was the adoption of a constitution and by-laws and the following constitution and by-laws was presented:

#### CONSTITUTION.

*Name.*

I. The name of this association shall be the "American Street and Interurban Railway Transportation and Traffic Association," and its office shall be at the place where the secretary resides.

*Objects.*

II. The objects of this association shall be to bring together General Managers, Managers, Superintendents, Passenger, Express and Freight Agents, Advertising Managers and other operating officials and employees engaged in or connected with the actual operation of street and interurban railway companies for the interchange of ideas, consideration of operating and transportation problems, methods of promoting traffic and all other matters incident thereto.

*Members.*

III. The membership of this association shall consist of two classes, as follows:

(a) Active members, consisting of active members of the American Street and Interurban Railway Association. Each active member shall be entitled to one vote on all questions coming before this association, which shall be cast by a properly accredited representative of its transportation or traffic department. Each active member shall send as many delegates from these departments as it may desire.

(b) Associate members, consisting of associate members of the American Street and Interurban Railway Association, who may elect to ally themselves with this association.

*Amendment.*

IV. This constitution may be amended by a two-thirds vote of the members present at a regular meeting, provided the proposed amendment shall have the approval of two-thirds of the executive committee, and provided also that a copy shall have been sent to each of the active members, at least thirty days prior to the date of the meeting at which the proposed amendment is to be acted upon.

#### BY-LAWS.

*Officers and Executive Committee.*

I. The officers shall consist of a president, three vice-presidents, a secretary and treasurer and four others, who shall constitute the executive committee. The executive committee shall have the entire charge and management of the affairs of the association. The secretary and treasurer shall be the secretary and treasurer of the American Street and Interurban Railway Association. All other officers and members of the executive committee shall be elected by ballot at each annual meeting of the association, and shall hold office until their successors shall be elected. The officers and members of the executive committee of this association, with the exception of the secretary and treasurer, shall be chosen from the transportation and traffic departments of active members.

*Duties of Officers.*

II. The officers of the association shall assume their duties immediately after the close of the meeting at which they are elected. They shall hold meetings at the call of the president, or, in his absence, at the call of the vice-presidents, in their order, and make arrangements for carrying out the objects of the association. In case of resignation or death of an officer or a member of the executive committee, the vacancy may be filled for the unexpired term by the executive committee.

*President.*

III. The president shall be the chief executive officer of the association. The president, if present, or in his absence one of the vice-presidents, in their order, if present, shall preside at all meetings of the association, and of the executive committee, and shall represent this association on the executive committee of the American Street and Interurban Railway Association.

*Secretary and Treasurer.*

IV. The duties of the secretary and treasurer shall be as follows:

(a) To receive and safely keep all moneys of the association; to keep correct accounts of same, and to pay all bills of the association approved by the president.

He shall make an annual report to be submitted to the association at its annual convention. His bond given to the Ameri-

can Street and Interurban Railway Association shall be and is deemed to be sufficient for all the purposes of this association. His salary shall be fixed and paid by the American Street and Interurban Railway Association.

(b) To take minutes of all the proceedings of the association and of the executive committee, and to enter them in books kept for the purpose.

(c) To conduct the correspondence of the association.

(d) To read minutes and notices at all meetings, and to present papers and communications, if the authors wish it.

(e) To collect and file for the benefit of the members information regarding matters relating to the purposes of the association.

(f) To attend to the publication of the proceedings of this association in connection with the secretary of the American Street and Interurban Railway Association.

(g) To send notices to all members of the association at least thirty days before each meeting, mentioning papers to be read, and any special business to be brought before the meeting.

(h) To perform such other duties as may be required of him by the constitution and by-laws, and such duties as may be assigned him by the executive committee.

*Executive Committee.*

V. (a) The executive committee shall hold a regular meeting before each regular annual meeting of the association, and shall hold such special meetings as may be necessary. Such special meetings may be called by the president, or any five members of the executive committee. A majority of the members of the executive committee shall constitute a quorum at all meetings. A vote of the executive committee may be taken by mail when deemed necessary by the president.

(b) The secretary shall give such reasonable notice of all meetings as the committee shall by vote prescribe, and all such notices shall, as far as practicable, specify the business to be brought to the attention of the committee at such meetings.

(c) The executive committee shall present a report to each regular annual meeting of the association, and shall include in such a report the names of the members elected during the year, and its recommendations for the future work of the association.

*Meetings.*

VI. The regular annual meeting of this association shall convene at a time and place to be approved by the executive committee. Special meetings may be held upon the order of the executive committee. Notice of every meeting shall be given by the secretary in a circular addressed to the members at least thirty days before the time of meeting. Fifteen members shall constitute a quorum at any meeting.

*Order of Business.*

VII. At the regular meeting of the association the order of business shall be:

1. Reading of the minutes of last meeting.
2. Report of the executive committee.
3. Address of the president.
4. Report of the secretary and treasurer.
5. Reports of standing committees.
6. Reports of special committees.
7. Reading and discussion of papers.
8. General business.
9. Election of officers.

At other general meetings of the association the order of business shall be the same, except as to the second, fourth and ninth clauses.

*Voting.*

VIII. All votes, except as herein otherwise provided, shall be *viva voce*, or by ballot upon the request of any member, and in the case of a tie, the presiding officer shall vote.

*Reading of Papers.*

IX. All papers read at the meetings of the association must relate to matters connected with the objects of the association, and must have the approval of the executive committee before being read. Persons to whom subjects are assigned must signify in writing their intention to prepare the paper, and forward it to the secretary at least sixty days previous to the date of the meeting.

*Papers, Illustrations and Models.*

X. All papers, illustrations and models submitted to the meeting of the association shall remain the property of the owners; subject, however, to retention by the executive committee for examination and use, but at the owner's risk.

*Rules of Order.*

XI. All rules not provided for in these by-laws shall be those found in "Robert's Rules of Order."

*Amendment.*

XII. Notice of all propositions for adding to or altering any of these by-laws shall be given to the members of the association, at least thirty days before the meeting at which they are to be acted upon.

*Copy of Constitution and By-Laws.*

XIII. Each member of the association shall be furnished by the secretary with a copy of the constitution and by-laws of the association and also a list of the members.

After the reading of the constitution Mr. Ely called Mr. Allen to the chair and a discussion on the clauses of the proposed constitution followed. Among those who spoke were Messrs. Reel, Nagle, McDonald, Todd, Punderford, Simmons, Henry, Adams, Shannahan and Allen. Mr. Allen in behalf of the organization committee explained that the association was by no means intended exclusively for managers and general mangers, but that it was the aim to take in all branches of the operating department. After some discussion the constitution and by-laws were unanimously adopted as read. Letters were also read from a number of companies endorsing the movement.

The question of officers of the new association was taken up and a nominating committee was appointed as follows: J. N. Shannahan, chairman; Dana Stevens, F. W. Bacon, E. F. Peck, J. W. Brown. This committee was instructed to report at the afternoon session.

A committee on programs for the 1908 convention was also appointed with instructions to report during the afternoon session. This committee consisted of the following named gentlemen: G. O. Nagle, chairman; E. P. Shaw, Jr.; D. MacDonald.

The meeting then adjourned to the Engineers' Club for lunch.

The meeting reconvened at 2.30 with Mr. Goodrich in the chair. The nominating committee reported nominations as follows:

For president, C. Loomis Allen, of Utica, N. Y.; first vice-president, R. I. Todd, of Indianapolis, Ind.; second vice-president, George L. Radcliffe, of Cleveland, O.; third vice-president, A. W. Warnock, of Minneapolis, Minn.; members of the executive committee, G. W. Parker, Detroit; H. C. Page, Springfield, Mass.; N. W. Bolen, Newark, N. J., and H. A. Davis, Nashville, Tenn; secretary and treasurer, B. V. Swenson.

A vote was taken on the nominations and they were unanimously adopted.

The committee on program also reported tentatively. A full announcement of a definite program will be announced at a later date. The various committees suggested by this new association are not yet ready for publication, but as soon as they are definitely decided upon announcement will be made.

ENGINEERING ASSOCIATION

Meetings of the executive committee of the American Street and Interurban Railway Engineering Association were held at the office of the American Street and Interurban Railway Association on the afternoon of Jan. 30 and the morning of Feb. 1, 1908. On Jan. 31 the members of the committee visited the East New York shops of the Brooklyn Rapid Transit as guests of W. G. Gove, superintendent of equipment, and later were shown through the

Plank Road shops of the Public Service Corporation of New Jersey, through the courtesy of Charles Remelius and other representatives of that company. The following members of the committee attended the meetings in New York: F. G. Simmons, Paul Winsor, F. H. Lincoln, W. H. Evans, W. J. Harvie, E. O. Ackerman, William Roberts, H. H. Adams and the secretary, J. W. Corning.

At the meeting on Jan. 30 President Simmons explained that the committee had been called together to consider the work of the various committees for the ensuing year and to make any suggestions which should be considered desirable. The work of the Standardization Committee was taken up first. Mr. Evans, the chairman of this committee, explained that a few more details were required to round up the work of the committee upon the subjects considered last year. He also enumerated a number of other topics for the coming year which had suggested themselves to him or had been proposed by members of the committee. After discussion the committee was instructed to take up the work first mentioned and also to report upon the following subjects:

1. Standard height of couplers for city cars.
2. Standard height of couplers for interurban cars.
3. Standard automatic couplers for interurban cars and radial draft rigging.
4. Standard height of platforms.
5. Standard height of car steps.
6. Bumpers.

The committee was also instructed to consider the desirability of formulating a set of standard specifications for axles.

Mr. Simmons announced the appointment of several committees, whose names have already appeared in the technical press. He also suggested and was empowered by the committee to appoint a committee of five to be called the Committee on Economical Maintenance. This committee will consider the relative economy of high and low maintenance charges on equipment.

The work of the Committee on Control was then considered. This committee was instructed to continue the line of work which was represented by its previous reports. In addition the committee was requested to consider the question of the proper method of controlling the rate of acceleration.

President Simmons then announced that the American Street & Interurban Railway Association had decided to assign to the Engineering Association the consideration of all power-house subjects, some of which had previously formed an important part of the convention programs of the parent association. This suggested the advisability of the appointment of a Committee on Power Generation. The president was authorized to appoint such a committee to consist of five members. Special instructions were issued to the committee to consider the question of boiler-room instruments, such as $CO_2$ recorders, draught gages, etc., and also to take up and report on the practical operation of steam turbine plants.

A corresponding committee of five was authorized to be known as the Committee on Power Distribution. This committee was requested to take up and report on modern methods of overhead construction, with particular reference to that of the catenary type.

The work of the standing committees was then considered and acted upon as follows:

The Committee on Maintenance and Inspection of Electrical Equipment was instructed to continue its work of last year, amplifying on one or more of the subjects then discussed, and to take up the question of tests for materials and supplies.

The Committee on Way Matters was also instructed to continue the work of last year and to consider especially the question of the application of bonds, the quality and composition of rails and rail corrugations.

The Committee on Operating and Storage Car House Designs and that on Rules for the Construction of Car Houses are yet to be appointed. It was decided, however, to instruct these committees to continue the work originally laid out for them as well as that initiated by the main association.

The Committees on Car Wiring and Standardization were transferred to the Engineering Association by the American Association, in accordance with the policy of the latter association, already announced. The former was instructed to take up, in addition to its usual work, the question of methods of car and car-house lighting. The committee will confer with a committee of the Fire Underwriters on this subject at a meeting to be held during the spring.

A discussion followed on the advisability of having all papers in the hands of the secretary sixty days in advance of the convention and dispensing with the reading of reports on the floor of the convention. A suggestion was also made that one day be set aside at the convention for the examination of exhibits. The question of the establishment of the office of secretary as a purely honorable office was also discussed, as was also the plan of making past presidents of the association members of the executive committee. It was found that these actions would require changes in the constitution and by-laws. The secretary was instructed to prepare for distribution to the members drafts of the necessary amendments to accomplish these results as well as for changing the method of amending the by-laws.

### CLAIM AGENTS' ASSOCIATION

A meeting of the executive committee of the Claim Agents' Association was held at the association headquarters on Thursday, Jan. 30. This meeting was called for the purpose of deciding on a program for the 1908 convention, a full announcement of which will be made at a later date.

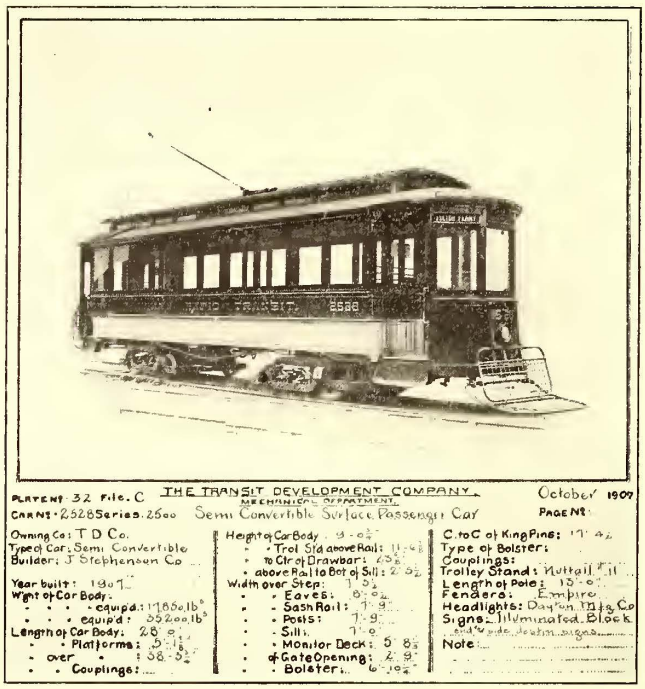
### ACCOUNTANTS' ASSOCIATION

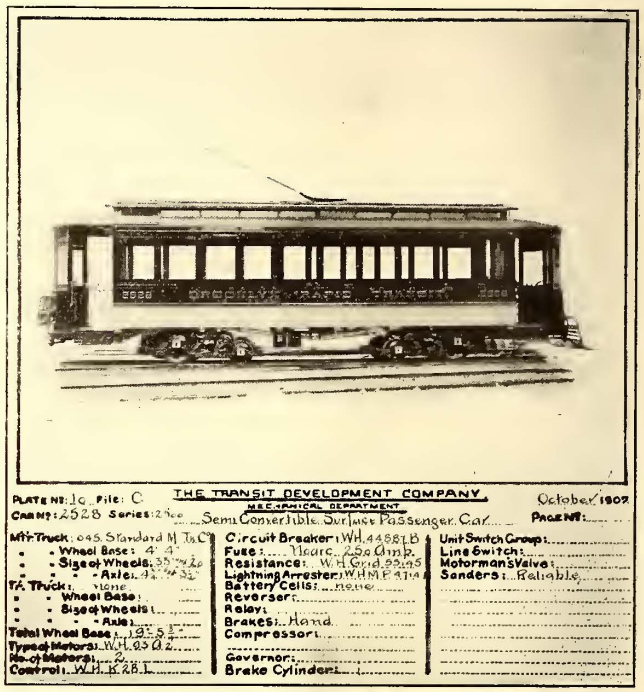
The meeting of the executive committee of the Accountants' Association was held on Saturday, Feb. 1. An announcement of the program decided upon will also be made at a later date.

According to statistics recently prepared by the Indiana Railroad Commission the electric railway companies of Indiana increased their mileage during the past year a little over 400 miles, making a total of 1530 in the State. These figures, however, do not include street railway lines. The longest line in operation in the State is that of the Terre Haute, Indianapolis & Eastern Traction Company, which operates 349 miles, the next largest is that of the Indiana Union Traction Company, which operates 331 miles, the Ft. Wayne & Wabash Valley Traction Company ranking third with 150 miles, the Indianapolis & Cincinnati Traction Company with 108 miles. There are twenty-seven other distinct companies operating lines less than 100 miles in length.

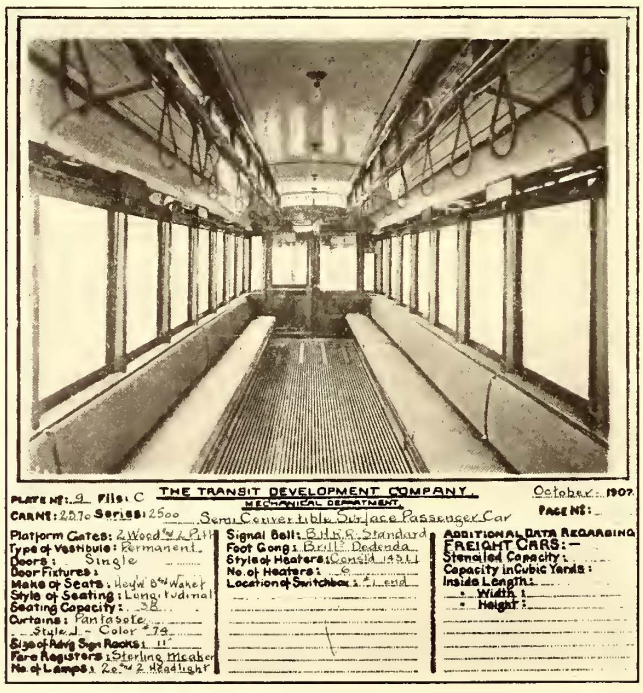
## CAR RECORDS IN BROOKLYN

The mechanical department of the Brooklyn Rapid Transit Company has developed a system of car record prints which has been found very useful in familiarizing the employees with the company's wide variety of rolling stock and the equipment peculiar to it. Each record consists of three photo prints 10½ ins. x 9½ ins. in size with as many different views of the same cars, namely, a side view, a part head-on view and an interior. The illustration of




REPRODUCTION OF PRINTS AND DATA OF TWO EXTERIORS OF CAR




REPRODUCTION OF PRINT AND DATA OF INTERIOR

the cars are 8½ ins. x 6½ ins., so that enough space is left on the prints to incorporate all essential data on the type of car. Under the part head-on view, the type, principal dimensions, bolsters, coupler, fender, trolley standard, length of pole, headlight and signs are given; the side view print carries data on the trucks, brakes, motors, control and other motive equipment; while the interior is accompanied with information on the vestibules, gates, seating, bells, heaters and minor car fittings.

These records are especially valuable to the claim department, as they make accessible immediately complete information on any type of car concerned in an accident. The embodiment of photographs in the record is of great advantage when cases are brought up in court, as such evidence appeals to the layman with much more force than blue prints or technical descriptions.

## HYDRO-ELECTRIC PLANT FOR TOKIO, JAPAN

The first 60,000-volt hydro-electric plant in Japan has just been put into service near Tokio. It contains six 3000-kw, 50-cycle, 6600-volt alternators. The generator voltage is stepped up to the line voltage through three banks of three each single-phase water cooled 2000-kw transformers, at which potential it is transmitted 25 miles to the Waseda sub-station just outside the city of Tokio. In this main sub-station water cooled transformers of 1800 kw each step down the line voltage to 11,000 volts, at which potential it is transmitted under ground through lead armored cables to eleven distributing sub-stations situated in various parts of the city. In each of these smaller sub-stations oil cooled transformers of 250-kw capacity step the voltage down to 2000 volts, the line potential of the city circuits.

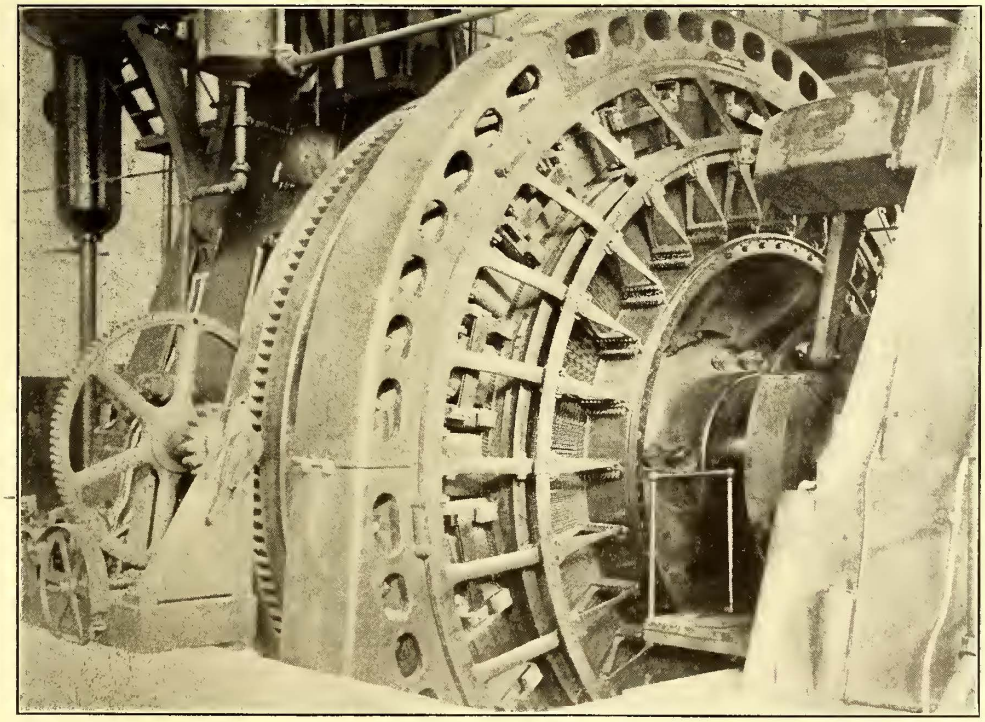
The entire transformer, regulating and controlling equipment consisting of 18 water cooled and 54 oil cooled transformers, 81 single-phase induction feeder regulators and 149 switchboard panels, was furnished by the General Electric Company, as was also the lead armored cable.

R. T. Gunn, superintendent of transportation for the Ft. Wayne & Wabash Valley Traction Company, has issued a new form of transfer from interurban to city cars in Ft. Wayne, Logansport and Lafayette, as the franchises in these three cities provide for such transfers. Mr. Gunn and the officials of the company do not regard it a good practice, and would prefer to have no transfers between the interurban and city system at any point.

## COMMUTATING POLE GENERATORS FOR BOSTON ELEVATED RAILWAY

Two 2700-kw commutating-pole railway generators recently installed in the Charlestown and Harvard Power Stations of the Boston Elevated Railway Company by the General Electric Company present some interesting features in connection with the design, installation and operation of this type of railway generator. The first of these generators was put in commercial service on Oct. 10, and the second was placed in service about the middle of November. Both are direct connected to McIntosh & Seymour 4100-hp vertical cross-compound engines. They are designed for 575 volts at a speed of 90 revolutions per minute, but are capable of wide voltage range at all loads, and at the voltage for which they are designed are guaranteed to deliver 2700 kw continuously with a temperature rise not to exceed 35 degrees C. in any part above the surrounding air, also 50 per cent overload or 4050 kw for two hours following the normal run, the temperature rise not to exceed 5 degrees C., and to withstand a momentary overload of 100 per cent or 5400 kw without injury.

No change whatever in the brush setting has to be made from no load to momentary overload condition of 100 per cent, and the circuit breaker can be tripped under any condition of load between these limits without appreciable disturbance at the brushes. In fact, the provision for shifting brushes is almost superfluous on this type of machine, as with the brushes once adjusted for best commutation it is never necessary to alter their position, sparkless commutation being assured under all conditions of load. Moreover, the machines may be successfully run in parallel with other machines of the non-commutating pole type, no trouble whatever being experienced in paralleling the machines with others in the Boston stations.



2700-KW COMMUTATING POLE GENERATOR INSTALLED IN BOSTON

The magnet frame is of cast iron, rectangular in shape, made in six sections securely bolted together and of the box section type, forming a most rigid structure for supporting the numerous poles with their heavy field coils. The main poles are rectangular cast steel, with laminated pole-faces and the commutating poles are laminated throughout. Field coils are compound-wound and of the well-known G. E. ventilated type.

The armature core, formed of steel punchings, is rigidly held to a cast-iron spider of substantial proportions by means of numerous dovetails. Effective cooling of the armature is procured by numerous ventilating ducts throughout the core, and also by a novel construction of the end flanges which allows the end conductors to be well separated, and permits a free and natural flow of air between them. The armature winding is of the multiple drum type, composed of formed coils of bar copper, and interchangeable on the same armature. The coils are held in the slots by tough wooden wedges and the end-windings are kept in position by patented sectional binding bands, easily removed or replaced.

The commutator bars are of hard-drawn copper of such dimensions as to provide ample wearing depth and liberal creepage distances. The spider, made of cast iron, is rigidly bolted to the armature spider and the clamping rings are of the best cast steel. An interesting feature of the commutator construction is the precaution taken to prevent a possible short circuit from studs or bars to clamping rings. Where the clamping rings extend beyond the commutator bars, they are thoroughly insulated with mica and in addition, extra insulation is molded over the extreme edge of ring and carried well down underneath, where it is securely fastened, thus making it almost impossible for grounding at this point.

The brush rigging is of the latest type, employing cast brackets of substantial dimensions to which the individual brush holders are bolted. The resulting construction is strong, rigid and entirely free from movement or vibration, thus obviating the necessity of employing supporting tie-rings passing from stud to stud. Alternate sets of brushes are so placed on the stud brackets that they are staggered around the commutator. By this means the brushes do not track, thus promoting even and uniform wear of commutator without the use of auxiliary means to obtain this desirable feature.

It is interesting to note that the armature diameter of these machines is approximately 4½ ft. less than the armature diameter on the non-commutating pole generators of the same output just installed in the Lincoln Wharf Station of the Boston Elevated Railway Company.

The Gan-Han Electric Railway to be constructed between Taira, Iwaki Province, and Koriyama, Iwashiro Province, Japan, via Koriyama, Iwashiro Province, via Moharu has been sanctioned by the Government. The total mileage covers forty-five miles and the capital is 1,450,000 yen.

## SINGLE-PHASE CATENARY CONSTRUCTION

Some interesting improvements in single catenary bracket and span construction have recently been brought out by the Elmer P. Morris Company, of New York, and are shown in the accompanying illustrations. Fig. 1 illustrates

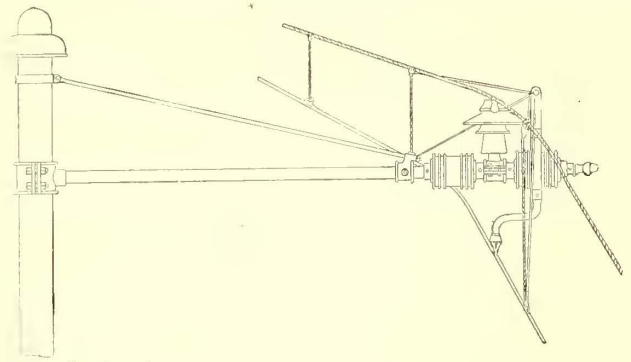



FIG. 1.—BRACKET CONSTRUCTION FOR CURVES

a type of bracket construction for curves which preserves the vertical position of the supports for the working conductor. In this type the push-off or steady strain has been eliminated, and a pull-off substituted which clamps around the porcelain insulator at the end of the arm. The upper end of this pull-off is anchored to the messenger between the suspender arms and the lower end secured to the trolley wire. In this way the strain is removed from the insulator carrying the messenger wire. There are secondary insulators on the arm on either side of the petticoat messenger insulator. In case the main insulator fails these secondaries provide against the grounding of the line by insulating the messenger almost as effectively as the main insulator.

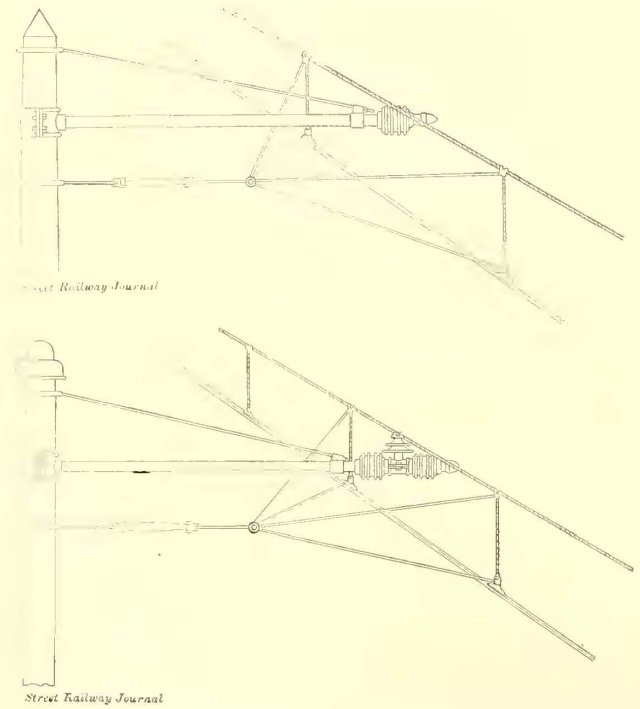



FIG. 2.—PYRAMIDAL GUYING TO WOOD STRAINS SHOWING BOTH ROLLER AND PETTICOAT INSULATORS, THE LATTER WITH AUXILIARIES

In Fig. 2 are shown two different types of bracket construction with both the messenger and the trolley guyed to the same wood strain insulator. The first of these represents the old method of roller insulator for voltages up to 6000 volts, with pyramidal bridle, while the second shows the petticoat messenger insulator and the pyramidal guying to wood strains with secondary insulators as described in connection with Fig. 1. In both cases illustrated in Fig. 2 the steady wires to the strain insulator are run from the suspender rods on either side of the brackets.

In Fig. 3 is shown the bracket construction with auxiliary insulators and pyramidal guying. In this form a yoke is

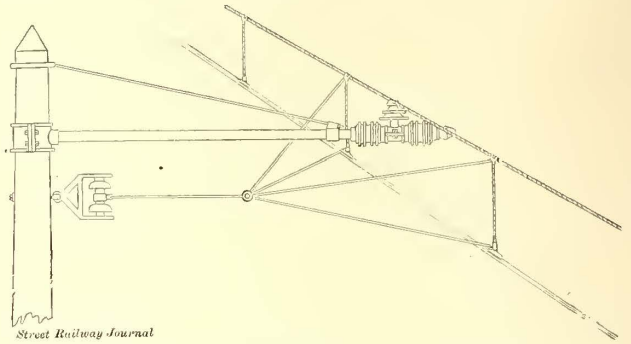



FIG. 3.—AUXILIARY INSULATORS AND PYRAMIDAL GUYING TO YOKE INSULATOR

used carrying between its arms an insulator to which the pyramidal bridle is attached. The yoke may be either clamped around the pole or bolted through it.

Fig. 4 illustrates types of span and bracket construction intended for high voltage work which are modifications of the German plan. The two types of span construction differ merely in the suspension of the messenger. In one

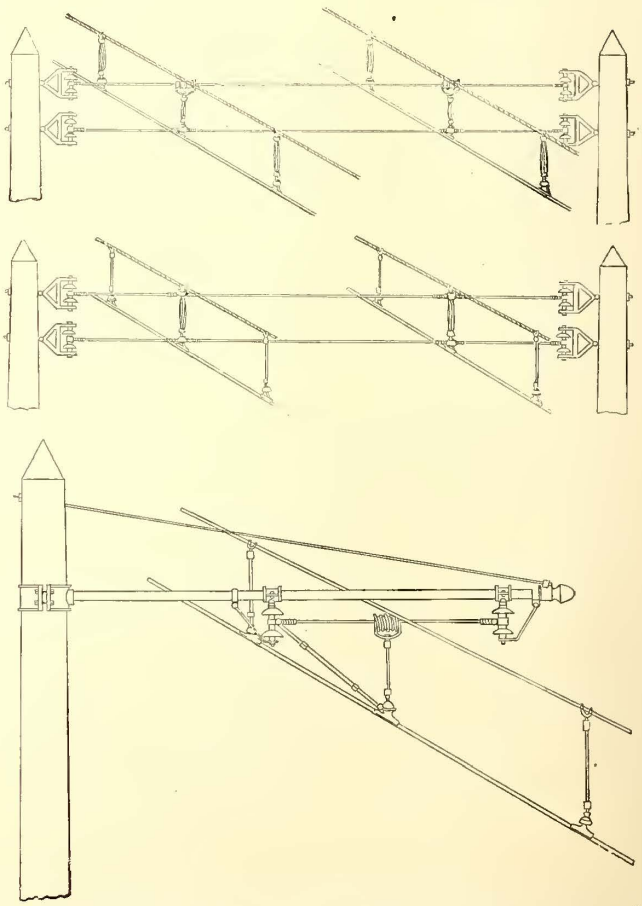


FIG. 4.—TYPES OF SPAN AND BRACKET CONSTRUCTION INTENDED FOR HIGH-VOLTAGE WORK

the messenger is carried over a rolling insulator, while in the other the messenger is firmly clamped to the insulating rod separating the messenger and trolley wires. In the bracket construction the messenger is supported by an insulator below the arm carried on a rod instead of a cable. Both ends of this insulating rod are secured to the arm by

a stiffening brace. In addition a brace with an insulator at the middle is run from the inner end of the rod to the trolley. This makes a very stiff suspension.

Fig. 5 shows a modification of the cross-span construction shown in Fig. 4. In this case a single insulator is suspended from the pole by two straps and the cables from

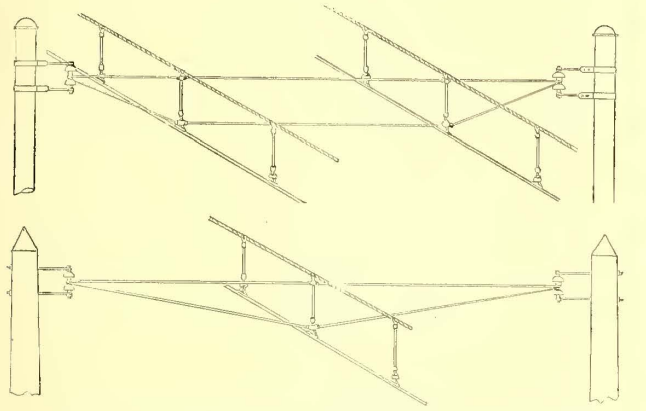


FIG. 5.—MODIFICATION OF CROSS-SPAN CONSTRUCTION WITH SINGLE INSULATOR

the messenger and the trolley run to the same insulator. Any of these forms of construction can be modified so as to meet the requirements of any special installation.

The Morris suspension is in use on a number of lines, the

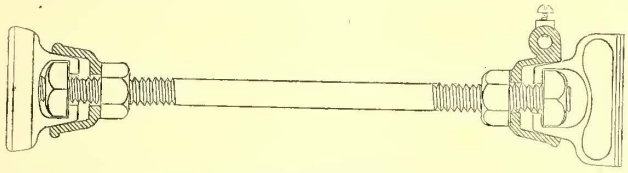


FIG. 6.—SUSPENDER WITH INTERCHANGEABLE STRAIN AND FEED CAPS

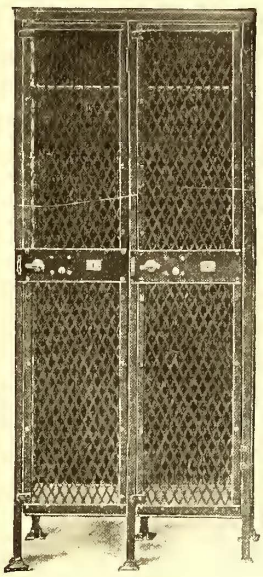
most important installation being some 40 miles on the electrified division of the Erie at Rochester. In this work bracket construction was used with 5/8-in. solid rod, as shown in Fig. 6, for suspension. The strain and feed caps are interchangeable.

## EXPERIMENTS WITH BREAKING HIGH VOLTAGES

Some interesting experiments have recently been conducted at the works of Dick, Kerr & Co., at Preston, to determine the ability of the Von Zweigbergk metallic shield blowout for breaking high voltage direct current, and incidentally the practicability of high voltage direct current railway operation. The tests were made with a specially designed blowout coil 6½ ins. in diameter and weighing about 35 lbs. Direct current at 3200 volts was applied, with twelve 40-hp, 500-volt railway motors connected in circuit, two in parallel and six in series, in order to give an induction discharge similar to that which would be produced by two 175-hp, 1500-volt motors in series. A current of from 75 to 100 amps. was broken several hundred times, but hardly any traces of wear could be detected on inspecting the contacts. The results have been so successful that an equipment for 4000 volts direct current is now being built by Dick, Kerr & Co. The equipment will consist of two motors each of 1900 volts, but capable of working up to about 2000 volts and of about 200-hp capacity each. These motors will be connected permanently in series to allow for a line voltage of about 4000. The Von Zweigbergk Controller Company, whose headquarters are in Cleveland, Ohio, is now manufacturing blowouts for this voltage.

## EXPANDED METAL LOCKER

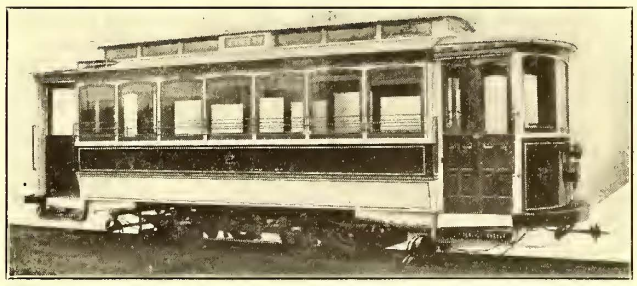
To the company employing a large number of persons the value of a metal locker as a clothes receptacle is generally recognized. The "Pen-Dar" metal lockers made by Edward Darby & Sons Company, of Philadelphia, being constructed entirely of open-mesh, permitting a free circulation of air, are well ventilated and sanitary. Moreover, the contents of each individual locker is constructed of expanded metal by a patented process. The material is made from planished steel plate, cut, expanded and then rolled in such manner that it presents a smooth surface entirely free from rough edges or corners. Each locker is equipped with one shelf, three coat hooks, individual brass number plates and a special three-point locking device, which fastens the door at the top, center and bottom with a single turn of the lock. The lockers are finished in various colors, and each lock is provided with two keys, which are made non-changeable.



EXPANDED METAL LOCKER

## NEW ROLLING STOCK FOR BANGOR, MAINE

The Bangor Railway & Electric Company has just placed in operation a number of cars of Brill make similar to the one illustrated. They measure 20 ft. ⅛ in. over the end panels; over vestibules, 30 ft.; width over sills, including panels, 6 ft. 8½ ins.; over posts at belt, 8 ft. 2 ins. The trucks on which they are mounted are of the No. 21-E type with a wheel base of 7 ft. 6 ins.; two motors of 40 hp each are used per car. The company also has on order



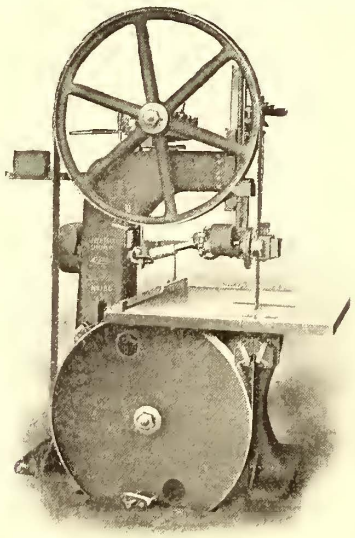
EXTERIOR OF CAR ADOPTED FOR BANGOR

at the present time with The J. G. Brill Company cars of the semi-convertible type which are similar to the cars now operating over the lines of the Bangor, Orono & Oldtown Railway Company, since consolidated with the Bangor Railway & Electric Company. These cars are 28 ft. over the bodies and are mounted on No. 27-E1 trucks. The last mentioned road also operates with the semi-convertible on the interurban portion of its system, said cars being of the combination passenger and baggage type.

The Havana Central Railroad, which operates an electric railway 70 miles long, between Havana and suburban towns, contemplates the building of 50 miles of additional track, a large terminal station and a number of piers. It is the intention of the company to operate, in the future, a ferry from Havana to Regla.

## A NEW BAND RIP SAW

A machine which is claimed to embody every modern improvement in band saw construction and to stand the wear and tear of continuous service is made by the J. A. Fay & Egan Company, of Cincinnati. The distance between the saw and the fence is 24 ins. and the height under the guide is 12 ins. The feed rolls are placed close together, enabling short pieces to be fed successfully. The



A NEW RIP SAW

saw guides have sectional hardwood blocks arranged to permit of taking up the slightest wear. The machine is built along the same lines as the Fay & Egan No. 1 machine, but in addition to the features of the older tool it has other improvements designed to give it a maximum of efficiency. The straining device has forward, backward and side adjustment, and the claim is made that the lightest blades may be run at the highest speed without danger to saw or operator. The machine illustrated is the No. 180.

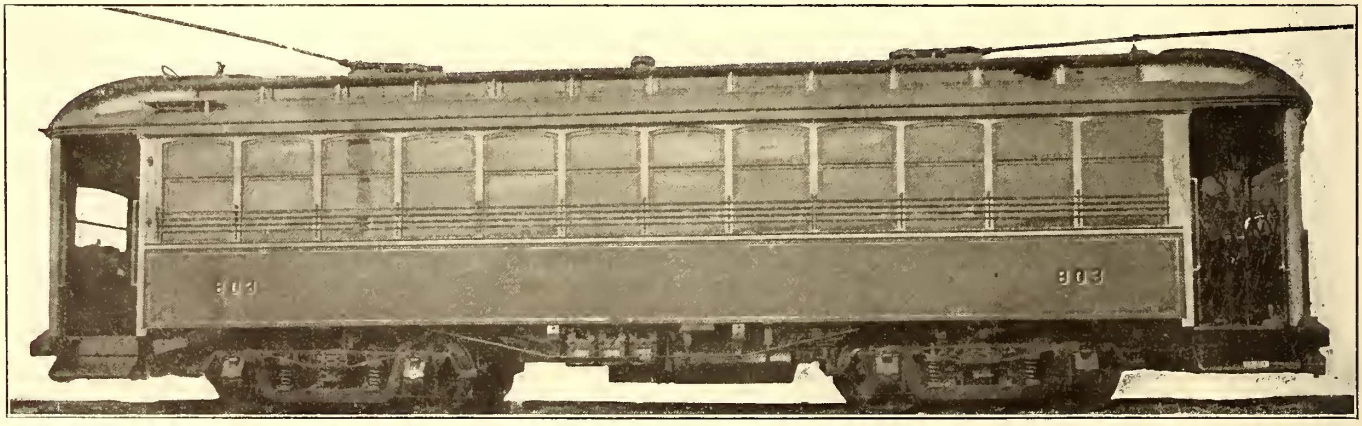
## CANADIAN FARE BOX SYSTEM AT OGDENSBURG

The Ogdensburg Street Railway Company has recently installed the Canadian system of collecting fares by the Coleman fare box. The company states that so far the system has proved very satisfactory and has simplified the office accounts. Of course the conductor cannot use the money collected in making change and must therefore carry a much larger amount for that purpose. So far as is known this is the first instance of the use of the system in the United States.

## NEW CARS FOR MEXICO ELECTRIC TRAMWAYS COMPANY

The Mexico Electric Tramways Company has recently received from the St. Louis Car Company a number of standard suburban cars which contain several features of general interest. Each of the cars is 43 ft. 8 ins. long over all, 33 ft. 4 ins. long over the corner posts, leaving 5 ft. 2 ins. for the total length of each vestibule over the bumpers. The total width over all is 8 ft. 8 ins. and the width inside is 7 ft. 5 ins. The bottom framing consists of two side sills of long leaf yellow pine, 4½ ins. x 8 ins. plated on the outside, with ⅜ in. x 12 ins. steel plate; two 6-in. I-beams with long yellow pine fillers; two end sills of white oak 4½ ins. x 8 ins., and two center cross sills of white oak 4¼ ins. x 5¾ ins. The platforms are supported by two oak sills on each side, reinforced by 6 in. x ½ in. steel plates, and two center angles 4 in. x 4 in. x ½ in. extending through bolsters for a distance of 4 ft. There are also two draft sills 2¾ ins x 6 ins. bolted to the center sills. The bumper angles are 4 ins. x 6 ins., curved to the radius, and extending 6 ins. in front of the outside vestibule sheathing. The bumper angle is covered with No. 16 sheet steel extending from the edge of the bumper to the vestibule at an angle of 45 deg.

The car is framed for twelve windows on each side. The framing is of wood, sheathed on the outside below the belt with 3/32-in. sheet steel. The cars have a closed vestibule at each end and a single tread step at each side of the vestibule. The platform is dropped 10⅞ ins. from the level of the car floor. At each end of the car body are double, mutually operating doors equipped with St. Louis Car Company's operating device. Each car is equipped with two 66-in. longitudinal seats at each end and sixteen 33½-in. type C-3 of St. Louis Car Company's walkover cross seats, leaving an aisle 22 ins. wide. The ceiling is made of 3/32-in. sheet steel instead of wood, but the rest of the interior finish is of mahogany. All sashes are made of teakwood and all except the deck sashes are glazed with the best quality of D. S. A. glass. The deck sashes are glazed with chipped glass with imitation bevel and are equipped with deck sash operators. The lower side sashes are arranged to drop and the upper sashes are stationary. The curtains are of Pantasote with ring fixtures. The cars are furnished with straight air-brake equipment and multiple control system. They are mounted on St. Louis Car Company's M. C. B. Mexico special trucks having steel tired wheels.



SUBURBAN CAR FOR SERVICE IN MEXICO

Wells, Fargo & Company have taken over the entire express business of the Los Angeles Pacific Railroad.

# FINANCIAL INTELLIGENCE

WALL STREET, Feb. 5, 1908.

## The Stock and Money Market

The stock market at present is undergoing a period of contraction, which is in marked contrast to the expansion that took place during the earlier days of the current year. It is not that Wall Street is suffering from any lack of funds with which to indulge in an active speculation, as the supply of money at this center continues to increase, although not in such enormous volume as in the latter part of January, when currency from the interior flowed this way in almost unprecendented volume. The surplus reserves of the local banks are still climbing and now amount to $40,526,100, with every prospect of a still further augmentation in the early future. Besides, money in all departments exhibits increasing ease and rates are at present down to an unusually low point for this season of the year. However, there has been a pronounced curtailment of activity in both bond and stock markets, with a general tendency toward lower prices. By many of the most conservative this is regarded as a perfectly natural and healthy condition, particularly in view of the sharp rebound which the market had from the extreme low levels during the panic of last fall.

There have been numerous developments that have operated to bring about lessened activity and declining values in stock, chief among which, no doubt, has been President Roosevelt's message to Congress. While this message contained nothing particularly new in addition to the already well-known views of the president relative to corporate enterprises, the mere fact that a repetition of these views was given such widespread publicity at a time when matters in the business world generally were beginning to show signs of recovery from the recent disaster gave a decided chill to speculation and resulted in causing some liquidation on the part of timid investors. Added to this was the attention drawn to the local banking situation through the suspension of a few more banks, which, while generally understood to represent nothing more than the aftermath of last year's panic, nevertheless exerted more or less influence. Then, too, there was further contraction in several branches of trade and manufacture and considerable talk of impending dividend reductions, to say nothing of increasing demands for funds from corporations and more or less idle gossip of gold exports to Europe. While it is possible that we may be called upon sooner or later to part with a considerable quantity of the immense amount of gold brought from abroad last autumn, it is a practical certainty that the outflow for the present will amount to little or nothing.

But while pretty much everything has operated in the direction of reduced values for securities of all classes, there have been and still exist a few bright spots in the situation, which undoubtedly have served to check any wholesale selling. Among these may be specifically mentioned, aside from the great monetary ease, the more seasonable weather, which is calculated to quicken, at least in a moderate degree, pretty much all lines of general trade. Moreover, the action of the leading manufacturers of steel to maintain prices on their present scale may be accepted in a very favorable light, as it indicates the confidence of these "Captains of Industry" in the future of business. But above and beyond all these is the great wealth of the country at large, more especially the West and South, a factor which in the long run is bound to tell on security values, irrespective of whatever unsettling factors may temporarily arise.

Though generally moving in unison with stocks of all other descriptions, the local traction shares have maintained a comparatively firm tone and there has been in evidence an investment demand of at least moderate proportions. There have been no new or novel developments in connection with the affairs of these companies, all of which are going ahead making improvements and additions to their equipment, in proportion for an unprecendentedly large business which promises to develop the coming spring and summer.

## Philadelphia

The local traction stocks have reflected to a great extent the irregularity prevailing in the general securities market during the past week. Trading throughout the period was only moderately active, and prices, while strong in spots, showed an easier tendency. Philadelphia Rapid Transit continues to lead the group in point of activity, as well as price movement. Opening prices at 17¼ the price ran up ¾, and after a slight rally it declined further to 16. Union Traction declined in sympathy, the price reading from 50½ to 49¼. Philadelphia Traction declined ½ to 89 and American Railways to 45. Philadelphia Company common lost a point to 38, and the preferred, after a rise of a point, lost all the improvement. Other transactions were: Fairmount Park Transportation at 8; United Companies of New Jersey at 258 and 259¼; and Germantown Passenger Railway at 120.

## Baltimore

Extreme dullness prevailed in the Baltimore traction issues and values generally were fractionally lower than those prevailing at the close of last week. United Railway stock sold at 11½ @ 11¼. The 4 per cent bonds sold at 87 @ 86½ and the incomes at 49½ @ 49⅞. The refunding 5s brought 75¾.

## Other Traction Securities

In the Boston market strength was exhibited in Boston Elevated, which held around 137. Boston and Worcester preferred advanced a point to 59½. Massachusetts Electrics were steady, the common selling at 11 and the preferred at 48. West End common sold at 84 @ 85. Very little interest was manifest in the Chicago Traction. Chicago & Oak Park sold at 2 @ 1¾ and the preferred at 8. Metropolitan Elevated changed hands at 50, South Side Elevated at 67½ @ 68 and Northwestern Elevated at 20.

The most active trading in traction securities for some time on the Cleveland Stock Exchange took place last week, when 200 shares of Northern Ohio Traction & Light common changed hands at 20¼. A small lot was sold later at 20½. Cleveland Electric varied between 41½ and 42½, but one 25-share lot went for 43. This stock has shown quite a little strength for the past week or two, and holders are asking a better price than usual for it. One small lot of Elgin, Aurora & Chicago preferred sold at 73, an advance of half a point. Washington, Baltimore & Annapolis stock pooling certificates sold in two lots at 8 and 9, respectively.

## 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:

| | Jan. 22. | Feb. 5. |
|---|---|---|
| American Railways | 43½ | 43 |
| Boston Elevated | 136½ | 137 |
| Brooklyn Rapid Transit | 44¾ | 46¼ |
| Chicago City | a150 | — |
| Cleveland Electric | — | 43½ |
| Consolidated Traction of New Jersey | 68 | 68¾ |
| Detroit United | 37 | — |
| Interborough-Metropolitan | 7½ | 8½ |
| Interborough-Metropolitan (preferred) | 19¾ | 21½ |
| International Traction (common) | 35 | 34 |
| International Traction (preferred) 4s | 64¼ | 63 |
| Manhattan Railway | 123 | 130 |
| Massachusetts Elec. Cos. (common) | 12 | — |
| Massachusetts Elec. Cos. (preferred) | 47½ | 47 |
| Metropolitan Elevated, Chicago (common) | 17 | 17 |
| Metropolitan Elevated, Chicago (preferred) | 46 | 45½ |
| Metropolitan Street | 22 | 22 |
| North American | 47½ | 48 |
| Philadelphia Company (common) | 37½ | 37 |
| Philadelphia Rapid Transit | 14¾ | 15⅞ |
| Philadelphia Traction | 87⅝ | 89 |
| Public Service Corporation certificates | 54 | — |
| Public Service Corporation, 5 per cent notes | 85 | — |
| South Side Elevated (Chicago) | 67 | 70 |
| Twin City, Minneapolis (common) | 86⅝ | 83¼ |
| Union Traction (Philadelphia) | 49 | 49½ |

a-Asked.

## THE AMERICAN LIGHT & TRACTION COMPANY

The report of the American Light & Traction Company for the fiscal year ended Dec. 31 last was a highly satisfactory document and reflected in no small degree the unbounded prosperity enjoyed by that organization during the twelve-month period. The gross earnings of the company exceeded those of the previous fiscal period by nearly $200,000, or a little over 8¾ per cent. Expenses were curtailed to the extent of about $11,500, or 24 per cent, which left an expansion of some $210,000, or 9.52 per cent, in the net earnings. After the payment of 6 per cent dividends on the $14,236,200 preferred stock, the balance available for the $6,760,700 outstanding common stock was $1,572,423, or equal to the handsome percentage of 23.25 per cent on that issue. It will, therefore, be noted that there was a wide margin of safety over the 6 per cent rate of dividend paid on the junior issue.

It is also a rather significant feature that, after the payment of common dividends, which were in excess of the amount disbursed in the previous year by 21.14 per cent, and the setting aside of some $681,000 for reconstruction reserve, which was slightly above the amount so utilized in 1906, the company was able to report a surplus of over half a million dollars, which amount was more by $141,417, or 39.14 per cent, than in the year previous. The addition of the final net results for the last fiscal year to the previous profit and loss balance brings that amount up pretty close to the $3,000,000 mark—$2,992,827, which is exactly 20.19 per cent greater than was recorded on Dec. 31, 1906. The surplus earnings for the last year, before the deduction of reconstruction reserve, were more by $141,917, or 13.62 per cent, than in the previous year.

It will be recalled that the common stock of the company was placed on a 6 per cent dividend-paying basis last autumn, resulting in the disbursement of $67,838, or 21.14 per cent, more to the common stockholders than in the fiscal year ended Dec. 31, 1906. Interests closely identified with the company do not hesitate to state, with a degree of confidence, that the dividend rate will be still further increased to 7 per cent next autumn and eventually to an 8 per cent annual basis, provided, of course, there is no change in the present favorable outlook for the company.

There has been steady and marked improvement in the earnings of the company for several years back. The amount of dividends paid on the preferred stock, also, has been increased yearly. Previous to 1906 there was no amount set aside for reconstruction reserve, as each subsidiary looked out for itself in the matter of reconstruction. However, in each year for some time past, after preferred dividend payments, and in the last couple of years, liberal reconstruction charges, there has been a large margin of surplus earnings available for the common stock. The following table shows the gross and net earnings, preferred dividends paid and the percentage of surplus earnings available for the junior issue in each year from 1903 to 1907, both years inclusive:

| | Gr. earn. | Net earn. | Pf. divs. pd. | P. C. sur. avail. com. |
|---|---|---|---|---|
| 1907 | $2,463,158 | $2,426,595 | $854,172 | 13.18 |
| 1906 | 2,263,735 | 2,215,735 | 853,068 | 10.09 |
| 1905 | 1,373,621 | 1,336,168 | 570,492 | 16.11 |
| 1904 | 1,151,504 | 1,132,511 | 563,814 | 12.15 |
| 1903 | 1,080,851 | 1,050,311 | 553,060 | 10.63 |

The gross earnings for 1907, indicated above, are greater than those for 1903 by $1,382,307, or 127.89 per cent, while the expansion in net earnings for the same period is $1,376,284, or 131.03 per cent. The amount of preferred dividends paid in the last fiscal year exceeded that of 1903 by $301,112, or 54.44 per cent. The percentage of surplus earned on the common stock in 1907 was, as will be noted above, considerably larger than that for 1903, despite the fact that the amount of common stock outstanding in 1907 was $6,760,700, as compared with only $4,678,400 in 1903.

The principal changes in the balance sheet on Dec. 31, last, compared with the corresponding date of 1906, were a decrease of $1,235,909 in bills receivable; an increase in certificates of indebtedness of $1,890,777; an increase in collateral trust notes of $1,260,267; an increase in reconstruction reserve of $681,000; an increase in undivided profits of $502,683; and a decrease of $500,000 in accounts payable. The total increase in assets and liabilities was $1,980,239.

## BUFFALO, ROCHESTER & EASTERN HEARING

The hearing on the application of the Buffalo, Rochester & Eastern Railroad Company, for permission to build a line from Buffalo to Troy, was continued before the Public Service Commission last Wednesday. George C. Diehl, engineer for Erie County, testified as to the need of the new road in that county. F. C. Westfall and John Maxwell, of Oneida, criticized the freight service given that city by the steam road operating through the territory. F. H. Mason, secretary of the Buffalo Chamber of Commerce, submitted figures to show that insufficient rail facilities eastward from Buffalo had cost Buffalo great volumes of business, which had gone to other ports. He offered tables to show that while the tonnage of the railroads of New York has increased 54 per cent, freight receipts 172 per cent, and passenger receipts 168 per cent, track mileage of these roads has increased only 12 per cent. The chief engineer of the Buffalo, Rochester & Eastern said it is proposed to have 148 grade crossings, of which 74 are over private roads. Streets and roads to be crossed number 513, railroad and street car crossings, 33, and canal, 40. As far as possible, crossings are to be made over or under grade.

## THE SUBWAY PLAN APPROVED FOR NEW YORK

The Public Service Commission finally approved, Tuesday, Feb. 4, the plans for the Broadway-Lexington Avenue subway. The line will begin at the Battery, continue under Church and Vesey Streets to Broadway, and then under Broadway and Lexington Avenue to the Bronx side of the Harlem, where it will branch into two spurs, one to Woodlawn Cemetery, and the other to Pelham Bay Park. The estimated cost of the road and a connecting link across town under Canal Street, is $67,000,000. After formally adopting the new route, the commission passed a resolution asking the board of estimate to assent to the scheme. This consent is necessary because the new route is made up of several modifications of roads laid out by the old rapid transit commission and approved at the time by the board of estimate. As soon as the board of estimate acts the Public Service Commission will start obtaining the necessary consents from the property owners, and when these are received there will be nothing to prevent the commission from beginning advertising for bids. It is expected that the board will advertise for construction bids in about six months should the amendments to the Saxe law which have been presented to the Legislature be passed. These amendments give the commission power to grant operating leases for longer periods than laid down in the Saxe bill.

## NEW SOUTH WALES RAILWAYS AND TRAMWAYS

The Chief Commissioner for the Railways and Tramways of New South Wales has submitted his report on the financial transactions of the railways and tramways for the quarter ended Sept. 30 last. On the tramways the revenue received during the quarter amounted to £228,490, being an increase of £23,242 over the corresponding period of last year. There was an increase of £19,966 in the expenditure. The number of passengers carried amounted to 39,000,000. The lines have a total length of 130 miles, which are principally worked by electric traction. The business of the department still shows an increasing tendency, but is expected very shortly to have a check, as the weather outlook is not promising, and it is anticipated that very poor crops will be reaped; consequently the latter half of the financial year, which ends on June 30 next, will show a great falling off. At the same time there has been a considerable development in the industries of the state, and any check due to the weather will only be temporary.

Plans are said to be in hand on several of the steam railroads in Oklahoma to change portions of the road to electric lines. Besides this, St. Louis capitalists are also said to be considering the construction of several long interurban roads in Oklahoma and Arkansas. It was stated recently that the Fort Smith & Western Railway is contemplating changing the St. Louis, El Reno & Western Road between Guthrie and El Reno, forty miles, into an electric interurban, with the possibility that the Guthrie-Kingfisher and Guthrie-Chandler lines, controlled by the Rock Island and the Santa Fe, may also eventually adopt electricity.

## REPORT OF THE METROPOLITAN WEST SIDE "L"

The Metropolitan West Side Elevated Railroad Company, of Chicago, has issued its annual report for the year ended Dec. 31, 1907.

The income account compares as follows:

| | 1907. | 1906. |
|---|---|---|
| Gross receipts | $2,878,587 | $2,637,901 |
| Operating expenses | 1,443,498 | 1,290,358 |
| Net earnings | $1,435,089 | $1,347,543 |
| Other income | 6,819 | 16,665 |
| Total income | $1,441,908 | $1,364,208 |
| Fixed charges | 1,050,123 | 984,938 |
| Surplus | $391,785 | $379,270 |
| Dividends | 195,927 | ... |
| Surplus | $195,858 | ... |
| Previous surplus | 1,320,291 | ... |
| Total surplus | $1,516,149 | ... |

Metropolitan West Side Elevated Railroad's general balance sheet as of Dec. 31, 1907, compares with that of Feb. 28, 1907, as follows:

ASSETS.

| | Dec. 31, 1907. | Feb. 28, 1907. |
|---|---|---|
| Cost of road, equipment and property | $30,863,824 | $30,652,567 |
| Construction advanced | 1,237,143 | 981,709 |
| Preferred stock in treasury | 292,100 | 292,100 |
| Common stock in treasury | 35,900 | 35,900 |
| Extended mortgage bonds in treasury | 1,179,000 | 1,422,000 |
| Cash | 247,658 | 220,449 |
| Materials and supplies | 77,644 | 62,121 |
| Accounts received, etc | 47,699 | 20,882 |
| Prepaid insurance | 26,323 | 16,190 |
| Advanced Union Consolidated Elevated | 53,720 | 43,559 |
| Miscellaneous and unadjusted accounts | 78,984 | 43,201 |
| Total | $34,139,997 | $33,790,680 |

LIABILITIES.

| | | |
|---|---|---|
| Preferred stock | $9,000,000 | $9,000,000 |
| Common stock | 7,500,000 | 7,500,000 |
| Bonds | 14,500,000 | 14,500,000 |
| Collateral trade notes | 500,000 | 600,000 |
| Equity trade notes | 536,525 | 40,693 |
| Notes payable | 73,722 | ... |
| Vouchers, payrolls, etc | 263,297 | 227,210 |
| Interest coupons due | 5,960 | 5,320 |
| Interest accrued and due | 66,720 | 65,560 |
| Dividends, checks outstanding | 474 | ... |
| Interest accrued, not due | 173,680 | 175,320 |
| Rentals accrued | 8,750 | 8,749 |
| Taxes accrued | 101,873 | 101,872 |
| Depreciation and reserve | 88,705 | 85,251 |
| Profit and loss surplus | 1,320,291 | 1,124,433 |
| Total | $34,139,997 | $33,790,680 |

The total passengers carried aggregated 54,200,888, or a daily average of 148,715, an increase over 1906 of 9.06 per cent.

Maintenance of way and structure expenditures were $115,714; maintenance of equipment, $194,724; conducting transportation, $937,292; general expenses, $88,140; loop expenses, $107,627; total, $1,443,498.

Equipment consists of 225 motor cars, 183 coaches, 79 control coaches and 17 miscellaneous. Above includes 20 motor cars recently purchased from the Pullman Company. During the year the extension of Douglas Park Line to Forty-Eighth Avenue was opened for traffic. On account of the Western Electric Works reducing their forces in the early part of 1906 the traffic from this extension was not as large as anticipated, but business is sufficient to pay operating expenses and fixed charges. Total mileage, exclusive of side tracks, is 50.55. Cross-over switches have been installed, which will enable business to be handled with less delay than heretofore. Track structure and buildings have been properly maintained. A storage battery with capacity of 3200 amperes has been purchased from the Electric Storage Battery Company, and installed on Loomis Street, west of main power station.

The cost of transportation has increased materially because of increased cost of power, labor and material.

## ANNUAL REPORT OF THE OTTAWA ELECTRIC RAILWAY COMPANY FOR 1907

The report of the Ottawa Electric Railway Company for the year ended Dec. 31, 1907, was presented at the annual meeting of the stockholders of the company, held Monday, Jan. 27. It shows gross receipts for 1907 of $574,278, as compared with $525,746, and a net profit for 1907 of $180,908, as compared with $180,684 for the previous year. President Ahern, of the company, in presenting the report, said in part:

The gross earnings for the year were $574,278.46, compared with $525,746.59 in 1906, an increase of $48,531.87.

The net earnings for the year were $225,349.07.

Dividends amounting to 12 per cent were paid.

After providing for the interest on bonds and loans, and for mileage payments, the net earnings show over 18 per cent earned on the company's capital stock.

12,623,440 passengers were carried during the year, compared with 11,408,422 in 1906.

The net earnings have been disposed of as follows:

| | |
|---|---|
| Interest paid on bonds and loans | $31,626.40 |
| Four quarterly dividends of 2⅛ per cent and a bonus of 2 per cent | 119,484.00 |
| Mileage payments | 12,814.25 |
| Placed to credit of contingent account to be applied to reduction of track renewal, car equipment, etc | 26,000.00 |
| Carried to credit of profit and loss account | 35,424.42 |
| Total | $225,349.07 |

The balance at credit of profit and loss on Dec. 31, 1906, was $199,564.46, to which has been added as above $35,424.42, making $234,988.88. Of this amount $200,000 has been transferred to the credit of rest account, leaving a balance at the credit of profit and loss account of $34,988.88.

In order to cover expenditure on capital account during the past few years, your directors decided in November last to issue 2500 shares of new stock at par pro rata to the shareholders of record on Nov. 30, 1907. All these shares have been subscribed, and will be paid for within the next few months.

During the year, Sussex Street from St. Patrick Street to Government House Gate, Gladstone Avenue, and Laurier Avenue from Nicholas Street to King Street were relaid with 80-lb. rails; a second track was laid on Gladstone Avenue.

The work of relaying the tracks within the city with heavy rails is now almost completed.

At the end of December an agreement was reached between the water-power owners on both sides of the Ottawa at the Chaudiere for the purchase of the Little Chaudiere water powers and for conserving the waters of the Ottawa River. This will result in an increased and more uniform flow of water, and will be of great benefit to this company's valuable water powers.

The traffic of the company continues to increase steadily from year to year, and your directors use their best endeavors to keep pace with the development by constantly adding to the rolling stock, and in other ways improving the service.

Everything points to a satisfactory year's business in 1908.

ASSETS.

| | |
|---|---|
| Roadbed and equipment, water power property and plant, real estate and buildings | $2,058,431 |
| Stores | 5,296 |
| Cash | 4,899 |
| Insurance paid on account of period beyond Dec. 31, 1907 | 5,200 |
| Total | $2,073,826 |

LIABILITIES.

| | |
|---|---|
| Capital stock | $998,200 |
| First mortgage, 4 per cent bonds | 500,000 |
| Dividend No. 54, payable Jan. 1, 1908 | 44,806 |
| Interest on bonds, payable Jan. 5, 1908 | 10,000 |
| Unpaid dividends | 390 |
| Pay list to Dec. 31, 1907 | 11,220 |
| Bills payable and interest | 216,085 |
| Bank of Ottawa | 24,058 |
| Accounts payable | 5,077 |
| Contingent account, including balance from 1906 | 29,000 |
| Rest account | 200,000 |
| Profit and loss | 34,988 |
| Total | $2,073,826 |

## REPORT OF CAPITAL TRACTION COMPANY FOR YEAR

The Capital Traction Company, of Washington, reports for the year ended Dec. 31, 1907. The income account compares as follows:

| | 1907. | 1906. |
|---|---|---|
| Gross receipts | $1,764,345 | $1,708,463 |
| Operating expenses | 903,481 | 801,314 |
| Net earnings | $860,864 | $907,149 |
| Other income | 22,163 | 18,590 |
| Total income | $883,027 | $925,739 |
| Interest | 91,500 | 43,200 |
| Surplus | *$791,527 | $882,539 |
| Dividends | 720,000 | 720,000 |
| Surplus | $71,527 | $162,539 |

*Equals 6.59 per cent on the $12,000,000 capital stock.

The profit and loss account compares as follows:

| | 1907. | 1906. |
|---|---|---|
| Balance net income | $71,527 | $162,539 |
| Inc. from securities in insurance reserve | 7,467 | 4,280 |
| Bills payable | 16,131 | 405,000 |
| Proceeds of bond sale | 2,520,000 | ... |
| Renewal fund | 30,121 | ... |
| Refunded amount advanced | 95,619 | ... |
| Previous surplus | 36,409 | 32,671 |
| Total | $2,777,275 | $604,490 |
| Less— | | |
| Renewals, extension and equipment | 1,493,326 | 563,853 |
| Expenses bond sale and redemption | 1,140,956 | ... |
| Insurance reserve | 6,579 | 4,227 |
| Carried to general account | 16,131 | ... |
| Total | $2,656,993 | $568,410 |
| Balance Dec. 31, 1907 | 120,282 | 36,410 |

The general balance sheet as of Dec. 31, 1907, compares as follows:

| ASSETS. | 1907. | 1906. |
|---|---|---|
| Construction | $8,070,682 | $7,651,199 |
| Equipment | 4,548,575 | 4,053,144 |
| Real estate | 1,843,747 | 1,487,903 |
| Renewal fund | ... | 30,121 |
| Insurance reserve | 121,000 | 114,421 |
| Bills receivable | 16,131 | ... |
| Extension account | ... | 500,619 |
| Cash | 120,282 | 36,409 |
| Total | $14,720,417 | $13,873,816 |
| LIABILITIES. | | |
| Capital stock | $12,000,000 | $12,000,000 |
| Bonds | 2,520,000 | 1,080,000 |
| Tickets | 55,384 | 51,844 |
| Bills payable | 16,131 | 405,000 |
| Profit and loss | 128,902 | 336,973 |
| Total | $14,720,417 | $13,873,816 |

## PORTO RICO PLANT NEARING COMPLETION.

Work on the electric plant near the town of Comerio, Porto Rico, which was begun last spring by J. G. White & Company, is nearing completion. The plant will supply power service and light for the city of San Juan and the immediate vicinity. It will also furnish current to operate the electric roads in San Juan, and the extension line to Caguas. San Juan is about thirty miles from Comerio, and the 20,000-volt current will be conducted by double transmission lines. The work has been advanced by the Porto Rico Railroads Company, Ltd., and is financed by a group of Canadian capitalists.

## CHICAGO SOUTH SIDE ELEVATED REPORT FOR 1907

Gross earnings of the South Side Elevated Railroad in 1907 were $2,105,000, an increase of $317,000 or 17.4 per cent over 1906. The net earnings were $645,000, an increase of $63,000, or 9.3 per cent.

Owing to the fact that half a year's interest on $8,000,000 of the company's bonds was paid out of earnings, instead of out of construction account as formerly, while the new lines were under construction, the amount of earnings available for dividends on stock was only $439,507, or 4.25 per cent on the capital. This compares with 5.4 per cent on the capital in 1906 and 6.1 per cent in 1905.

The company's income account for the year compares as follows:

| EARNINGS. | 1907. | 1906. |
|---|---|---|
| Passenger | $2,021,931 | $1,721,213 |
| Other earnings | 75,860 | 63,591 |
| Miscellaneous | 7,402 | 4,171 |
| Total earnings | $2,105,193 | $1,788,975 |
| EXPENSES. | | |
| Maintenance of way | $114,081 | $77,984 |
| Maintenance of equipment | 168,669 | 144,318 |
| Conducting transportation | 677,482 | 534,946 |
| General expenses | 205,899 | 191,658 |
| Loop rental and expenses | 293,613 | 258,363 |
| Total expenses | $1,459,745 | $1,207,269 |
| Net earnings | 645,447 | 581,706 |
| Interest on bonds | 196,875 | 33,750 |
| Rental paid to Chicago Junction Railway | 9,064 | ..... |
| Dividends | 409,187 | 409,177 |
| Surplus for year | $30,320 | $138,779 |

The balance sheet, as of Dec. 31, compares as follows:

| ASSETS. | 1907. | 1906. |
|---|---|---|
| Cost of property | $12,201,652 | $12,238,803 |
| Construction and extension | 7,180,420 | 6,367,591 |
| Capital stock in treasury | 92,400 | 92,400 |
| Materials and supplies | 126,073 | 126,314 |
| Due from individuals and companies | 17,510 | 11,489 |
| Due from agents | 6,900 | 5,855 |
| Current assets and prepaid charges | 78,946 | 67,027 |
| Cash | 261,994 | 142,396 |
| Cash on hand—construction and extension | 6,547 | 83,135 |
| Total | $19,972,445 | $19,135,013 |
| LIABILITIES. | | |
| Capital stock | $10,323,800 | $10,323,800 |
| Funded debt | 8,000,000 | 7,110,000 |
| Current liabilities | 222,160 | 225,049 |
| Depreciation | 50,000 | 50,000 |
| Reserve | 1,376,485 | 1,396,163 |
| Total | $19,972,445 | $19,135,013 |

The large increase in gross earnings is attributable partly to the normal increase of population in the territory traversed and partly to the opening of five new stations on the Englewood extension and to opening to traffic the new Kenwood branch, on which there are seven stations. The lower rate of increase in net earnings was due to a normal increase in the operating expenses and to some extraordinary expenses which were made for the improvement of the structure and operating conditions. The large increase in the cost of conducting transportation was due to the opening of new lines, requiring a much larger quota of men and cars.

The traffic record for the year was as follows:

| | Passengers— Total. | Daily average. | Per cent of increase over 1906. |
|---|---|---|---|
| January | 2,864,739 | 92,411 | 0.01 |
| February | 2,690,640 | 96,094 | 1.07 |
| March | 3,107,018 | 100,226 | 4.99 |
| April | 3,094,553 | 103,152 | 7.72 |
| May | 3,406,265 | 109,880 | 13.09 |
| June | 3,470,576 | 115,686 | 13.67 |
| July | 3,469,916 | 111,933 | 20.39 |
| August | 3,529,259 | 113,847 | 28.58 |
| September | 3,547,677 | 118,256 | 31.76 |
| October | 3,926,755 | 126,670 | 35.36 |
| November | 3,617,807 | 120,594 | 27.90 |
| December | 3,713,415 | 119,788 | 25.80 |
| For year 1907 | 40,438,620 | 110,791 | 17.47 |

Rapid progress is being made on the Stockyards extension. It is hoped to have it in operation by May 1. When completed the company will have 37½ miles of single track elevated lines.

At the annual meeting, held on Jan. 30, William R. Linn and Leslie Carter were re-elected directors, Wallace Heckman elected to succeed William B. Walker, and Charles V. W was elected to fill the unexpired term of the late Ma Hopkins. All of the officers were re-elected.

## MEETING OF COLUMBUS RAILWAY & LIGHT COMPANY

At the annual meeting of the Columbus Railway & Light Company, of Columbus, Ohio, the following directors were chosen: Robert E. Sheldon, Clarence M. Clark, Edward K. Stewart, George W. Sinks, David E. Putnam, Theodore Rhodes and Carl J. Hoster. All the old officers were re-elected as follows: Robert E. Sheldon, president; E. K. Stewart, vice-president, treasurer and general manager; P. V. Burington, secretary and auditor; L. G. White, general superintendent.

The annual report of the president showed that after operating expenses, taxes, rentals, interest, dividends and depreciation had been charged off a surplus of a little less than 4 per cent on the capital stock of $5,000,000 was shown. The previous year the earnings were 2.47. Owing to the poor condition of the bond and stock market, the company did not attempt to sell either to secure money for improvements and extensions, but borrowed at the prevailing interest rate. This, of course, reduced the dividends. Had it not been for this it is believed the surplus would have been at least 5 per cent on the capital stock.

Gross receipts from operating were $2,238,546.11, while the operating expenses were $1,153,878.61 or about 51 per cent. Receipts from miscellaneous sources were $17,972.75.

## ANNUAL REPORT OF THE LAKE SHORE ELECTRIC RAILWAY COMPANY

The annual report of the Lake Shore Electric Railway Company for the year 1907, submitted to the stockholders at the annual meeting, Jan. 28, 1908, shows as follows:

| | 1907. | 1906. |
|---|---|---|
| Passengers | $839,237.29 | $795,719.12 |
| Chartered cars | 5,002.65 | 3,687.56 |
| Freight | 45,411.53 | 37,454.66 |
| U. S. mail | 2,179.43 | 2,168.29 |
| Milk | 1,794.76 | 1,949.07 |
| Advertising | 2,490.00 | 2,130.00 |
| Car mileage | 10,177.42 | 11,336.69 |
| Interest and discount | 2,297.43 | 1,633.39 |
| Miscellaneous | 4,570.20 | 4,641.38 |
| Gross income | $913,160.71 | $860,720.16 |
| Operating and taxes | 521,559.04 | 476,257.85 |
| Net earnings | $391,601.67 | $384,462.31 |
| Other income | 25,000.00 | 6,250.00 |
| Surplus | $416,601.67 | $390,712.31 |
| Interest paid | 294,072.99 | 254,198.34 |
| Net surplus | $122,528.68 | $136,513.97 |
| Per cent of opr | 57.11% | 55.33% |
| No. of car miles | 3,392,735 | 3,355,661 |
| Income per car mile | 26.91c | 25.65c |
| Opr. and taxes per car mile | 15.37c | 14.19c |
| Net earnings per car mile | 11.54c | 11.46c |
| Passengers carried | 4,904,505 | 4,758,838 |
| Earnings per passenger | 18.61c | 18.54c |

COMPARATIVE STATEMENT OF GROSS EARNINGS.

| | Gross Earnings | Increase | Per cent |
|---|---|---|---|
| 1901 | $358,180.35 | | |
| 1902 | 466,051.35 | $107,870.67 | 30.01 |
| 1903 | 616,484.23 | 150,432.88 | 32.28 |
| 1904 | 659,873.21 | 43,388.98 | 7.03 |
| 1905 | 788,268.47 | 128,395.26 | 19.45 |
| 1906 | 860,720.16 | 72,451.69 | 9.19 |
| 1907 | 913,160.71 | 52,440.55 | 6.09 |

President Moore, in presenting the report, said in part:

During the year the high-tension lines from the Fremont power-house eastward to the junction of the Sandusky, Fremont & Southern Railway were rebuilt and new lines added.

During the year 1907, five new 50-ft. interurban car bodies were purchased, also two sets of trucks and equipments. Three car bodies being to replace the three destroyed in the fire at Fremont during October, 1906.

At Fremont there was installed a 2000-kw turbine, together with a Wheeler condenser, pumps, necessary piping, etc., for the operation of this new machine.

A new water intake system was also constructed at this point. A new switchboard for the operation of the turbine, and two [illegible]-kw rotaries were added to Fremont power house.

[illegible]b-stations at Hayes, Genoa, Hessville, Mussers, and [illegible]le were rearranged, and a 400-kw rotary installed in each of the Berlin Heights and Dover Bay sub-stations, together with necessary transformers, and switchboards.

At the Beach Park station two 400-kw alternating-current generators were installed, and the engines connected thereto were completely overhauled and put in first-class condition.

One 400-kw rotary was installed.

A switchboard section to control the two 400-kw alternating generators and the rotary converters was added.

In the city of Sandusky a new track was laid from the intersection of Columbus Avenue and Water Street westward on Water Street, Lawrence Street, Washington Street and Tiffin Avenue out to the Kuebler brewery. For this entire distance the track was laid on concrete and the brick pavement replaced. From the Kuebler brewery on Tiffin Avenue and Venice Road to the junction of the Sandusky, Fremont & Southern Railway new track was laid with stone ballast.

The following is a comparative statement of the gross earnings and operating expenses of the Lorain Street Railway Company for the years of 1907 and 1906:

| | 1907. | 1906. |
|---|---|---|
| Gross income | $177,804.39 | $146,878.09 |
| Operating expenses and taxes | 110,543.01 | 97,762.81 |
| Net earnings | $67,261.38 | $49,115.28 |
| Bond interest | 64,500.00 | 42,604.26 |
| Surplus | $2,761.38 | $6,411.02 |
| Per cent of operation | 62.17 | 66.56 |
| Car miles | 703,006 | 636,707 |
| Earnings per car mile | 25.29c | 23.06c |
| Operation and taxes per car mile | 15.72c | 15.35c |
| Net earnings per car mile | 9.57c | 7.71c |

During the year 1907 one 400-kw rotary, together with the necessary switchboard, transformers, cabling, etc., was installed in the South Lorain plant.

The remainder of the double track, with the exception of approximately 1500 ft., was completed between the steel plant at Lorain and the Loop in the city of Elyria.

This company owns and has in operation rolling stock as follows: Eighteen double truck interurban cars, 2 single truck city cars, 3 work cars—23 cars in all.

Construction work on the Sandusky, Fremont & Southern was continued throughout the year. The road is now completed except a small portion of ballasting, this being delayed for lack of sufficient crushed stone.

From the junction with the main line of the Lake Shore Electric Railway, at Fremont, to the connection with the Lake Shore Electric Railway at Venice Road, Sandusky (twenty miles), the road is on private right of way entirely, which right of way is nearly all eighty feet in width.

This company purchased during the year, ten 50-ft. interurban cars, equipped with Baldwin Locomotive Works trucks and Westinghouse 121 motors, with automatic control; also eight Rodgers ballast cars.

A sub-station was built at Whitmore, in which have been installed two 400-kw rotaries with the necessary switchboard, transformers, etc.

The earnings of this road are shown as the S. F. & S. Division of the Lake Shore Electric Railway.

MILEAGE OPERATED.

| | Single track miles. |
|---|---|
| The Lake Shore Electric Railway Company | 170.49 |
| The Lorain Street Railroad Company | 24.77 |
| The Sandusky, Fremont & Southern Railway | 20.03 |
| Total | 215.29 |

## TOLLS ON INTERURBANS ENTERING INDIANAPOLIS.

The annual report of the Indianapolis Traction & Terminal Company, made to the city in connection with the franchise of the company permitting interurban cars to enter and leave the city over its tracks, shows a large gain for 1907. The total number of round trips in 1907 was 99,243, against 80,137 in 1906. For this privilege the city receives 4 cents for each round-trip made by the interurban cars over the lines of the Indianapolis Traction & Terminal Company. The amount paid this year was $3,967.70, as against $3,206 in 1906. In addition to this payment the Traction & Terminal Company pays to the city an annual tax of $30,000, all of which is expended upon the improvement of the public parks.

## THE CLEVELAND SITUATION

Judge Estep in Common Pleas Court has decided that the City Council has authority to grant the low-fare companies the right to joint use of tracks with the Cleveland Electric on West Twenty-Fifth Street between Bridge Avenue and Lorain Avenue and on Lorain Avenue between West Seventy-Third Street and West Twenty-Fifth Street. The cars can, under this decision, reach the West Side market house and from there run over Abbey Street to the Abbey Street bridge. From there they will cross the Central viaduct and reach the East Side market house. Ontario Street to the Public Square will then be used. The Court rules that the low-fare companies must erect their own wires and poles. Mr. DuPont has applied to the Cleveland Electric for the use of its poles and wires, with proper compensation. This decision came in an injunction suit brought by the Cleveland Electric some time ago.

Judge Addams, in insolvency court, has held that the Forest City Railway Company has the right to appropriate 1200 feet of track on West Sixty-Fifth Street for its use. The Cleveland Electric contended that the company was not operating seven times as much track as it desired to appropriate, as the law requires, but at the time the suit was filed the company claims that its trackage was sufficient under the law to give it the right to take action. The appropriation proceedings have not been begun yet.

In the Ohio Supreme Court a few days ago the legality of the grant to the Forest City Railway Company in Denison Avenue was upheld. The decision came in the suit of William Reynolds, taxpayer, against the city and the Forest City Railway Company. All the extensions made from this grant as a basis are thus legalized by the decision.

President Horace E. Andrews occupied the position of a witness at the meeting Monday, Jan. 27. The Mayor had two schedules, one of $11,000,000 and the other of $3,000,000, making up the total of $14,000,000, which he thinks will replace the property of the old company, and he quizzed Mr. Andrews as to the percentage of overhead charges that should be made in this. Mr. Andrews replied that 10 per cent on the entire amount would be fair. Then the Mayor insisted that he give the percentage on various items which he named. Mr. Andrews said that he was not in position to give such figures, and the Mayor appealed to Mr. Goff. He said Mr. Andrews was either guessing or attempting to conceal something. At this Mr. Andrews stated that if the Mayor felt that way, that he would refuse to go further with the examination. His position was supported by Mr. Goff, who said that the Mayor seemingly attempted to discredit every man he had brought in to give expert information, and that all were men whose character and truthfulness could not be successfully assailed by the Mayor or any one else. Then the Mayor proposed to withdraw any remarks that he had made to which Mr. Goff took exceptions. The latter said that the Mayor had treated him with the utmost consideration, but had been different with the men he had selected to aid him. He declared that he would not treat any gentlemen the Mayor might bring in as these men had been treated.

The proposition to extend the franchises on Woodland Avenue and the West Side was again discussed, but the Cleveland Electric officials objected to the proposition allowing the Forest City cars to use its tracks on Ontario Street and Superior Street, in return for the so-called concession at once. The Mayor then withdrew the request respecting Superior Street, and the Cleveland Electric officers said they would give an answer regarding Ontario Street within a few days. As a result the ordinance that had been prepared was not presented at the Council meeting Monday evening.

Instead, an ordinance allowing the Forest City Railway Company joint use of the tracks on Superior Street between the Public Square and East Ninth Street and East Ninth Street from Superior to Euclid was passed under a suspension of rules. Compensation amounting to $2,800 was named for the use of the tracks, without the poles and wires. An attempt has thus been made to force the issue.

Through a series of concessions and compromises, Mayor Tom L. Johnson, for the city of Cleveland, and F. H. Goff, representing the Cleveland Electric Railway Company, have reached an agreement on the valuation of tracks and pavement in the leasing negotiations. Under this estimate, the track valuation is placed at $3,800,000 and that of the pavements is $1,732,000, making a total of $5,532,000. This brings the total physical valuation up to $13,869,009. When Mayor Johnson found that Messrs. Clark and Hoffman were still far apart on the value of the tracks he proposed a compromise that would do away with the 8 per cent depreciation rule and the substitution of another that would take into account the middle schedules prepared by the engineers, the difference between the amounts thus found to be split.

On Thursday morning two policemen were stationed on each line just outside the city limits to count the number of passengers that patronize the outlying lines. Cars were halted for them and the count continued all through that day and the next. They may get some idea of the passengers carried at this time of the year, but on some of the lines the summer business is enormous, especially on the Euclid Avenue-Euclid Beach route.

The suit to test the curative ordinance passed for the Forest City Railway Company came up in the circuit court for hearing Thursday morning and came near wrecking the peace negotiations. Mayor Johnson asked that the hearing be passed for the present, as he would have to be in court most of the time as a witness and to look after his own end of the matter, as his "financial interest" in the new company would also come in as one of the causes of action. The attorneys for the company desired to go on with the case as did City Solicitor Baker, who considers it one of the most important cases yet brought to trial. Both the Mayor and Mr. Goff declared that the suit should not be heard until the end of the negotiations are reached. Consequently the attorneys were called over for a consultation and they finally agreed to pass the case until later, with the hope that something will be done before long.

Mr. Goff asked that the City Council pass an ordinance renewing the grants on the Woodland Avenue and West Side lines for thirty days, in order that the Cleveland Electric may continue to operate cars legally on those lines, in case the franchises expire on Feb. 10, as claimed by the Mayor. City Solicitor Baker suggested that the grants of the low fare companies for joint use of the tracks on certain sections be renewed for the same length of time, as they would expire with the franchises of the Cleveland Electric, if the principles announced during these negotiations hold good. The Mayor agreed to this and Thursday afternoon stated that he would recommended this action to the City Council and that the attorneys of the two roads should get together and agree on the form of franchise ordinance that would be best.

According to a remark made by Mr. Goff at the meeting Friday, the total cost of the Cleveland Electric property, not including financing or the cost upon which stocks are to be issued, would be $15,654,800. Adding one-ninth, on the assumption that the stock is to be issued as it was in the case of the Forest City Railway Company, the total value would be $17,290,400. There has been quite a little discussion regarding the basis upon which the stock of the Cleveland Electric is to be taken if a merger is worked out. Mr. Goff says that it should be the same as the Forest City will receive. The Mayor was not so sure of that, so there may be an opportunity for a little rub there. The Mayor also insists that his estimate of 7 per cent for overhead charges should be sufficient. This must also be settled. Mr. Goff has made so many valuable concessions that it seems impossible that he would be able to compromise this difference which amounts to about $856,617.

A report of the value of shops, shop tools, materials and supplies, signed by A. B. DuPont and Horace E. Andrews, per H. J. Davies, was made at the meeting Saturday. The value given was $421,915.91 or about $80,000 more than Mr. DuPont made a year ago. The Mayor at once objected to the report as too high. He asked Mr. DuPont if he thought the value was correct and Mr. DuPont replied that he had not verified the items, but that the company had more property of that kind now than a year ago.

Two difficult problems yet remain to be settled, overhead charges and franchise values. It is believed that these will be the hardest items yet taken up. Mayor Johnson is particularly anxious to complete the negotiations before the legislature may have an opportunity to take action that will spoil matters. Since the defeat of the Howe franchise tax measure, he is particularly fearful of what may be done.

A revised estimate on overhead charges was presented by Mr. Goff, Saturday, with 10.3 per cent as the basis and $14,109,671.32 as the physical value. The charges would thus be $1,-

415,200, making the difference between this and the Mayor's estimate $660,670. This is another step taken by Mr. Goff toward a settlement. It makes the total general percentage 20.03.

At the session Monday, Mr. Goff said that he had reduced all his charges for administration, contingencies, financing, brokerage and other invisible expenses to percentages and that after subtracting what the Mayor was willing to allow for the same there is $2,000,000 left. The Mayor argued that all this should be omitted from the physical value, but Mr. Goff stated that he saw no justice to the Cleveland Electric in such a proceeding. The Mayor contends that the company should be satisfied with the physical value alone, with the "good round sum" that he proposes to add for good will. Mr. Goff, however, is not disposed to allow an estimate for good will any more than the Mayor is to accept a valuation on the invisible expenses that have been under consideration.

Mayor Johnson did not want to discuss the plans of taking over the property by a holding company, but wanted to leave that until after a physical value was reached. He said that the consideration of this plan does not necessarily mean that the Municipal Traction Company is to take over the properties. There may be two holding companies and two original companies, he said, or one holding company and two owning companies. That part of the proceeding has not yet been worked out, and nothing has been decided as to the basis upon which the Cleveland Electric stock is to be taken. Mr. Goff wants to know something about this as he goes along, but he has not gained much information so far on the matter, notwithstanding his requests and questions. He declared that the Cleveland Electric must be put on a parity with Forest City, whatever plan is adopted.

Mr. Goff again addressed the Council on overhead charges, prefacing his remarks with the statement that this would be his last speech on the subject and it would be passed down the line. The argument was in support of the claims he had made and he said they could not be thrown away. He feels that they are just charges and must be recognized.

## ANNUAL DINNER OF A. I. E. E.

The annual dinner of the American Institute of Electrical Engineers will be given in the grand ballroom of the Waldorf-Astoria, New York City, Wednesday evening, Feb. 19, 1908, at 7 o'clock. Following the custom of previous years, this dinner will be of special significance. The library dinner was given in 1903, in 1904 the Edison dinner commemorated the introduction and development of the incandescent lamp, and the traction dinner was given in 1905. This occasion will be known as the public service dinner. The speakers of the evening will treat the issues of the relation between the community and the public utility corporations from broad points of view and with commanding authority. The committee in charge is composed of Robert T. Lozier, A. A. Gray, F. K. Bates and George H. Guy.

## CHICAGO RAILWAYS FINANCING

Announcement has been made that arrangements have been completed with N. W. Harris & Company and the National City Bank, of New York, covering the $12,000,000 provided for in the reorganization plan of the properties formerly owned by the companies composing the North and West Chicago Street Railway systems, now known as the Chicago Railways Company. N. W. Harris & Company made the following statement:

"The bankers will receive for the funds advanced first mortgage bonds covering the entire system of 300 miles of track, serving without surface competition the north and west sides of the city of Chicago, embracing territory having a population of 1,580,000.

"Under the terms of the new ordinance from the city, the city of Chicago has stipulated a value, junior to the first mortgage bonds, of approximately $30,500,000. This amount enables the Chicago Railways Company to fully and adequately carry out the provisions of the plan of reorganization, allotting par in consolidated mortgage bonds to all holders of bonds deposited under said plan which have been heretofore issued by the companies whose properties constituted the system, being North Chicago City Railway, Chicago West Division Railway, North Chicago Street Railroad, West Chicago Street Railway, Chicago Passenger Railway, West Chicago Street Railroad Tunnel and Chicago Union Traction."

## DIVIDEND-PAYING STREET RAILWAYS IN MASSACHUSETTS

In accordance with State law the Massachusetts Railroad Commissioners have certified to the bank commissioner that the following street railway companies incorporated in that State are shown by their returns to have earned and paid without impairment of assets or capital stock dividends of not less than 5 per cent on their capital stock for the last five years:

Athol & Orange Street Railway, Boston Elevated Railway, Citizens' Electric Street Railway, Dartmouth & Westport Street Railway, East Middlesex Street Railway, Fitchburg & Leominster Street Railway, Holyoke Street Railway, Pittsfield Electric Street Railway, Springfield Street Railway, Union Street Railway, West End Street Railway.

The bank commissioner may now allow savings banks and similar institutions to invest in bonds of such of the listed companies as he deems proper.

## REPORT OF CLEVELAND, PAINESVILLE & ASHTABULA COMPANY

The report of President E. W. Moore, of the Cleveland, Painesville & Ashtabula Railroad Company, at the annual meeting held a few days ago, shows the following figures on earnings and expenses:

| | 1907. | 1906. |
|---|---|---|
| Gross earnings | $122,362.72 | $103,094.64 |
| Operating expenses | 79,211.43 | 61,155.43 |
| Net earnings | 43,151.29 | 41,939.21 |
| Interest | 48,612.73 | 43,676.28 |
| Deficit | 5,461.44 | 1,737.07 |

As is true of most of the roads in Ohio, the greater part of the earnings came from the passenger business, the express and car mileage being the next larger items, though they form a very small part of the total. Good increases in the earnings have been shown from year to year and it is believed that at the end of the present year it will be found that the road is earning its expenses and fixed charges. It may then be expected to yield a profit. The balance sheet for the year just ended shows the following:

ASSETS.

| | |
|---|---|
| Cash | $1,964.54 |
| Current assets | 568.11 |
| Investment | 1,956,117.13 |
| Profit and loss | 33,876.58 |
| Stores | 5,751.14 |
| Total | $1,998,277.50 |

LIABILITIES.

| | |
|---|---|
| Capital stock | $1,000,000.00 |
| Bonds | 850,000.00 |
| Accident fund | 1,575.95 |
| Current liabilities | 146,701.55 |
| Total | $1,998,277.50 |

The accrued interest on the funded debt amounted to $42,500, a few cents less than the year before, while the accrued interest on the floating debt increased from $1,176.22 in 1906 to $6,112.73 in 1907. This increase is due to improvements made in the road and the poor bond market the past year.

The average daily passenger receipts for the year were $293.20 in comparison with $272.29 in 1906, while the total number of passengers carried was 713,328 as compared with 660,226 the preceding year. The average earnings per passenger were .15 and in 1906 they were .1505. The per cent of operation to income in 1907 was 64.73 and in 1906 it was 54.46. The company is building up its service and getting the property into good shape, but it is probable that these figures will show a favorable change in the future.

Fred S. Borton and Fred Storm were elected to the board of directors in the place of T. W. Merry and J. E. Latimer. H. A. Everett, E. W. Moore, J. A. Biedler and C. W. Wason were re-elected to the board. The officers are as follows: E. W. Moore, president; J. A. Biedler, vice-president; Fred S. Borton, secretary; E. V. Hale, treasurer.

## REPORT OF THE NEW HAMPSHIRE COMMISSIONERS

The sixty-third annual report of the railroad commission of New Hampshire for the year 1907 has just been issued. It is a larger volume than usual, but as there is no session of the Legislature this year contains no recommendations addressed to that body. Confining comparisons to the sixteen electric roads wholly in this state, which were operated in 1906 and 1907, these results appear: Their gross income increased from $1,055,488 to $1,120,764, and their operating expenses from $870,892 to $918,091, while their fixed charges were reduced from $144,240 to $125,711. The number of 5-cent fares increased from 20,120,415 to 21,404,119.

An analysis of the totals shows small shrinkage in the gross receipts of the Exeter, Hampton & Amesbury, and Portsmouth & Exeter and a failure by the Claremont, Exeter, Hampton and Amesbury, Keene, Nashua, Portsmouth & Portsmouth and Exeter to earn operating expenses and fixed charges. The other nine reported divisible incomes ranging from $33.42 on the Berlin to $74,577.20 on the Manchester, but only the Manchester and the leased Nashua paid dividends to stockholders.

The new roads, the Manchester and Nashua and the Uncanoonuc, were opened for business during the year, and another one, Manchester & Derry, Dec. 1, 1907.

The investigation of the Canaan accident, in which twenty-six persons lost their lives and seventeen others were seriously hurt, is reported at length. Other than this the railroad fatalities were nearly the same in numbers and due to similar causes as those in previous years. No passenger was killed or seriously hurt. Of the thirty-eight victims who lost their lives in accidents investigated, fourteen were railroad employes, nineteen were trespassers, and five were struck upon crossings.

## UNITED RAILROADS OF SAN FRANCISCO RAISE $5,000,000

Patrick Calhoun, president of the United Railroads, of San Francisco, who recently returned to that city from the East, confirms the report that he has raised $5,000,000 to take up the company's floating debt, and to make many improvements. Among these is the construction of a power plant for the operation of the company's entire system, the reconstruction of tracks and the general betterment of the service. Mr. Calhoun says: "The impression prevails in the East than San Francisco is not likely to be seriously affected by the present financial stringency. While in times like the present money cannot be had for speculative building, there is plenty of it for this city, which needs and must have buildings at once. The erection of these buildings will make work for mechanics and redound to the prosperity of all. I think it is an excellent thing for San Francisco that such an opinion obtains in the financial centers of the East. There is no set of men in America that has so firm a confidence in the future greatness and prosperity of San Francisco as the men who are associated with me in the control of the United Railroads, and they have shown this by backing their confidence with their dollars from the day of the fire, when a $75,000 contribution was raised, until the present, when they are sending millions here for investment."

There has been a steady improvement in the operating system of the United Railroads in the past few months and the service has now reached a normal basis comparable with the condition of the company before the strike of last May. According to a recent announcement by General Manager Black, an increase in the car service on Sutter Street is to be made at once, which will effect an average headway from the ferries to Fillmore Street of two minutes. From Fillmore Street to Sixth Avenue and California Street the service will be 2½ minutes; from Sixth Avenue to Thirty-third Avenue, 5 minutes, and from Thirty-third Avenue to the Cliff will be 10 minutes. On the division of the line running over Fillmore Street a headway of 10 minutes will be maintained. In addition to this, inspectors in regular uniform will be stationed along the Sutter Street line at Kearny, Polk, Van Ness Avenue and Fillmore, who will announce the destination of all cars and furnish any information that may be desired by passengers concerning routes, transfer points, etc. They will be required to assist passengers in getting on or off the cars and otherwise facilitate the comfort of the service. In this connection Manager Black said that passengers would be requested to board the cars at the rear and alight from the front. The efficiency of the service, he asserted, would require the co-operation of the traveling public.

## PROGRESS ON THE CHICAGO SOUTHERN RAILWAY

Matthew Slush, formerly president of the Detroit, Monroe & Toledo Short Line, is quoted in a Dayton paper as speaking encouragingly of the Chicago Southern Railway, in the construction of which he has been engaged since his retirement from the Detroit line. The Chicago Southern was opened for business between Chicago and Kankakee a few weeks ago, and Mr. Slush said that the patronage had been even more than was expected. The Chicago terminal is at Halsted and Seventy-ninth Streets, and, owing to the fact that the road passes through so much of the city, much local traffic is secured. South of Chicago it passes through a densely populated and rich farming section. The line is about fifty-seven miles in length, and as soon as conditions warrant it will be extended to Lafayette, Ind., fifty-five miles further, where it will connect with the Indiana Union Traction Company's lines and thus form a through route between Chicago and Indianapolis. Mr. Slush said the financial trouble had interfered with the plans of the company to some extent, but that the road is now completed as far as intended at the present time and is in shape to do a good business.

## ELECTRICAL CONDITIONS IN WESTERN SOUTH AMERICA

Discussing electrical conditions in Chile and the other states on the western coast of South America, Walter T. Peck, an American engineer, who has recently returned from that section, sees excellent prospects for electrical development in that part of the globe during the next decade. "In Chile, where the large electrical enterprises are nearly all financed by German capital," said Mr. Peck, in an interview with a representative of the Street Railway Journal, "naturally German engineers and German machinery remain in the ascendency, but English and American engineers are pushing hard on the Germans. During the last five years especially, the demand for American machinery has picked up in a remarkable manner. In Peru, the Americans had a better start than in Chile and dominate the situation. Lima, the largest city, has excellent water-power, which supplies current for the three tramway systems in the city besides current for lighting and other purposes. Among other new projects under consideration in Chile is the transformation of a large steam power plant at Santiago into a 20,000-hp hydraulic electrical plant, which will supply light and power to the city of Santiago and the surrounding districts. German capital will finance the project and German machinery will be used in the installation of the plant. One of the latest installations by Americans which is now under way is an interurban line from Talcahuano to Concepcion, the plans of which include local lines in both places. The road between the two places will be nine miles long and the electrical plant will have a capacity of about 1500 horse-power. Both passengers and freight will be transported when the line is completed. In passing, it might be well to note that Talcahuano is second in commercial importance only to Valparaiso. A Chilean company is financing the project, but the machinery is entirely American. The roads will be ready for operation within a few months. A somewhat smaller road which was opened last month and which is equipped with American electrical machinery, is the line from Santiago to San Bernardo. This road is also about nine miles in length and the electrical plant is operated by hydraulic power, with English suction gas producers as reserves. The work was done by Chilean engineers and was backed by Chilean capital. A combination of Chilean capitalists, which controls a large number of local electric lighting plants throughout the state, has in hand plans to install five other plants in the near future at various places. The combination which was entered into about four years ago controls at present the electrical plants at San Bernardo, Rancagua, San Fernando, Curico, Lo Bravo, Talca, Chillan, Los Angeles and Temuco. Unfavorable financial conditions have halted operations for a while, but the situation has improved so much of late that the work will be pushed forward in the near future. The new stations will all be operated by hydraulic power with no steam, oil or gas engines as reserves. The regions of the nitrate fields in the northern part of Chile seem to offer the best prospects for electrical development in the immediate future. There, as in other places, the high price of coal is a serious obstacle and the low pressure steam engine plants now in use are being rapidly replaced by electrical equipments with steam, oil or gas engines as reserves."

## AFFAIRS IN NEW YORK

Frederick W. Whitridge, receiver of the Third Avenue Railroad, has been appointed by United States Judge Lacombe receiver of the Forty-Second Street, Manhattanville & St. Nicholas Avenue Railway, and of the Dry Dock, East Broadway & Battery Railroad Companies. His bond was fixed at $50,000 in each case. The two roads have for years been operated as a part of the Third Avenue system, and, according to a memorandum filed by Judge Lacombe in making the appointment, neither road owns cars or equipment, hiring them from the Third Avenue road. The appointment in the case of the Forty-Second Street road was made in a suit brought against it by the Barber Asphalt Company to recover $6,546. It is charged that the road owes $2,800,000 secured by mortgages, has more than $7,385,400 in outstanding notes due March 1, and has not the cash with which to meet the interest on its bonds. The appointment in the case of the Dry Dock line was made in the suit of the American Hay Company to recover $6,546. It was charged that the railroad company owes $4,009,202, and is insolvent. The Dry Dock Company's capital is stated at $1,200,000 and the Forty-Second Street Company's at $2,500,000.

It is reported that an issue of about $30,000,000 4½ per cent bonds will be floated to take up the $25,000,000 Interborough notes outstanding and certain other indebtedness of the companies in that system proper. Next the Interborough-Metropolitan Company, the holding corporation for all the traction properties, which has $2,100,000 6 per cent notes coming due May 1 next and also has several millions of three-year notes, out of a total of $15,000,000 authorized, which will be due on June 1, 1910, will receive consideration. The prospect is for some temporary measure to meet the $2,100,000 due in May. Meanwhile it is hoped that the Interborough's floating debt can be gotten out of the way through the bond issue in contemplation. This debt consists mainly of two issues of notes, one of $15,000,000 fours, maturing May 1 of this year, and one of $10,000,000 fives, maturing May 1, 1910. These were sold on the general credit of the Interborough, with the provision that they should share equally with all other funded obligations in the event of such a mortgage being placed on the company.

Judge Lacombe, of the United States Circuit Court, heard the final argument Jan. 29 on the question of federal or state receivers for the New York City Railway Company and reserved decision.

W. R. Willcox, chairman of the Public Service Commission, at a luncheon given to him at the Brooklyn Club by E. C. Blum, last week, explained the situation of the commission, and of the city, in relation to future subways, in view of the fact that not more than $35,000,000 to $40,000,000 will be available for such construction within the next two years. He also explained the importance of the legislation recommended by the commission in its recent report to the Legislature. After considerable discussion by those present four resolutions were passed, which were, in effect, that Brooklyn's demand for transportation relief are entitled to precedence; that one system covering Brooklyn, Manhattan and the Bronx is necessary; that the legislation recommended by the commission in its report will make it easier to obtain bids for the extension of existing lines and the construction of new ones by private capital, and that E. C. Blum, Robert J. McFarland and Edwin S. Piper be appointed a committee for the purpose of formulating amendments to the Rapid Transit act, embodying the recommendations found in the Public Service Commission's report.

## STEVENS ALUMNI DINNER

The seventh annual dinner of the Alumni of Stevens Institute was held at the Hotel Astor, New York, on Tuesday evening, Feb. 4. About 250 Stevens men and their friends were present. Besides enjoying the usual features of a college dinner and reunion, they heard some notable addresses, among the speakers being President Alex. C. Humphreys; Dr. H. S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching; Hon. Robert P. Porter, formerly Chief of the Census Bureau, and now the American representative of the *Times*, of London; Colonel George Harvey; James E. Sague, of the New York Public Service Commission; Colonel Charles W. Fuller, Prof. George V. Wendell, Ernest H. Peabody and H. V. R. Scheel.

## N. Y., N. H. & H. ELECTRIC LOCOMOTIVES

Owing to rumors that the operation of the electric locomotives of the New York, New Haven & Hartford Railroad have not been entirely successful, the railroad company has issued a statement which contradicts the report that the entire system has been turned over to the Westinghouse Company and declares that there is no dispute and never has been a dispute between the two companies. The report that the New Haven road owes the Westinghouse Company between seven and ten millions of dollars is declared to be untrue, the amount due the Westinghouse Company being only such as comes under the terms of the contract by which settlements are made monthly. The entire operation both of the power house and the trains, according to the statement, is and always has been in the hands of the railroad company. The rumor that the system had been turned over to the Westinghouse Company probably arose from the fact that owing to slight necessary changes in the locomotives which demanded expert technical supervision, the Westinghouse Company was given charge of the small machine shop where such repairs are made. But even the expense of running this shop is borne by the railroad, and the Westinghouse engineers were asked to take charge merely to expedite the repair work. At no time since the inauguration of the electric service between Stamford and New York has the service been discontinued; in fact, in commercial service, the locomotives furnished by the Westinghouse Company have exceeded by 20 per cent the contract guarantee, and under certain conditions have been operated up to 100 per cent over the contract guarantee. At the Cos Cob power station certain changes were found desirable and will be completed shortly, but the full capacity of the station is much in excess of the operating requirements and has at all times been found sufficient to meet the needs of the electrical service. Both companies are stated to be working together in the closest harmony. The Westinghouse Company has never had supervision over the operation of the company's power house or its trains; its connection with the operation of the electric locomotives has been to provide experts for the instruction of the engineers in the handling of the electrical machinery.

The statement issued includes a list, with their respective designating numbers, of the twenty locomotives which run between New York and Port Chester, and the twenty-two locomotives which run between New York and Stamford.

An official of the Westinghouse Company corroborated the above statement of the railroad company in every particular, and added that the railroad had made even better monthly payments than actually required by contract.

## AN EFFORT TO GET RID OF THE AMBULANCE CHASER IN NEW YORK

W. P. Goodell, president of the State Board of Examiners, who was appointed to look into the subject of "ambulance chasers" and report on a method for correcting abuses among lawyers resulting therefrom, proposes an amendment to the Code of Civil Procedure by which lawyers would be required to have written contracts with clients in acting to recover damages for injury or death, and also recommends that the courts be empowered to reject or reduce the fees of the lawyers engaged. James L. Quackenbush, who has charge of the legal department of the New York City Railway, is quoted as saying:

"It is a very proper measure, and undoubtedly for the benefit of those bringing actions, but it won't help the defendants. Nor do I think it will reduce in any way the activities of the so-called ambulance chasers. A lawyer who leaves his office to solicit business is quite willing to take anything he can get, whether given him by the court or by his client, but I am in favor of anything that will tend to stop the robberies which are daily occurrences with this class of lawyers.

"I think we have plenty of laws now dealing with the situation. What is wanted is the enforcement of them. I do not think there is any pronounced sentiment among the better class of lawyers to stop ambulance chasers, but where evidence of malpractice or robbery sufficient to warrant disbarment or a conviction is discernible, the case should be taken up at once by the Bar Association. I think this would be found to be the best remedy. There are plenty of laws covering this particular situation, and I have been following this plan with success."

## AN ARGUMENT AGAINST ATTEMPTING TOO MUCH

In appearing before a committee of the Massachusetts Legislature recently to oppose the Butler Ames bill allowing electric railroads to build and own elevated or subway structures longitudinally in public ways, Bentley W. Warren, attorney for the Boston & Northern Street Railway, gave this view of the present interurban situation in Massachusetts:

"The trend of the times," he said, "has a tendency to show a lack of need for any of the new electric railroads at all. An electric railroad is merely a railroad like the steam railroads, but operated by electricity. The opinion of the majority of railroad experts now is that the future motive power on the steam roads will be electricity. The New York Central and the New Haven railroads are already operating considerable lengths of their main lines by electric power. Of course, it is somewhat experimental; there are drawbacks, just as when the street railways first operated by electricity the first heavy snowstorm here in Boston tied us all up. But the steam railroads are going to be successful in introducing electricity, just as we were in introducing it on street railways. For that reason it follows that there will be no need of another system of electric lines paralleling the existing railroads. The steam roads have their own private rights of way; it will be better and cheaper to provide extra tracks for existing lines than to build new lines outright. Besides, the steam roads have an advantage which the electric railroads cannot hope to equal in this state; that is, the great terminals already owned in the centers of population. No one of the new electric railroads could possibly acquire a terminal comparing with the South Station, for instance."

## PROPOSED LEGISLATION IN OHIO

It is said that so much opposition developed in the committee to the Howe bill that Senator Howe feared to allow it to go to a vote. Governor Harris is even said to be opposed to the passage of the measure, in view of the fact that a resolution has been adopted providing for the submission to a vote of the people an amendment to the constitution in reference to taxation.

The Stockwell bill, providing for the renewal of a street railway franchise to a company other than the original holder, has been placed at the foot of the House calendar. The bill provides that, in case a grant is renewed to others than the original owners, the track and equipment in the street may be taken at the cost of reproduction at the time, less depreciation, with not to exceed 20 per cent added, and should the new company and the owners disagree upon a price, then it shall be referred to a commission made up of three persons, one appointed by the Mayor, another by the owners of the property and the third by the probate court of the county. Should the owners neglect for sixty days to appoint a member the probate court shall make such appointment for them. The question of renewing the grant may be submitted to a vote of the electors at the discretion of the City Council or on petition of 5 per cent of the qualified voters of the city. The purpose of the bill really is to make it easier for the low-fare company in Cleveland to secure the property of the Cleveland Electric when the franchises expire by making it obligatory that the company sell its tracks and equipment to the companies that may secure the franchises.

The House of Representatives has passed the Metzgar bill, which does away with the doctrine of assumed risk and fellow-servant liability with relation to railroad employes. It provides that when an employe is injured by reason of any defective piece of machinery he shall be entitled to recover damages, and the fact that he may be guilty of contributory negligence does not operate against him, although a jury must fix the damages.

Senator Howe has a bill before the Legislature providing that cities may establish and construct terminal stations for steam and interurban railways. Bonds or terminal certificates may be issued for the purchase of land and the construction of such stations. Before any steps shall be taken toward this end contracts shall be entered into with the railroads for a period not longer than forty years for a rental that will pay the interest on the cost of constructing such stations.

Conductors and motormen on electric cars will be given police powers if the Hillenkamp bill, introduced a few days ago in the House, becomes a law.

Provision has been made for an elevated railway in Cincinnati through a bill introduced in the Legislature by Representative Harry T. Hunt, of that city. A plan has been under way for several years for a rapid transit line in that city.

The Public Utilities bill to be introduced in the Ohio Legislature by Representative Carl Shuler, of Montgomery County, has been completed. It follows the law now in operation in Wisconsin in preference to that of New York and provides for a commission of five members, whose terms shall be five years, with salaries of $10,000 each per year. The Governor is empowered to make the appointments. The bill provides for indeterminate permits that shall continue so long as the corporation or company conforms to the rules and regulations of the commission and the provisions and enactments of the city and village councils, rather than for franchises that shall have a definite time to run. Under the bill all companies shall carry a proper and adequate depreciation account whenever the commission requires it, and it shall have authority to determine the rates of depreciation. This money shall be used in improvements and betterments, when necessary, but if invested the interest returns shall be credited to the fund. Books and records kept by the companies, either in or out of the state, must be produced on request of the commission. Engineers, examiners, clerks, expert accountants and other assistants necessary to the work may be employed by the commission. Every complaint made by twenty-five persons, firms, corporations or associations against any public utility regarding rates, tolls or charges of any kind must be investigated. On the other hand, any public utility company may make complaint when any rate regulation or other change or charge affects its service, and the same shall be investigated. All the rules and regulations of the commission are subject to review by the courts. After the law becomes operative no franchises are to be granted by municipalities. Provision is made for municipal ownership of all public utilities, but before properties shall be acquired or constructed the question shall be submitted to a vote of the people. If the majority of those voting favor the move, and that majority is equal to 60 per cent of the vote cast at the regular election, then the municipality shall have authority to issue bonds to acquire or construct the properties. Such bonds shall not be limited in amount by the Longworth act, so limitation as to the power of taxation in municipalities shall be abrogated to the extent that the municipality shall not be hindered in acquiring or constructing public utility plants. This bill gives the commission absolute power to regulate rates charged by interurban railways and telephone companies. It cannot affect street railways which have contracts with cities, unless they voluntarily come under the control of the commission, because of the indeterminate permit proposition. The commission will also have authority to supervise the issue of bonds of public utility corporations.

## THE DEFEAT OF THE HOWE BILL IN OHIO SENATE

Electric railway men in Ohio are pleased with the action of the state Senate in defeating the Howe bill, which sought to relieve individual taxpayers by placing the great burden of the state's support upon corporations, and especially railroad corporations. In reality this bill provided for indirect taxation, as the roads would have been compelled to increase their passenger and freight tariffs to meet the heavy payments and this would have thrown the taxes upon those who patronize the roads rather than upon the corporations themselves. There would have been no other way to meet these payments, since only about one-seventh of them are now paying dividends, and they would have made any move rather than give up to tax confiscation.

The Senate committee on municipal affairs has agreed to report the Schmidt bill, abolishing the necessity for consents of property owners on streets that have already been occupied by railways, for passage. On motion of Senator West, the bill was amended so that arrangements may be made for the occupation of the streets by another company than the one that had the original franchise, two years before this expires and one year thereafter.

The speaker of the House of Representatives has decided to enforce the rule relative to new matter in an amendment of a bill being printed in italics in the copies that are furnished for use in the general assembly, and the Stockwell street railway bill will have to go back and come through the course in the regular manner. Stockwell defended his bill by saying that

other measures had been gotten up in the same way, but this did not help matters any. It provides for the renewing of grants of street railways through competition, if necessary, and the question of granting the franchise may be referred to a vote of the people.

## TWIN CITY REPORT FOR YEAR

The Twin City Rapid Transit's income account for the year ended Dec. 31, 1907, compares as follows:

| | 1907. | 1906. |
|---|---|---|
| Gross receipts | $6,055,743 | $5,644,988 |
| Operating expenses | 2,980,435 | 2,625,379 |
| Net earnings | $3,075,308 | $3,019,609 |
| Taxes, interest and dividends | 2,438,170 | 2,299,927 |
| Surplus | $637,138 | $719,682 |
| Renewal fund | 506,000 | 482,000 |
| Net surplus | $131,138 | $237,682 |

## STREET RAILWAY PATENTS

UNITED STATES PATENTS ISSUED JANUARY 21, 1908.

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

876,944. Railway Signal; Fred B. Corey, Schenectady, N. Y. App. filed Oct. 6. 1905. The signal lamp and its discs or roundels of a semaphore are inclosed in a casing having a lens, to thereby prevent the discs from being obscured by snow and ice. Means by which the discs are thrown into danger position whenever the operating mechanism is disabled.

876,953. Railway Signaling System; Carl Enderlein, Cassel, Germany. App. filed March 22, 1906. Has a plurality of cam drums, by which the switch and signaling circuits are completed in a proper sequence.

876,957. Groove-Rail Cleaner; Claus H. Frick, San Antonio, Tex. App. filed Aug. 21, 1907. A plurality of bits pivoted upon a spring depressed frame and scrapers carried by the frame behind said bits.

876,962. Semaphore Signal; Beinhold Herman, Crafton, Pa. App. filed Nov. 27, 1903. Consists in providing a novel construction and arrangement of the semaphore casting whereby two lights may be obtained in the different positions of the signal with a compact structure.

876,970. Electric Switch; Walter F. Jones, Eccles, Manchester, England. App. filed July 13, 1907. A controller for electric circuits, comprising a ring of conducting magnetic material having projecting teeth around its periphery, between which are arranged insulated contacts connected to the lements of the circuit to be controlled, and a relatively movable ring or frame provided with contact brushes and blow-out magnet pole tips adjacent thereto.

876,976. Mount for Amusement Race-Track; Gaston Lacomme, New York, N. Y. App. filed Nov. 2, 1907. A gravity railway having means whereby the rider may accelerate the speed of his mount.

877,005. Electric Locomotive; Richard Schwarz, Schenectady, N. Y. App. filed Oct. 18, 1906. Has compression springs between the spokes of the driving wheel and the motor armature spider, one set of springs being hollow and partly surrounding a portion of the spokes of the other wheel.

877,030. Motor Control; Carl Eduard Zix, Berlin, Germany. App. filed July 25, 1906. Relates to the control of distant motors, such as those used to actuate a railway track switch, which must be reciprocated.

877,055. Reinforced Brake Shoe; Judson Cook, Philadelphia, Pa. App. filed May 8, 1907. Comprises a cast metallic body portion, a forged blank comprising two parallel portions which are connected together by a strap forming a loop, the edges of the parallel portions being in contact with each other and incorporated in the cast body portion.

877,096. Switch Point Lock; James B. Latimer, Chicago, Ill. App. filed Oct. 26, 1906. Comprises an endwise movable rod adapted for connection with switch points and provided at its outer end with longitudinally separated notches and a swinging lever having detents adapted to engage said notches.

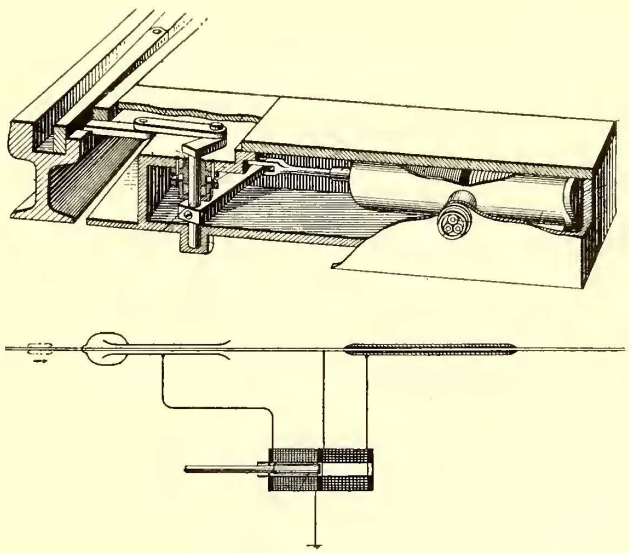
877,099. Car Lifting and Replacing Device; Louis Leyerle, Cleveland, O. App. filed Aug. 20, 1906. The lifting mechanism is mounted on trundles whereby the car may be rolled onto the rails after it has been raised.

877,100. Pleasure Railway; Horace A. Lockwood, Kansas City, Mo. App. filed Jan. 24, 1907. A track disposed in coils arranged in volute form, a rotary shaft disposed axially within the coils, and means carried by the shaft for engaging and propelling a car along the track.

877,340. Railway Crossing; Arthur Hosmer, Fort Worth, Tex. App. filed Oct. 17, 1907. A crossing rail provided with a longitudinal rib for engaging the web portion of a reinforcing rail and also formed with a basal flange adapted to extend under the reinforcing rail to support the same.

877,379. Trolley Replacer; George Q. Seaman, New York, N. Y. App. filed March 23, 1907. The trolley pole is pivoted independently of the spring impelled element and has a ratchet connection therewith. This ratchet is released when the pole moves suddenly upward, so that the latter falls on a "cradle" adapted to restore the same when desired.

877,427. Circuit Controller; Lemuel F. Howard, Edgewood, Park, Pa. App. filed Aug. 3, 1906. For use in connection with railway appliances and particularly for power operated switch and like movements.



PATENT NO. 877,458

877,458. Electric Track Switch; Rollin A. Baldwin, New Haven, Conn. App. filed Dec. 5, 1906. A form of automatic electrical track switch adapted to be operated by the manipulation of the usual car controller in both directions of its throw. It is so arranged that the switch point can be moved in one direction or the other at will without the necessity of its initial position being first ascertained by the motorman. Accordingly, it is particularly advantageous at night and in misty and foggy weather. The operable parts are hermetically sealed up in a waterproof casing, and a lock is provided for the switch point to prevent accidental displacement.

877,474. Passenger Car; Allen E. Ostrander, Paterson, N. J. App. filed Dec. 12, 1906. Details of construction of a steel passenger car.

## PERSONAL MENTION

MR. GEORGE F. HOPPE, at one time president of the Atlanta Traction Company, of Atlanta, Ga., is dead.

MR. WALLACE HECKMAN has been elected a director of the South Side Elevated Railroad Company, of Chicago, succeeding William B. Walker.

MR. A. H. SWING has resigned as superintendent of the Philadelphia, Coatesville & Lancaster Traction Company, and will be succeeded by Charles Fifer, of Salem, Ohio, whose appointment was noted in the last issue of the STREET RAILWAY JOURNAL.

MR. J. WALTER ACKERMAN, former city engineer of Auburn, N. Y., has been appointed by A. H. Flint & Company as resident engineer of the Ithaca Street Railway Company. Mr. Ackerman will have entire charge of the reconstruction work contemplated by the company.

MR. WILLIAM BARCLAY PARSONS, chief engineer for the Interborough-Metropolitan Company, sailed for Europe Tuesday on the Kaiser Wilhelm II., of the North German Lloyd line. Mr. Parsons expects to be gone only a short time and said in reply to an inquiry that he went to consult with a client.

MR. CALE GOUGH, who resigned on Jan. 1 the position of Western editorial representative of this paper, has taken over the electric light and water plant at Lawrenceville, Ill., and commenced its active management on Feb. 1. Mr. Gough has the best wishes of his former associates for his success in this new work.

MR. OSBORNE SHRYOCK has been appointed superintendent of the Meadville, Conneaut Lake & Linesville Traction Company, of Meadville, Pa., to succeed Mr. John Allen, resigned. Mr. Shryock is a native of Meadville and studied at Allegheny College and Cornell. He entered the service of the Meadville, Conneaut Lake & Linesville Traction Company after leaving Cornell, as an assistant in the company's shops.

MR. FRANK H. BROWN, of Pawtucket, has been appointed superintendent of the Woonsocket, Columbian and Providence & Burrillville Street Railways, and now has supervision of all the Rhode Island Company's lines north of Providence and has under his charge more than 110 miles of track. Mr. Brown formerly was in charge of the Pawtucket street railway system, which also includes the lines on the Cumberland side of the Blackstone River to Cumberland Hill, and was in charge of the interstate line from Pawtucket to the Attleboros, making in all 70 miles of street railway tracks.

MR. THOMAS K. GLENN, whose resignation as vice-president and general manager of the Georgia Railway & Electric Company, of Atlanta, was announced in the STREET RAILWAY JOURNAL for Feb. 1, says that while he is giving up active duties with the company, he will remain a director and expects to keep in touch with the situation. The statement by Mr. Glenn to the effect that he has been in the street railway business so long that it would be almost impossible for him to get entirely out of it will come as welcome news to Mr. Glenn's host of friends in the street railway field.

MR. GEORGE W. BRINE, vice-president and treasurer of the Georgia Railway & Electric Company, of Atlanta, Ga., who has been manager of the electrical department of the company since its organization, has been appointed vice-president and general manager of the company, filling a position created by the directors. Mr. Brine will be in direct charge of all the departments of the Georgia Railway & Electric Company, and will report direct to President P. S. Arkwright. The officials of the various departments of the company will report to Mr. Brine. The new office comes to Mr. Brine after years of conscientious labor. Mr. Brine has been associated with the Georgia Railway & Electric Company since its consolidation. As manager of the electrical department he was also a vice-president, ranking with Vice-President and Manager of Railways T. K. Glenn. The resignation of Vice-President Glenn left Mr. Brine the oldest vice-president of the company.

A SKETCH OF THE HEDLEY FAMILY and what they had accomplished in railroading in England and this country appeared in the New York *Herald* for Jan. 26. As a record the history is probably without parallel in railroad development, as it includes four generations, all of whom have made important contributions to the art. Mr. William Hedley, the pioneer, was a resident of Northumberland County, England, and built the "Puffing Billy," the first successful railroad locomotive in the world to run on smooth rails. This locomotive was completed and patented by Mr. Hedley in 1813, and the same year was put in regular service in the Wylam Colliery, near Newcastle-upon-Tyne, some time before the "Rocket" was built by Stephenson. Mr. Hedley's locomotive was kept in constant service until 1872. It was then purchased by the government and is now in the museum connected with the British patent office. Mr. Barnabas Hedley was a nephew to Mr. William Hedley, and was the first superintendent of the Newcastle & North Shields Railroad, and afterward opened many of the first railway lines in Great Britain. His son, James, who is father of Mr. Frank Hedley, general manager of the Interborough Rapid Transit Company of New York, and Mr. E. M. Hedley, general superintendent of the Hudson Companies electric railway system, is still living and took an active part in the development of steam railroads in England. He was superintendent of the York & North Midland Railway, opened several new railroad lines in England and frequently acted as locomotive driver for Queen Victoria and other members of the royal family. The prominent position of Mr. Frank Hedley and Mr. E. M. Hedley in New York transportation affairs is well known. It might further be added that Mr. Frank Hedley has a son, Frank C. Hedley, 12 years old, who is a keen student of railway affairs.

MR. W. H. GLENN, whose appointment as general manager of the railway department of the Georgia Railway & Electric Company, of Atlanta, Ga., to succeed his brother, Mr. T. K. Glenn, was noted in the last issue of the STREET RAILWAY JOURNAL, is well qualified by long association with the company and its constituents for the duties that devolve upon him. Beginning his street railway work as a rod man with the company, after his graduation from the Georgia School of Technology, he had several years' experience in the engineering department and afterward several years' experience in the shops. Then came the experience of the post of purchasing agent, and then that of superintendent of track and roadway. In the last position he had charge of most of the reconstruction work following the formation of the Georgia Railway & Electric Company and worked out many of the problems of the physical property that necessarily are an inheritance of every such consolidation. Thus he combines executive ability with a thorough knowledge of the physical property which he is to manage.

W. H. GLENN.

MR. JOHN M. ROACH, who for the past seven years has been in active charge of the management of the street railways of North and West Chicago, aggregating about 500 miles of track, and who has been connected with the street railways of Chicago for more than 25 years, has been elected president of the Chicago Railways Company, which has recently succeeded to the properties of the Chicago Union Traction Company. Mr. Roach was born in Lowell, Ohio, in 1851, and was educated at Beverly and Athens, Ohio. His connection with the street railways of Chicago dates from 1872, when he entered the service of the North Chicago Street Railway as a conductor. He advanced rapidly in the service, and was in succession appointed cashier and purchasing agent, and also served in various other capacities through successive changes in the management. In 1887 he was appointed assistant superintendent, and in 1890 superintendent. In 1893 came his appointment as second vice-president and general manager, and in 1897 he was appointed to the position of general manager of the West Chicago Street Railway Company, in addition to the other positions which he held, and thus had his jurisdiction extended over the entire system of street railways in Chicago then owned and controlled by the late Mr. Chas. T. Yerkes. In 1897 Mr. Roach was elected president of the Cicero & Proviso Street Railway and the Suburban Railroad, in addition to the other positions which he held, and on July 1, 1899, when the Chicago Union Traction Company assumed control of the North Chicago & West Chicago lines he was made vice-president and general manager of the entire system embraced in the Chicago Union Traction Company. After the purchase by the Chicago Union Traction Company, in May, 1900, of the Chicago Consolidated Traction Company, Mr. Roach was elected president and general manager, succeeding Mr. Chas. T. Yerkes. Since, May, 1900, Mr. Roach has acted as president of the Chicago Union Traction Company, in addition to performing the duties of general manager of the Chicago Consolidated Company, in which position he succeeded Mr. Jesse Spaulding. At the time of the meeting of the American Street Railway Association, in Chicago, in 1900, Mr. Roach was made president of that association.