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EDITORIAL NOTICE

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

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

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The New York State Street Railway Convention

It is always a pleasure for us to publish a report of the New York State Street Railway Convention, from the fact that the papers are always from practical men on points of timely interest, and the discussions on these papers are by operators who are recognized as at the head of their profession. It is only at conventions of this kind that it is possible to secure the combined opinions of so many experts on the problems under discussion. A successful street railway manager or an engineer who has achieved a high reputation in the design of steam or electrical appliances can write an article on some department of street railway construction or operation which represents his views on this subject and which hence is entitled to a great deal of weight. His opinion, however, may, and very often is, expressed in regard to one phase of the question only, while in a debate on the subject opinions on all sides of the question are usually elicited, and a proposition advanced by one person leads up to a further discussion of the same subject by another. In this way a topic is not only more apt to be rounded out in all its phases in a debate, but the solution reached has the additional advantage of carrying with it the weight of a dozen opinions instead of one. Another advantage derived by street railway companies in general from meetings of this kind is that the speakers are usually men of many engagements, who usually do not have the time to write long articles to express their views on any given topic, but when on their feet will give the same information. The greatest benefit from a convention of this kind can only be obtained from attendance at it, because a person then not only hears the words, but enters into the spirit of the meeting, can ask questions, or in private interviews can clear up any points upon which he may be in doubt. The next best course is to read the report. This is published in this issue, and in this connection we wish to express our appreciation, and that of the street railway field in general, at the broad policy adopted by both the State and American associations in giving freedom of access to the meetings to both the public and public press. This course is not followed by all technical societies and associations, many of whom reserve the report of their proceedings, as of course they have a perfect right to do, for the members of the association only. It is owing to the fact that this latter policy is followed by so many bodies that the generous act of the two street railway associations named above is particularly noteworthy.

It is a well-worn expression to say that the convention held last week "was the most successful in the history of the association." This, however, fitly characterizes the Caldwell meeting, even in view of the excellent record which has marked the past meetings of the association. The papers were numerous and good, the remarks made during the discussions were crisp and exhaustive and the enthusiasm over the purposes and welfare of the association as great, if not greater, than ever before. To this should be added the attractiveness of the location selected for the convention, the excursions prepared for the attendants to the convention, including the ladies, and the hospitality which marked the entertainment of the association by its hosts, the officials of the Hudson Valley Railway Company.

President Rogers was re-elected to the position which he has occupied for so long with marked ability, and presented an address which, as usual, was a very thorough presentation and review of the street railway affairs of the State for the preceding year. The president's address is always the feature of the conventions of the New York State Street Railway Association, and Mr. Rogers always succeeds in combining in his report a succinct statement of the important events of street railway interest which have occurred in the State within the previous twelve months. Good discrimination is used in the selection of topics treated, and if we were asked for a concise statement and review of the most important events in New York State during the past few years we could not do better

than to refer the inquirer to the series of addresses with which Mr. Rogers has treated the association during his incumbency of the position of president. In his speech last week he was particularly felicitous in bringing out the transformation which has occurred in the status of the street railway companies during the past ten years in their relation both to the public and to the financial world. From being owners of slow and comparatively inconvenient transportation systems, operating only in the cities, the street railway companies have now become most important agents in the improvement of social conditions and the augmentation of values and populations not only through the suburban districts surrounding the cities, but also through the country at large. Work like this, as President Rogers points out, should have the hearty co-operation of the municipal and State officials, and the companies should not be so burdened with taxes and annoying restrictions that they cannot properly carry out the services that would be possible otherwise.

* * * * *

The most important problem now confronting the railway companies, if any distinction can be made between them, is probably that of accidents. This subject at the Caldwell convention was divided into three heads. Mr. Barnes, of the State Railroad Commissioners, discussed the general subject of accidents and methods of preventing them. Mr. Dibbs, of the claim department of the Metropolitan Street Railway Company, of New York, took up the second stage of the subject, which was that of taking care of the claims presented to the company, while Judge Daly discussed the treatment of the cases in court and presented a very able and convincing argument in favor of the treatment of such accident claims by judges rather than by juries. The statistics in Mr. Barnes' paper on the death rate from accidents on electric railways disclosed the important though somewhat unappreciated fact that, with the exception of one year, there has been a continuous increase as compared with the mileage, and that this increase has amounted to about 63 per cent during the past three years. The greatest loss of life and injury to passengers has been caused by rear-end collisions and next to that by head-on collisions, and the greater proportion of these have occurred on interurban railways. Part of this blame the speaker puts upon insufficient safety equipment, including that of brakes and signalling apparatus, but the greater part of the blame, in Mr. Barnes' opinion, lies in lack of effective organization and management. We have always taken the position that when it came to safety appliances, particularly signalling, the best is none too good. As Mr. Vreeland tersely pointed out, a head-on collision between two electric cars, each running at the rate of 25 miles an hour, is more dangerous to the passengers than one between two steam railroad trains each running at 40 miles an hour, because there is nothing between the cars to act as a buffer to the shock; and we believe that the sooner electric railway companies which run cars or trains at high speeds realize the fact that they must adopt as good, if not greater, precaution to avoid accidents and prevent collisions than their steam railroad competitors the better it will be for them and the public. If this care is taken the claim departments of the several railways will have very much less to do.

Accidents do happen, however, on steam railroads as well as electric, and the next most important question is how best to meet the situation when it does occur. Here is another case where prompt action on the part of the company counts for a great deal. We have published a large number of different kinds of accident blanks to be used in obtaining information in regard to accidents from the witnesses and even from the victim, but unless this information is obtained promptly, particularly from the injured person, it does not amount to much. We believe that many of the excessive demands made upon the railway companies for damage claims are not due entirely to the cupidity of the claimant, but also in part at any rate to a feeling of resentment over the fact that the injury was caused and that no attention is given him until he makes a legal demand for damages. This can be avoided by a visit of a

representative of the company, either the general manager himself or his representative, or else, possibly, the company's physician. The latter is the one followed in Binghamton, and according to Mr. Clark is productive of ideal results. The physician can not only determine the extent of the injuries, but in his medical capacity he can have easy access to the person and can often get from him an impartial statement of the occurrence before friends or lawyers can persuade him that his injury and cause for damages are much greater than they really are.

Of Judge Daly's paper we cannot speak too highly. Judge Daly has established such a high reputation on the bench and as an authority on legal topics that his opinion cannot but carry great weight with the legal fraternity, and his recommendation to substitute judicial for jury trials is one which appeals to every sense of justice and may be a solution to one of the most vexing problems which now confront railway companies. The latter are often accused with being arbitrary in their disposition of damage cases, for contesting suits which are absolutely in favor of the complainant and for adopting unfair methods in litigation. This may in some individual cases be partially true, although we believe that the practice is very much exaggerated. Nevertheless, we are convinced that if railway companies were assured that they could get justice in trials their course of legal procedure would in many cases be entirely changed. Each case would then be much more likely to be judged on its merits than if the company felt that it could not afford to let a case go before the jury for fear of unfair treatment.

* * * * *

Closely associated with the subject of accidents is that of discipline, on which a paper was presented to the association by Mr Fairchild, and a report on a closely related subject—i. e., of a standard set of rules—was rendered by the committee on this subject. These rules, owing to the lack of space at our disposal in this issue, must be held over until next week; but we might state here that they represent a number of modifications over those rendered by the committee at the last meeting of the association, as the result of suggestions made by managers in different parts of the State. It is characteristic of the interest felt in the subject of rules that two State associations, that in New York and that in Massachusetts, have committees for drawing up standard rules, while a similar committee is employed on the same work for the National Association. To our mind, this is a good sign, in spite of the fact that it may result in several standards. We believe that practically every company, owing to local conditions, will have to depart somewhat from any standard set of rules, but the major principles of railway operation are the same, and the fact that any rule or principle has received the endorsement of the national committee, as well as the committee of the State association, in which any particular company is situated, will be indicative of the correctness of the rule and be prima facie evidence that such a rule was the best which could be adopted. For this reason it is fortunate that so much attention was given at the Caldwell convention to the subject of rules, and we shall be very glad to see such a standard set receive the endorsement of the association and also of the Railroad Commissioners of the State, subject to such modifications in subsequent years by vote of the association or ruling of the commission, as future experience may dictate.

* * * * *

Many of the rules in the draft as presented at Caldwell, like the majority of the Ten Commandments, are prohibitory in their wording and so would fall under the ban of the paper presented on "Discipline." On this subject Mr. Fairchild presented a very interesting paper, and his topic was one to which too much attention cannot be given, as it is undoubtedly true that the success of a railway proposition lies largely in the hands of the employees and depends upon the state of discipline enforced on the line. The class of men required to operate effectively the modern electric road is so much higher than that needed in the old horse-car days, when 6 or 8 miles an hour was the maximum speed obtained, that

a different sort of discipline is undoubtedly required. Higher motives must be assumed, just as a different class of work is expected. The ideal state of government of a railway company, like that of a country, would be to have an omniscient ruler, who, in the case of a railway company, could instantaneously read the character of every one of the employees, could detect and remember every fault as well as every meritorious act, and could properly balance these factors in determining the promotion or dismissal of the man. But, as such a human being does not exist, we believe that after making as strict an examination as is possible as to the acceptability of men, their physical condition and mental attainments, that some system of recording their acts, and of comparing their performance and relative standing by these records is the only way of avoiding injustice to the good men and the danger of keeping incompetent men on the force. Those who have used the merit and demerit system speak highly in its favor, and while this system may not be applicable to the largest roads and may entail too much bookkeeping and be unnecessary for the smallest roads, there is nothing derogatory to the men in its application. It is a system of marks and averages similar to the merit system which is employed in both the army and navy, as well as in practically every school and university in the country, and is not only a systematic and fair method of gaging a man's capabilities, but has also proved popular on the roads where it has been instituted.

* * * * *

The methods of removing ice and snow from street railway tracks in the most southern city in the State, as well as in Rochester, which lies in the snow belt of Central New York, were described by Mr. Reed, of New York, and Mr. Danforth. The natural conditions in Rochester are very much more severe than those in New York, but the condition in the latter city is greatly complicated by the use of the conduit system, where little salt can be used and where, in addition to clearing the snow from the tracks, the conduit also has to be kept clear and the grooved rail has to be cleaned by special scrapers. It is extremely doubtful whether in any city where the snowstorms are heavier than they are in New York, or where the city street cleaning department is less prompt and efficient in removing snow, or the drainage is less good, it would be possible to use the conduit system at all, and Mr. Reed's paper shows that the problem of keeping the lines in New York in continuous operation in winter demands the utmost vigilance and expert management.

* * * * *

The space at our disposal in this issue precludes any extended discussion of the valuable papers on operation by R. E. Danforth, whose subject was "Power Station Accounting," or that by T. E. Mitten, who treated "Car Despatching," or of the management of the supply department on a large road, which subject was handled in a most interesting manner by Mr. Tully. The discussion of Mr. Danforth's paper brought out the fact that while some of the smaller roads do not find it necessary to keep their records as completely as recommended by Mr. Danforth, some of the large roads go elaborately into the subject and find that the saving thereby accomplished is far greater than the cost of making the analyses and measurements required. Mr. Mitten's observations on car despatching were particularly interesting, as he discussed the practice followed on his Olcott branch, some 40 miles in length, the cars on which are run on a regular printed schedule and their operation directed at intermediate points by the head despatcher by means of the telephone. Mr. Tully's treatment of the methods of conducting the business of a large storehouse and supply department indicates that in this department, more than perhaps in any other, systematic methods and order make all the difference between success and failure.

* * * * *

In closing these brief comments on the convention we wish to refer to the hospitality shown to all the delegates and other attendants by their hosts—the officials of the Hudson Valley Rail-

way Company. The region about Lake George is one of the most picturesque in the country, and the natural attractions of the place of meeting afforded opportunity for many delightful excursions for the ladies and for the entire party. Mr. Colvin and his associates were most successful in their efforts to make the visit of the association at Caldwell a pleasant one, and their courtesy will long be remembered.

Result of Competition in Suburban Business

The most convincing proof that the electric suburban and interurban lines are cutting into the steam railway short-haul passenger business is found in the data furnished by the Interstate Commerce Commission. It is apparent from these statistics and from data gathered from other reliable sources that the trolley has made great progress at the expense of the steam lines, and that the latter are only just waking up to the fact. Some roads are taking steps to regain lost ground, but in many cases which have come under our observation the new order has made such a good impression upon the public that the only way the steam railroad companies can hope to regain their prestige is by instituting a modern electric service at much lower rates than were formerly charged on the steam lines. This, of course, will mean a large investment in electrical equipment, the abandonment of the old steam locomotives and coaches, much more frequent service and other innovations that are still considered of a revolutionary nature by conservative steam railway management.

It is a matter of common knowledge that the passenger transportation business of the country has been steadily increasing at a very considerable rate during the last ten years, yet in that time the statistics show that the steam lines have not progressed in this branch of their business in anything like the proportion that might reasonably be expected, and of late there has been an actual loss as compared with former years. For example, the number of passengers reported by the steam railroads of this country in 1900, a prosperous year and one decidedly favorable for the creation of passenger traffic, was actually less than the number carried by the railroads in 1893, a year of financial depression and general business stagnation. Nine years ago the number of passengers carried by the steam railroads of the United States was 593,560,612, whereas in 1900 only 576,865,230 were carried. The number of tons of freight, however, during the same period increased from 745,119,482 to 1,101,680,238. This contrast is all the more startling when the prevailing conditions in the two years, as illustrated by the difference in the freight tonnage, are taken into consideration.

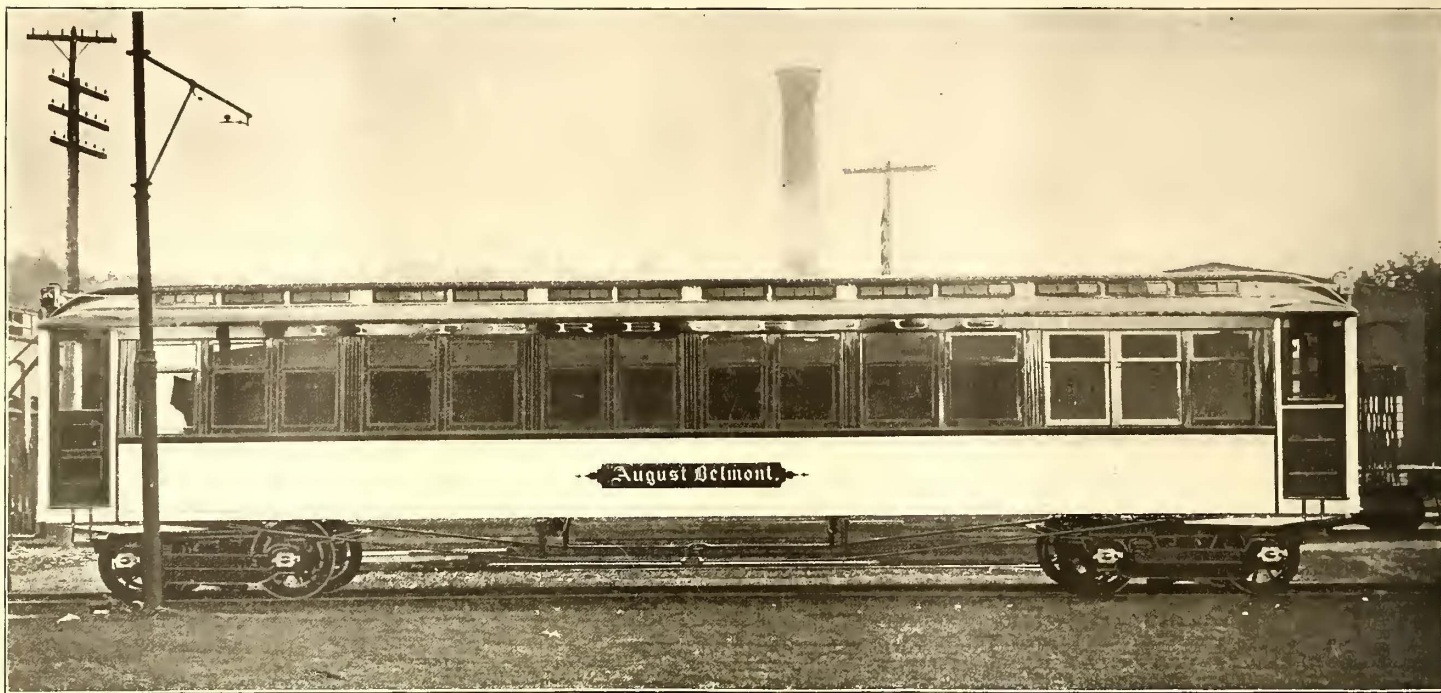
In 1901 the steam roads made a better showing, 607,000,000, but this is far from favorable as compared with the progress which might reasonably have been expected. Further examination of the reports emphasizes the fact that the loss was due to the competition of electric roads, for while in 1900 the number of passengers carried decreased 2.8 per cent, the passenger mileage increased 12.7 per cent; in other words, the short-distance passengers, who once went to the steam railroads, are now being carried in large numbers by electric railways. The number of passengers traveling a long distance, however, has not been affected by this competition, passenger mileage, in the face of a decrease in passengers carried, showing an increase of 12.7 per cent. Many experienced steam railway men admit that this is as it should be, that the steam roads should develop their freight and regular passenger business, and leave suburban traffic for electric lines. It may be possible that they are pursuing a wise policy in this matter, but to an unprejudiced observer it would appear that with their facilities and experience they should be better qualified than any one else to take up this branch of transportation, which is growing more and more important year by year, and develop it properly. We are confident that the managers of the electric lines will not quarrel with them over this arrangement, and surely the traveling public can give no more emphatic sign of its approval than is shown in the manner in which patronage is being distributed at present.

Cars for the New York Subway

The Interborough Rapid Transit Company is experimenting with two cars which it had built as samples from specifications of its engineers for use in the subway. These cars in general appear

protect the wiring so as to guard against electrical fires. The framework is particularly heavy, and it is believed that the structure is as nearly indestructible as can be attained in the present condition of the art.

The longitudinal sills are of compound construction, with center cross-trussing between the steel needle-beams, and the platform



SIDE VIEW OF THE "AUGUST BELMONT"

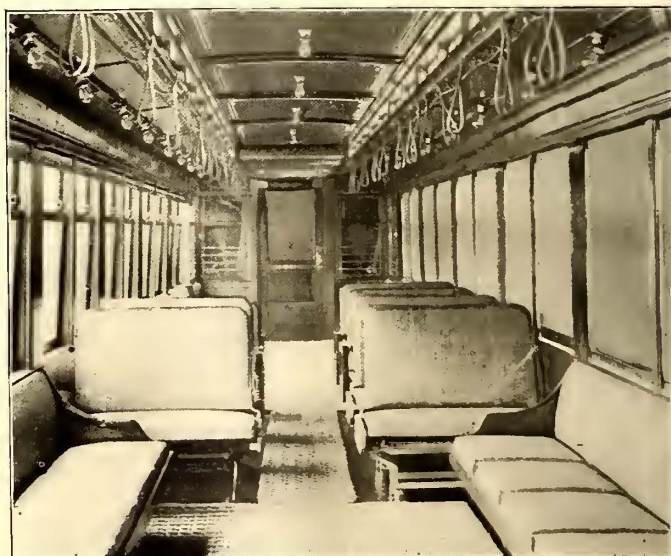
ance differ materially from those in use on any other system in the country. They are considerably longer, for instance, than the Manhattan elevated cars and are not so high. The car tapers toward the top to conform to the subway, and this makes it look even longer than it really is. One of the cars (No. 1) is named August Belmont and the other (No. 2) John B. McDonald. It is the purpose of the company to operate five and eight-car trains, and it is also intended to have parlor cars and ordinary coaches. Car No. 1 is finished as a parlor car and No. 2 as an ordinary

coach. The constructive features in both are identical, but in many details, such, for instance, as doors, windows, seats, lighting arrangements and minor features, they differ materially. The company has had several classes of furnishings installed for purposes of comparison. These are seen in the views above.

end sills are of steel, fitted with heavy steel anti-telescoping plates. The side framing of the car bodies is of white ash, doubly braced and very heavily trussed. The platform posts are of compound construction, with anti-telescoping posts of steel bar sandwiched between heavy white ash posts at corners and centers of vestibule platform. These posts are securely bolted to the steel longitudinal sills, also to steel anti-telescoping plate below the floor and to the hood bow, which serves to reinforce it and is of heavy steel angle in one piece, reaching from plate to plate and extending back into car



INTERIOR OF CAR NO. 1



INTERIOR OF CAR NO. 2

coach. The constructive features in both are identical, but in many details, such, for instance, as doors, windows, seats, lighting arrangements and minor features, they differ materially. The company has had several classes of furnishings installed for purposes of comparison. These are seen in the views above.

The most important consideration in the general design and construction of these cars is the factor of safety. Special precautions have been taken to make the car bodies fireproof and to

body six feet on each side. In case of accident, where one platform rides over the other, eight square inches of metal would have to be sheared off in the posts before the main body of the cars would be reached. This would afford effective means of protection.

The floors are double with asbestos roll fire felt sandwiched between and the floor sheathing is of white pine completely covered on the under side with 3-16 in. asbestos transite board. All

parts of the car framing, flooring, sheathing and the like, are coated with fireproof paint. One car has the ordinary clere story roof and one has the half empire roof, with a light-colored ceiling. The ventilator sashes in both cars are arranged to be opened by a lever, those on each side being divided into two parts. The front half admits fresh air in the forward end of car and the sash in the rear end of car permits the foul air to escape. Both cars are fitted with automatic coupling draw-bars, continuous platforms and platform buffers, electric lights and heaters.

The dimensions of the interborough cars and those of the Manhattan are given herewith, and a comparison will show that they differ materially in many respects:

	Interborough.		Manhattan.	
	Ft.	In.	Ft.	In.
Length over platforms.....	50	1	47	1
Length over car body.....	42	7	39	10
Length center of bolsters.....	36	0	33	2
Width over window stools.....	8	11 $\frac{3}{4}$	8	9
Width over sheathing.....	8	9 $\frac{3}{4}$	8	7
Width over deck eaves' moulding.....	8	5	8	9 $\frac{1}{2}$
Height, top of rail to center draw-bar..	2	5	2	5
Height, top of rail to under sills.....	3	11 $\frac{1}{4}$	3	3 $\frac{1}{4}$
Height, top of rail over platform.....	3	8	3	9
Height, top of rail over roof.....	12	0	12	10 $\frac{1}{2}$

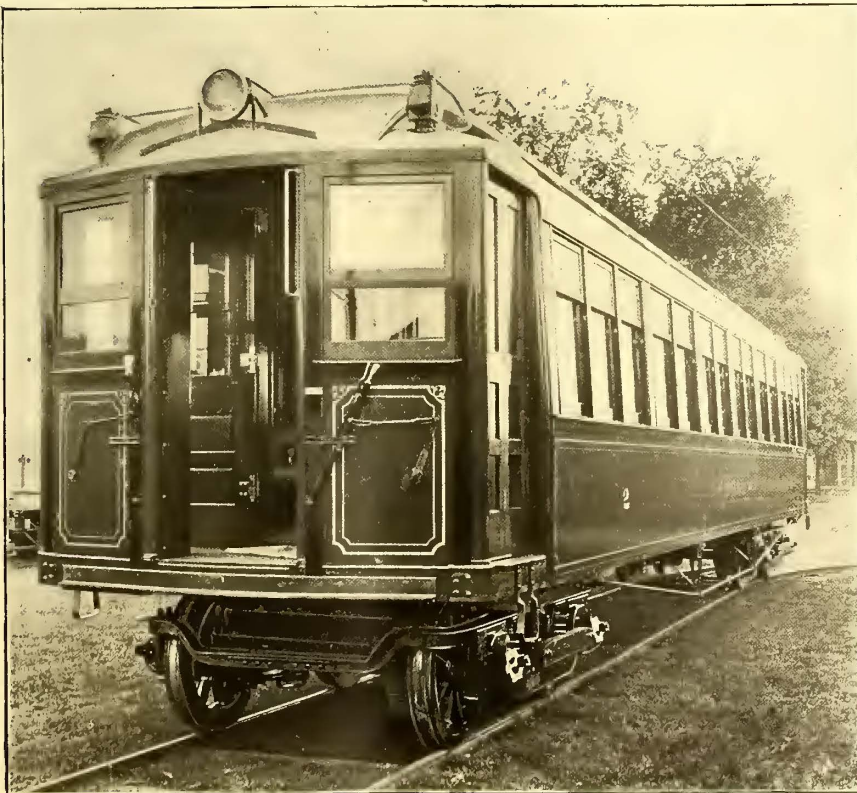
Probably the most important departure from ordinary practice in the general design of these cars is the arrangement of the platforms. The cars are vestibuled, and when made up into trains each car can be closed so as to be entirely distinct or a passageway may be opened throughout the train. An extended buffer attachment is employed in connection with the swinging draw-bar.

Several forms of doors have been introduced on these cars in order to test their respective merits. The vestibule doors on one car are of the Gibbs type; the side doors are arranged to slide into pockets in the side framing, thereby giving up the entire platform to the passengers. Another form of door swings in and is operated by a lever. A third

is a curtain that can be automatically raised or lowered as the door is opened or closed to shut the light away from the motor-man. Another novel attachment to the door is the peculiar handle



END VIEW OF CAR NO. 1



SIDE VIEW OF CAR NO. 2

type, which resembles those on Pullman sleeping cars, is a folding door in two parts, hinged in the middle and doubling like a jack-knife. The principal advantage in these is that they can be handled much more readily with crowded platforms than full swinging doors.

On the door leading from the vestibule to the body of the car

on the sliding door between the vestibule and car body. This door is made to latch so that it cannot swing open with the swaying of the car, but the handle is so constructed that the pressure on it to open the door unlatches it with the same movement.

In one car the lower windows are stationary and the upper windows are arranged to raise; in the other car the upper and lower sash are arranged to raise; the windows in one car have ordinary double-thick sheet glass and the other 3-16 in. polished plate, while all doors in both cars have $\frac{1}{4}$ -in. polished plate.

Both cars have Pantasote curtains, with pinch handle fixtures. One car has cocoa mats and one linoleum floor covering. The parlor car has six clusters of five lights each on upper deck ceiling and the other has single incandescent lamp fixtures, a row of six down the center on the upper deck ceiling and five on each side deck ceilings. Head linings in both cars are of triple veneer. The interior finish is of mahogany of light color in one car and medium dark color in the other.

The seating arrangements are similar to the Manhattan cars, but as these coaches are longer there are four additional seats on each end. The total seating capacity of each car is fifty-two. The seats are all finished in rattan, but there are four distinct patterns shown. The seats are designed for rapid loading and unloading and their outlines are rounded to the slightest curves. Stationary crosswise seats, after the Manhattan pattern, are placed in the parlor car, but the other coach is equipped with reversible seats. The seating arrangements are similar in other

respects. Four styles of the latter are shown in the car to illustrate the different devices that may be used for the purpose. In one car the space underneath the seats is open; in the other it is closed.

One car is painted white and the other chrome yellow; neither color has been selected as the company's standard car color, however. The cars were built by the Wason Manufacturing Company,

of Springfield, according to specifications of George Gibbs, consulting engineer of the Rapid Transit Company.

Plan for Relieving Brooklyn Bridge

The Rapid Transit Commission has under consideration a plan proposed by Neils Poulson, president of the Hecla Iron Works, of Brooklyn, and submitted to Mayor Low by the committee on bridges and tunnels of the Manufacturers' Association for the relief of the congestion of traffic at the Manhattan terminal of the Brooklyn bridge. The fundamental idea is the rearrangement of the trolley tracks as well as those of the elevated structure on the second floor and the approaches so that more room will be avail-

number of square feet of standing room between the cars, likewise the unused space, both on the ground floor and elevated structure, as follows:

GROUND FLOOR

Present plan—approximate areas.

Area of building, 520 ft. x 85 ft.—44,200 sq. ft.

Space for car service, 100 ft. x 80 ft.—8,000 sq. ft.

Standing room for people, 4,500 sq. ft.

Proposed plan—approximate areas.

Building and one-story side sheds, 520 ft. x 108 ft.—56,160 sq. ft.

Space for car service, 520 ft. x 108 ft.—56,160 sq. ft.

Standing room for people, 30,500 sq. ft.

SECOND FLOOR.

Present plan—approximate area.

Area of building, 520 ft. x 85 ft.—44,200 sq. ft.



ENTRANCE TO BROOKLYN BRIDGE, SHOWING PROPOSED INCLINED APPROACH TO ELEVATED LINES FROM CITY HALL PARK

able for loading passengers and handling cars. The capacity will be about doubled, according to the engineer's estimate. The accompanying illustrations are reproductions of photographs and plans showing the most important features of the proposed changes and affording means of comparison with the present facilities. These photographs and plans were submitted by Andrew F. Wilson, chairman of the committee which waited upon Mayor Low, together with a statement explaining the plans in general. The association believes that the most urgent and important thing is to relieve the crush during the rush hours on the trolley service, for which a plan is submitted. The drawing is made to show particularly the immense amount of space wasted in the present system and the danger of crossing tracks on entering and leaving the cars. The plans show the number of square feet the building occupies, the number of square feet used for car service and the

Space for car service and tracks, 32,200 sq. ft.

Standing room for people, 12,000 sq. ft.

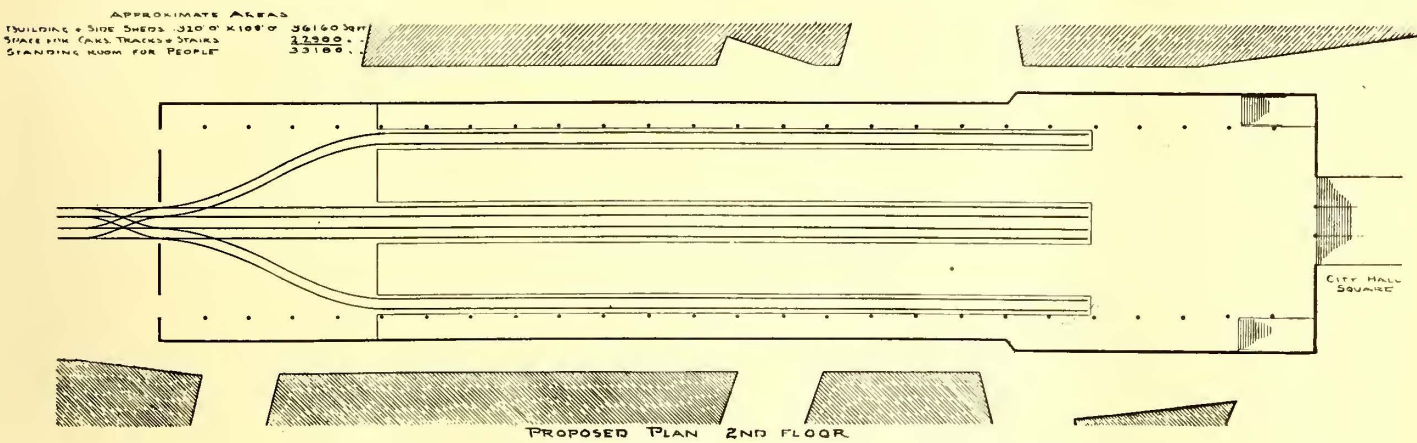
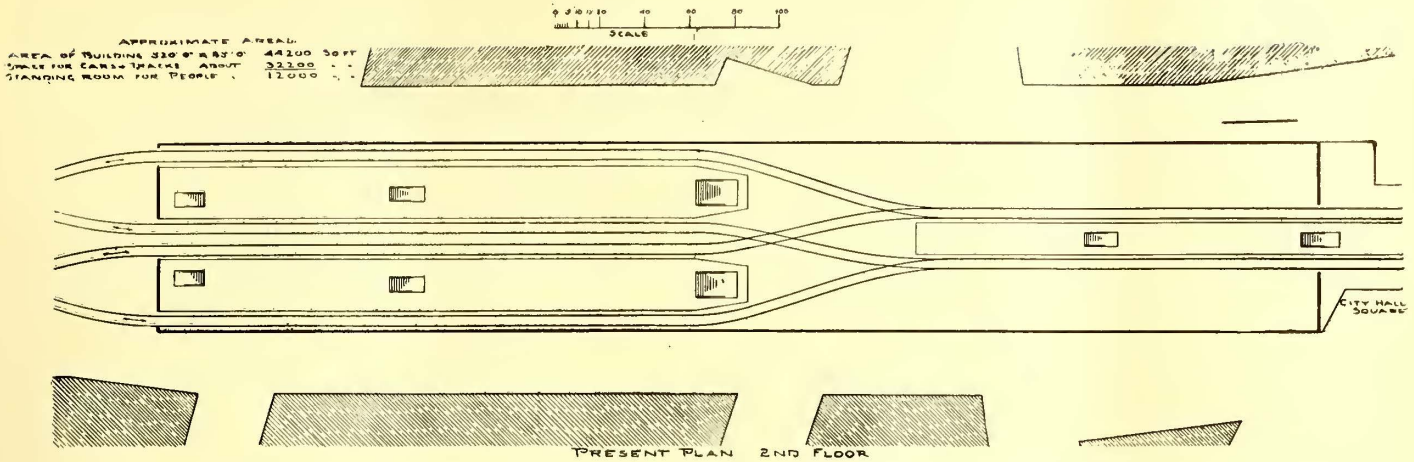
Proposed plan—approximate areas.

Building and side sheds, 520 ft. x 108 ft.—56,160 sq. ft.

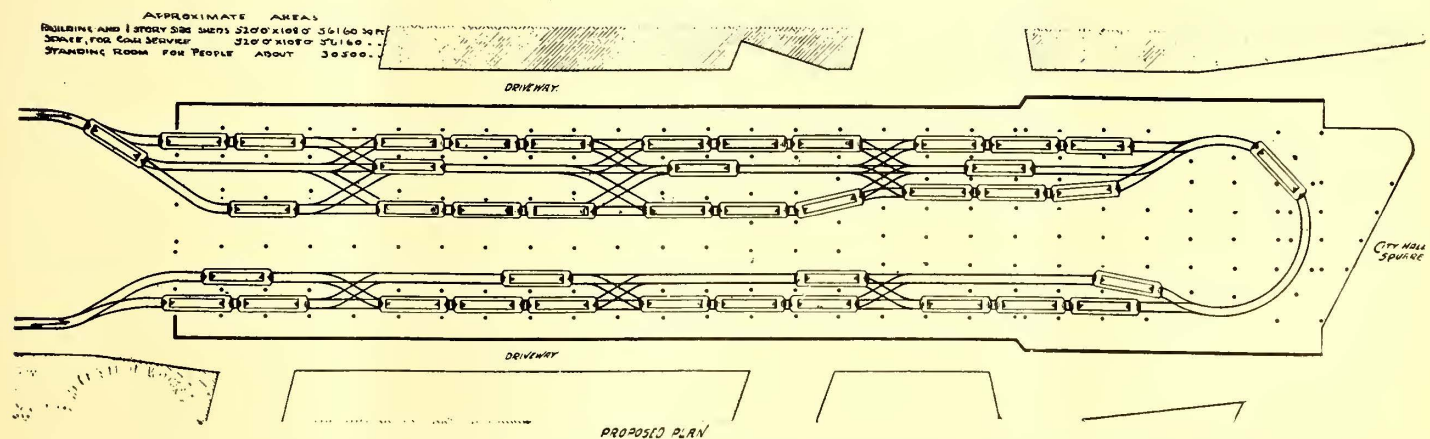
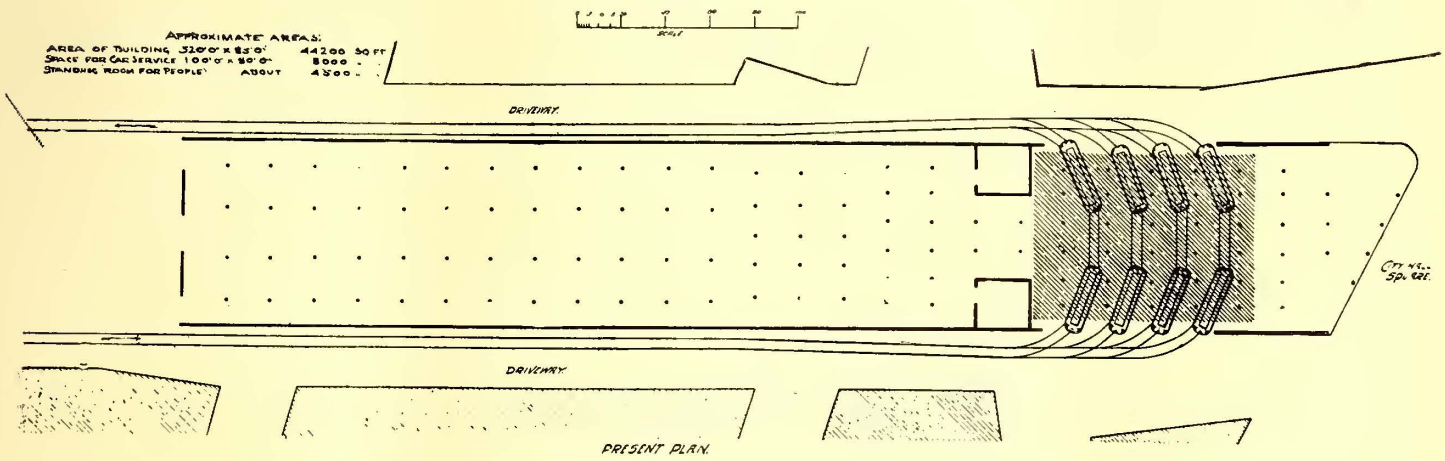
Space for cars, tracks and stairs, 22,980 sq. ft.

Standing room for people, 33,180 sq. ft.

The proposed plan for the trolley cars includes the one-story sidings taking up the space occupied by the tracks of the present trolley lines from the eastern end of the building to the western end next to Park Row, giving over 56,000 square feet, which is all used for car service, and over 30,000 square feet is left for platform. The loop being elevated, no tracks will have to be crossed and there will be no moving cars to dodge. By this plan the cars would enter the terminal, coming from Brooklyn at the eastern end, discharge all the New York passengers on the outside and,



CHANGES PROPOSED FOR ELEVATED TERMINAL OF BROOKLYN BRIDGE



COMPARISON OF PROPOSED PLAN WITH PRESENT CONDITION OF BROOKLYN BRIDGE TROLLEY TERMINAL

when empty, switch over to a parallel track on the inside, then make the loop and go to its respective station either on the outside or inside track on the opposite side, where it will take on its load of passengers, switch over to the center trunk line and then proceed to its destination. The plans submitted are drawn to show the columns as they are in the building. Looking at the two plans together it can be easily seen that the congestion is all at one point and that by the proposed plan use can be made of the large amount of space in the building which is now apparently wasted. By relieving the congestion at one point and distributing the crowd the crush at the bridge would be relieved. Another thing, by putting the loops lengthwise instead of crosswise there will be plenty of room for loading and unloading passengers, and there will be no tracks to cross.

To secure larger terminal facilities for the elevated service, pro-

the promenade. The advocates of this plan say that the whole scheme can be put into practical use in a few months before the cold weather sets in and before the crush commences when the closed cars are used.

Speed of Cars in Massachusetts

Ever since the accident to President Roosevelt in Pittsfield there has been considerable inquiry in Massachusetts as to the power of the Railroad Commission to regulate the speed of electric cars, and during a recent hearing Chairman Jackson issued an informal statement as to the board's position regarding speed and the powers needed by the board in order to cope with the existing street railway problems in a proper manner.

At the hearing the Berkshire Railway Company was asking for an increase in its stock, and in reply to an inquiry by Chairman Jackson H. W. Ely, of the Berkshire Company, stated that the speed of electric cars in Western Massachusetts usually did not exceed 10 miles per hour in the country districts unless the cars ran over private rights of way. Chairman Jackson stated that the board had always taken the attitude that safety should not be sacrificed to speed and that the trouble lay in the fact that the board had no jurisdiction in the matter, the control resting with the local authorities along the towns traversed by the roads. The superseding of the old horse railways by electric lines had made the speed question greater than a local matter, and the speed question has developed just as the through location question has. Last May the board was granted jurisdiction over through locations, and another step in progress was the granting of authority to require certificates that each new line is safe for operation. At the last session of the Massachusetts Legislature the board had asked authority to regulate the speed of cars, but nothing came of it.

Under the existing law steam railroads are prohibited from crossing highways at grade and cities or towns from laying out streets crossing the railroads at grade without the consent of the board. The electric car must by force of circumstances often be, and by regulation always ought to be, restricted to a speed consistent with the safety of other travelers upon the highway. The same car moving over private land or upon a right of way of its own approaches a highway under practically like conditions with a railroad train. The law, therefore, restricting the grade crossings of railways should be extended to the

crossing of railway and highway. Where such crossings can be avoided at an expense which is not too burdensome this should be done and suitable safeguards provided in instances where the outlay would be unreasonably great.

Ex-Senator Post, a director of the Berkshire Street Railway, stated that the country electric roads would be glad to have some such authority over speed regulation centralized in a body like the Railroad Commission, and gave it as his opinion that if the commission had had authority over locations at the time of the laying out of the grade crossing where the accident to the President's carriage had occurred such a crossing of the highway would never have been allowed. In regard to the speed question, he stated that his road would not object to having a reasonable speed limit fixed by the commission, to cover the whole territory through which they run, rather than to be subjected to the variations in speed regulation imposed by different towns en route.

Efforts to hold up public improvements of great value to the community by property owners who may be disgruntled or dissatisfied are not encouraged nowadays by the courts. In dismissing a recent application for injunction to restrain the subway contractors, Judge Lacombe, of the United States Circuit Court, said: "The complainant has failed to persuade this court that there is a reasonable probability that she will be able, upon the trial, to show that the State of New York, by any of its instrumentalities or agents, has deprived, or is threatening to deprive, her of her easements as an abutting property owner, and for that reason, without examining into the extent of such easements, her application for preliminary injunctions is denied."



CITY BUILDING, BROOKLYN BRIDGE ENTRANCE AND ELEVATED RAILWAY TERMINAL

vision is made for material changes from the present system. There are three platforms, of which only one is used during the rush hours for passengers to Brooklyn, and that platform contains about 5000 square feet. It was necessary to have the switching done at the Park Row end of the building when the cable system was instituted, but now that the electric system is substituted, it is pointed out, the switching can be done at the other end. This will give a platform space of over 30,000 square feet, as against 5000 square feet at present. Under the proposed plan there can be four trains of six cars each in a station at one time standing still for loading.

It is contended that this alteration can be made very quickly and at no great expense, and that an important advantage will be derived in that it will also make it more easy for the trolley system below, as there will be no galleries in the way. At the Park Row end of the building it is proposed to build a platform of about 100 ft. x 115 ft., and from that platform there can be as many stairways as are wanted; but it is believed that it would be better to have an incline promenade from the elevated floor to the City Hall Park, as is shown by the illustration herewith. This would distribute the crowd and the elevated passengers would be separated from the trolley passengers at City Hall Park. If passengers should want to enter the building from the street below to reach the elevated the present stairways may be left. As here proposed, there are three distinct plans, one for the trolley service, one for the elevated and one for the promenade.

It is claimed that it would simplify matters to change the elevated and trolley systems at the same time, and then the lower floor can be used entirely for the trolley service, no change of grade being required. The material, beams and girders of the gallery floor when removed can be used for the structural part of

Proceedings of the Caldwell Convention of the New York State Street Railway Association—I.

An account of the social features of the convention of the New York State Street Railway Association, held at Caldwell Sept. 9-10, was published in the *STREET RAILWAY JOURNAL* last week. Below will be found an abstract of the discussion on Sept. 9, with all of the remaining papers. The proceedings of Sept. 10 will be published next week, together with the report of the committee on standard rules.

TUESDAY MORNING'S SESSION.

The meeting was called to order by G. Tracy Rogers, of Binghamton, N. Y., president of the association, at 10:45 a. m. After the calling of the roll the president stated the first paper to be presented was on accidents, by Mr. Barnes, engineer of the State Railroad Commission. This paper was read by Colonel Cole. It was published in part last week, and the conclusion will be found elsewhere in this issue.

Mr. Clark: I move that the paper be received and spread upon the minutes and that the thanks of this convention be extended to Inspector Charles R. Barnes for the exhaustive, complete and full treatise on this important subject.

Seconded and carried.

Mr. Clark: We have adopted the system in Binghamton of looking after accidents which perhaps it is due more to good fortune than good management, has been, we think, successful, and we think that much of our success in looking after accidents and the ensuing negligence actions which arise has been the prompt attention that we have given to accidents when they have occurred. Our employees, motormen and conductors, particularly, are instructed in case of an injury to person or property to report to the first inspector, or by telephone to the office, or to me personally if I can be reached, the character of the accident, the extent of the injury and the location of the accident. I have instructed them next to summon by the nearest telephone our company's surgeon, and in that connection I desire to state that our experience has proven that a surgeon, competent and of good judgment and of sound common sense, has proved the most essential adjunct and claim agent to a small road that we can imagine. He is employed by the year. His business is to respond promptly and look after the injured parties, and if in his judgment they need or require hospital treatment to see that they receive it, either at the charge of the railroad company or otherwise, to be determined afterwards. While caring for their injuries and looking after their physical wants, he is instructed to get from them their side of the story, which he immediately submits to the office upon a statement blank prepared for that purpose. Our experience has proven very satisfactory in that respect, inasmuch as the statement which is generally secured by the surgeon at that time and under those conditions is the unprejudiced and unbiased statement of the injured party or his immediate friends before they have seen their legal adviser, who possibly would tell them to say nothing, or before the busy neighbor has dropped in and told them they ought to have five or ten or fifteen thousand dollars from the railroad company, as the case may be, and before perhaps the bruised spine has become thoroughly broken or a contused limb has been badly wounded. We have found that these statements given to the surgeon by the injured parties have saved us from many an important negligence action and been of great value to us in the settlement or adjustment of claims. Therefore I believe that for smaller roads in particular it is very important that a company's surgeon be employed, one who is in touch with the business interests of the company and one who is qualified to look after not only the physical wants, as I remarked before, but also able to secure an unbiased and unprejudiced statement which will be of great assistance to the general manager or the claim agent in arriving at a disposition of the claim.

I believe that the next important thing to do, and it should be done simultaneously with the care of the injured, is that the scene of the accident should be visited at once, such measurements taken as may be necessary to help prepare the case if litigation should ensue, and secure, so far as possible, all the circumstances surrounding the accident, and, in connection therewith, the place where it occurred, how it happened, distances, measurements and everything that might be of assistance in the preparation of the case. I consider this very important. I think it is almost useless for me to call attention to these procedures, because they are probably so stereotyped and so generally adopted that it is not necessary. I think the next thing to do, inasmuch as there are two distinct characters of accidents, one to the person and the other to property, is that they have to be treated from different standpoints. In an accident where there is not much involved, if a speedy settlement can be reached right upon the spot or very

soon thereafter and a proper release obtained there is no question but that is the best and proper disposition of the case, because in two or three or five or even ten accidents, where possibly the evidence is of sufficient importance to be a question of fact for the jury to decide if the case comes to a trial, in nine instances out of ten the verdict will be against the corporation. That is true even of the provincial cities, and it is more true of the larger cities and the more important ones. Therefore a speedy and quick determination and settlement of any injury, particularly to property, that may arise through an accident, even if a question of innocence or negligence on the part of the company does not stand out as clearly perhaps as you would wish it might to justify you, it is my opinion that the best and most economical disposition of that proposition is a speedy settlement.

In the case of injury to the person quite another condition confronts us, and, as I said before, if the injured party can be seen promptly, and if the surgeon has performed his part well, it is best, if there is any question of negligence on the part of the company and reasonable surety of freedom from contributory negligence on the part of the claimant, to settle the case upon the best possible basis, if an equitable settlement can be reached. Those, in my opinion, are the three most essential steps to be taken in case of injury either to person or property. I can readily see that in cities like New York and Brooklyn and other larger cities, where the system spreads over a vast territory, where the company's surgeon would not be as available or the inspector or the office could not be reached as easily and where the injured party could not be so swiftly cared for, that different methods probably would have to be pursued; but with smaller roads I am a firm believer in giving immediate personal attention to the injured party, seeing that a surgeon is sent and, perhaps, hospital care and attention is given. I know from my own personal experience that paying a small bill for drugs and a doctor's visit or two has saved us in a great many instances a negligence action which might have been troublesome and possibly expensive, and therefore I believe that it is highly important in case of accidents that speedy, prompt and vigorous investigation, examination and care be given immediately upon the receipt of the first information of the accident.

Another all-important proposition in connection with this subject is the preparation of the case for the attorneys. I believe in a great many instances attorneys are pushed in negligence actions on the part of railroads when they should not be and when they would not be if they knew the exact situation of the affair. I consider it highly important that your attorney be informed in relation to every detail, not perhaps just prior to the date of the trial, but as soon as the accident has occurred, so he can have all the circumstances in mind, and well in mind; and I believe that the general manager and the claim agent and those who look after the department of accidents can be of invaluable assistance to the attorneys by giving close and prompt attention to accidents when they occur.

In closing, I simply say I believe the most important thing in connection with an accident is prompt investigation of all the facts, caring for the injured and notification to the general officer or proper authorities of the road at the earliest possible moment.

Mr. Connette: I don't think I can add anything to what has already been said except the old saying that an ounce of prevention is worth a pound of cure. Mr. Barnes' paper has dwelt upon the question of the prevention of accidents, while Mr. Clark's remarks apply particularly to the cure of accidents after they have occurred. Both are good. I was very much impressed with Mr. Barnes' paper, for I am always seeking after knowledge toward the prevention of accidents. I realize that the expense of this particular part of the operation of street railways is a very serious one, and one in which not only I but all of us are interested; and I believe that the mind of this association ought to be directed to the adoption of every device and every possible scheme that can be secured toward the betterment of the service as a tendency toward the reduction of the number of accidents which occur in the operation of our roads. Not only the use of mechanical devices should be adopted, but I think that a thorough co-operation of all employees would have a tendency toward reducing this expense. I believe that when men are in a frame of mind where they take an interest in their work, where they thoroughly co-operate with their employers, where they feel almost that the interests of the company are their interests, they work more faithfully, more diligently and more zealously toward the more perfect operation of the railroad, and by this means, I think, rather than in any other way, we can reduce the number of accidents.

Mr. President: We will now listen to the reading of a paper by William A. Dibbs, claim agent of the Metropolitan Street Railway Company on "The Method of Handling Claims."

This paper was published last week.

Mr. Fassett: Our road, the Albany Traction Company, has used the same form that was used by the old Albany road, a road of about half the size, with more or less success for a number of years. Our road to a large extent is handled by inspectors, and our inspectors take the place of the ears and eyes and hands of the superintendent. Each inspector on the road has a large number of cars which he looks after absolutely. The main work of the inspector is to represent his portion of the road and see that the cars are properly spaced, that the motormen and conductors are doing the duties required of them, and in case of an accident to go immediately to the place and assist the conductor and at the same time to get the names of witnesses to the accident other than those who were on the car. In that way the inspectors get what names they can and send them to the chief inspector, with their addresses. He sends to each of the inspectors who are in different wards or different districts of the city in which the various witnesses live blanks on which the inspectors get the statements from those witnesses, so that, as a general thing, if an accident happens at any time on a certain day the next day at 9 o'clock the superintendent has the advantage of having the report of the conductor and motorman with the statements of all the witnesses. Of course, in the case of a larger road than ours, perhaps the claim department has to be handled in a different way. Our claim department does nothing until a claim has been actually presented. The reports are in the hands of the superintendent and inspectors until the claim is made. For a road of our size we have found that has worked advantageously. The inspectors at the same time are given authority to employ a physician and state to the physician that the first call is paid for by the company. After that it is a question which the doctor has got to find out for himself; but the care of the injured at the time and the work of procuring the statements of the witnesses are entirely in the hands of the inspectors. That has been our system for some time, and we have found that it works very successfully. A great many people have criticised us for the number of inspectors that we employ. On a road which employs about a thousand conductors and motormen we have an inspection list of over fifty. The inspectors are on duty night and day. We have, say, thirty day inspectors and twenty night inspectors, and all fifty are on duty between 5 o'clock and 6:30 o'clock in the evening, which is the time of the heaviest travel on the road. They look after a district of about half a mile, and on some of our lines they look after about six or seven cars. If for any reason our regular timetable is delayed in any way these inspectors, knowing just where each car should be placed—because a man has only ten or twelve cars to look after—can see how the road can be quickly straightened out by turning his cars in different places and looking after his cars and paying no attention to any others. In that way, in case of large fires, which tie us up frequently, our road is straightened out and moving in fifteen minutes after the blockade is removed.

Colonel Cole: I want to bear testimony to what I think is a very excellent system of inspection of the United Traction Company, of Albany. I have ridden, I think, on almost all of the city electric lines in the State, as well as many of the interurban lines, and I have never seen any line on which the men appear to be paying more practical attention to their duties than on that line. It is really a very worthy service. Every man seems to be as deeply interested as though he was responsible for running the whole road. I have never seen a careless inspector along the line of that road; I have never seen skylarking or the doing of nonsensical things. Every man seemed to be as diligent and faithful in the service as though he really had a large property interest in the company and in its welfare. It must be expensive to employ as many street inspectors as the United Traction Company does on its mileage in the city of Albany, but I imagine it is a good paying investment. It holds the car crews up to their work and keeps them at all times under the view of an inspector of that line within the city.

Mr. Vreeland: I don't think that I ever listened to a paper of more value to the railroads of New York City or of the United States than the one that was presented by Mr. Barnes. The statistics and figures presented by Mr. Barnes are only available to him, and they certainly should be of very great value to the gentlemen who are operating railroads in the State. His recommendations are valuable. I had occasion to say a year or so ago in connection with this proceeding at this or the American convention that there was no necessity for interurban high-speed roads gathering their own experience in connection with the operation of their single-track roads. It cost the steam railroads of the United States billions and billions of dollars to get a scientific and safe method of operation as far as practical with human agencies to carry it out. The idea seems to be in the mind of the average electric railroad operator that two cars approaching each other at the rate of 30 miles an hour on single tracks possess no element



GROUP OF ATTENDANTS AT THE CALDWELL CONVENTION

of danger as compared with two railroad trains with locomotives approaching at the same rate of speed. The accidents that have occurred on steam railroads with head-on collisions cannot be as serious as those in electric railway operation. In the case of steam roads you have two enormous bodies of steel coming together which take the shock before it reaches the passengers in the car. With electric cars you have got absolutely nothing between the passengers and the actual crash except in many instances a very light framework at the front of the car. One of the troubles which Mr. Barnes has stated, and which I have noticed in many parts of the United States, is that while the men who build electric roads get the very best lawyer they can to arrange their franchise and charter rights, first-class financial men to make their financial arrangements and technical engineers to build their railroads, they often think the road can be run by some track foreman. A man who has shown some ability in handling construction men, or an engineer who has exhibited ability in engineering, but has never had one day's experience in operation or operating methods, is not necessarily the best man to put in charge. In many instances the railroads around the country are being operated by men who have had absolutely no operating experience at all. I have had the good fortune during my career to be connected with practically all the departments of a railroad, and I have found in my experience that the operating and constructing departments of a railroad are entirely distinctive features. I am speaking more of the larger systems now. There is no man who can give his time and study to engineering for eight or ten years and then the next day operate a railroad satisfactorily. There is no track foreman, no matter how well he can ballast a line of track, that will make a good manager of a railroad the following day. The success of the steam railroads in the United States in operation is due to the fact, and has been due to the fact, that they have good material to select from, efficient men in the various branches of business; and they have also had a well-trained force of engineers and conductors.

Mr. Barnes spoke of the impossibility of getting a man on a single-track road educated up to the knowledge that obtains in a steam railroad system. I agree with him on that point. A man has got to be a brakeman or a fireman for a series of years; he has got to understand the train rules, the method of operation, everything connected with the operation of a railroad, before he is allowed to run a train. His education is not that which is simply required to go through the train and pick up tickets; he must get a thorough knowledge of the methods of operation before becoming a safe man to handle passengers. In our business we have the untrained force, and we have to have trained men to handle them and a master mind.

Another point Mr. Barnes spoke of was this question of the men understanding the various regulations. What I consider the most efficient thing in connection with operation is the system of bulletining, not posting on bulletins violations of the rules by men with whatever punishment that goes with it, but that such a man was reprimanded or such a man's record was made against him for violation of Rule 59. There are in use now about 125,000 miles of steam railroad, and you never see an order put up that John Smith was reprimanded because he ran over a railroad crossing without stopping, because that does not attract attention, but it goes up on the bulletin that John Smith was reprimanded for violation of Rule 59. I know what I am talking about, for I have run trains for years. When these bulletins are put up in the conductors' rooms there are, for instance, twenty-five conductors there who see the bulletin and who say "What is Rule 59? I see Bill Smith has been suspended for violating it; I don't know what it is." Some one gets a book of the rules and reads it out loud. The same thing applies among the engineers and the same among the brakemen. In that way I think you can keep the men better posted on the rules and regulations. I think that is the best method, because when a man's job is involved in the question of what rule he has violated he is going to hunt it up and see what the rule is.

Mr. Danforth: We have a system of looking up accidents similar to that used in other cities of the same size. We use the steam railroad's methods of handling interurban lines. In despatching we use the steam railroad regulations, and are operating with a fair degree of success along those lines. We find the greatest need in our interurban lines is more efficient despatching or block signaling. We are using the telephone in place of the telegraph and using the double-written order system. On our interurban lines we have the block system, or interlocking block system, which makes it absolutely impossible for two cars to run in the same block without receiving the signal from the despatcher's office. A good many of the accidents we have heard of in the last few months might have been avoided. In the matter of investigating

accidents there is not much to say. We have our claim agent assisted by the chief inspectors, who make the necessary visits in order to obtain statements of witnesses. Where the company is liable the claims are settled at the earliest possible moment.

The President: We will now listen to a paper to be read by Hon. Joseph F. Daly.

Judge Daly's paper is published elsewhere in this issue.

Mr. Clark: I move that the paper just read be received and spread upon the minutes and that the thanks of this convention be extended to the Hon. Joseph F. Daly for the able paper he has presented.

Motion seconded and carried.

Mr. Werden: It seems to me that the question which naturally arises in considering the paper just presented by Judge Daly is, Would a system, or court of claims, such as he suggests, remedy the evils pointed out and accomplish the results desired? It has been my privilege to be connected with the municipal court department of the Metropolitan Street Railway Company for the last three years. During that period we tried something over 1100 cases. While many of these were jury trials the most of them, about 75 per cent I believe, were tried by the court alone, for in the municipal court the right to a trial by jury is optional and in many instances no jury is demanded. We never demand a jury in any of our accident cases where the plaintiff has failed to do so. The trial of these cases has afforded, it seems to me, an exceptional opportunity to observe the working of a system similar to the one outlined or suggested by Judge Daly. The results of my experience and observation along the lines suggested by Judge Daly are, in a general way, these: First, that individual judges are quite apt to equalize the amounts of their judgments for similar injuries. That is to say, a case is tried before a judge to-day involving certain injuries and he awards the plaintiff a judgment of \$100. Next week another case is tried before the same judge involving injuries of a nature similar to those in the first case. Now, this judge is very apt to recall the prior case, and his judgment in the second one will in most instances, if in favor of the plaintiff, be about the same in amount, and in trying these cases from day to day he gradually establishes a scale of value, so to speak. Secondly, that the decision of different judges in different districts in cases involving similar injuries are more uniform in amount than are the verdicts of juries in like cases. For instance, say a case tried before the justice of the Seventh District involving a certain injury results in a judgment for the plaintiff of from \$75 to \$100. We have found that other cases in which there are substantially the same injuries, tried before the justice of the Ninth, Tenth or some other district, generally result in judgments of approximately the same amount. On the other hand, a case tried before a jury in the Seventh District may result in a verdict of \$50, while almost the same case, both as to fact and injury, tried by a jury in a neighboring district will result in a verdict of \$250. This tendency upon the part of judges to be uniform in the amount of their judgments has enabled us in considering the advisability of settlement to tell pretty closely what the amount of a judgment would be in case of defeat at trial.

Again, the decisions of judges are more in accordance with the law and evidence and come nearer doing justice between the parties than the verdicts of juries. Judges also get to the point of the case at once, and thus much valuable time is saved. The opening of counsel, long cross-examination, the summing up, the judge's charge, can all be done away with, and a large amount of evidence can safely be omitted in a trial before a judge which would necessarily have to be placed before a jury. All this expedites the trial, which is an important factor.

If some system like that suggested by Judge Daly could be established unequitable verdicts such as he points out, viz., a \$5,000 verdict in one instance and \$500 in another for the same injury, would be unheard of, and the company would be in a position to know about what every case was worth if it became advisable to settle.

Mr. Ely: I move that the following telegram be sent to T. J. Nicholl, vice-president Rochester Railway Company, who lost his mother at St. Paul yesterday:

"T. J. NICHOLL, Esq., Rochester, N. Y.

"The New York Street Railway Association, in convention assembled at Lake George, learns of your great affliction with sorrow and regret and extends hereby the deepest sympathy of all its members.

(Signed)

"G. TRACY ROGERS, President."

Motion seconded and carried.

The convention then adjourned for luncheon, to meet at 2:45 o'clock p. m.

TUESDAY AFTERNOON'S SESSION.

The meeting was called to order at 2:45 p. m. by President Rogers, who then read his annual address. This was published in the last weekly issue.

Secretary Robinson read the report of the executive committee and report of the secretary and treasurer.

Mr. Connette: I move that the report be approved.

Motion seconded and carried.

The President: The first paper to be read this afternoon will be "Store Keeping and Lost Property," by A. C. Tully.

This is published elsewhere in this issue.

Mr. Connette: I would like to ask Mr. Tully what methods the Metropolitan Street Railway Company pursue in gathering together scrap material which accumulates in the various departments, how the quantities are checked and how it is disposed of.

Mr. Tully: The material is weighed on our scales and signed by the weigher or superintendent or the person in charge of that department, who also certifies to the weight.

Mr. Vreeland: I have frequently been interrogated in connection with this subject by gentlemen operating railroads in other cities of the country. As we are organized, the president cannot buy a lead pencil for the use of his office unless he pays for it himself; everything has to be bought through the purchasing agent's office. It is the same with the construction department. The purchasing agent and general storekeeper is in charge of purchases for both the construction and operation departments. If a new piece of railroad is built or if new cars are purchased the accounts go through his office. If motors are bought, the same method is followed. There is absolutely no transaction of any character connected with the expenditure of money, outside of the fixed charges of the company, but is made part of the purchasing agent and general storekeeper's account. In a system like that in New York where, as within the last four or five years, as high as \$12,000,000 have been expended in operating and construction requirements, it is absolutely necessary that there be a complete record in some one office of all the transactions.

Mr. Fassett: There is nothing in the system as outlined by Mr. Tully different from ours except that our road, being much smaller, does not require the same number of employees, but the handling of the storeroom account is practically the same in a limited way, except the storekeeper has nothing to do with it; that is taken care of by the general office.

The President: We will now listen to a paper by R. E. Danforth on "Power House Accounts."

This was published last week.

Mr. Connette: Our system is similar to that described, except that possibly all the details are not pursued as vigilantly as they ought to be. For example, I suppose that very few power houses keep an account of the water evaporated. The number of pounds of coal used each day is, of course, carefully recorded, but the water in a great many instances does not cost anything. The only object of keeping an account of the water evaporated under such circumstances would be to ascertain whether the boilers are efficient or not, and this can be done by individual measurements.

Mr. Starrett: Our method follows closely that outlined in the paper. Perhaps we go into the matter a little further than is ordinarily done, because we are operating a larger power house, and the results to be obtained by the methods outlined in the paper are more valuable. We take a sample from every load of coal that comes into our Ninety-Sixth Street station and analyze it especially to determine the fixed carbon in it. This is necessary on account of the varying qualities of coal which we get in the New York market and their varying smoke producing constituents. We have had more or less trouble with the health authorities on account of the smoke, although we have not had the trouble that others have had. We also take samples of the gas from the boilers at certain times through the twenty-four hours and analyze those gases to determine whether or not the proper amount of air is being supplied for perfect combustion, whether too much or not enough. Records are kept of these analyses, and we can determine whether the individual stokers are giving the furnaces proper attention and whether we are getting the best results possible. We also analyze samples of the ash from the boilers during the three watches to determine the amount of combustible which remains. We find that we have reduced the amount of the combustible in the ash, which at times has been as high as 34 or 40 per cent, to about 12 or 14 per cent. We save a good many tons of coal a day in that way alone. The total saving amounts to more than ten times the cost of keeping the records and making the tests. Of course, we keep engine room records as well, and from these and the boiler room records and repair charges we make out our daily expense records. These are brought together at the end of the month in one sheet, showing the cost of repair of every part of the power house equipment,

total cost for the month of the total kilowatt output, etc. In the engineering department we keep power house records of our own which are separate from the other sheet and served to check the other at the end of the month. Our records are kept not with special reference to the total cost, but more as a check on the cost of the various items and as a check on the cost of repair of various parts of the equipment.

The President: If there is no further discussion on this subject we will listen to a paper to be read by Mr. Fairchild on "Discipline."

This was published last week.

Mr. Smith: We endeavor to formulate our rules so as not only to bring about good discipline, but also good feeling toward the company on the part of our employees. The rules should be simple and of a character that in their enforcement they will not make the men lose their self-respect. We have found that if the enforcement of the rule is left entirely to the subordinate officers they are likely to blow hot and blow cold. One day a rule is enforced strictly, the next day it is allowed to go without enforcement. We therefore endeavor to lay down a line of policy which we try to follow at all times. First, we try to make a position on our road worth having; then we endeavor to show the employee that he will not lose that position if he makes an effort to keep it. We never permit a discharge on the system with which I am connected without a hearing by the head of the transportation department. We very seldom bring the men to the general office for discipline, preferring to deal with them through the road agents, or, as we call them, supervisors. If a man is noticed as not doing that which he should with his car or with his passengers his attention is called to it again and again; if he pays no attention, then he is sent to the general office, where he is talked to by the head of the transportation department, the error of his ways is explained to him and he is told that such things cannot continue. The men seem to appreciate that sort of treatment. If a man becomes careless we go a long way in trying to make him a good man rather than discharge him and try a new applicant. We have not gone into the school question as extensively as perhaps we may in the future, but it seems the trend is in that direction—in the direction of the engagement of the best class of labor. We are very particular in our requirements in engaging men as to their age, former business, method of living, and all that. In this way we expect to get good material first, then by proper treatment and careful instruction a good, loyal employee; then by careful supervision that good discipline which we seek.

Mr. Allen: I would like to hear something about the pension system recently introduced in New York City and its working.

Mr. Root: Before taking up that subject I would like not exactly to take issue with the gentleman who just spoke, but to explain the theory on which the Metropolitan Company operates its road in relation to its employees so far as the discharge of them is concerned. I consider that the principle which has just been laid down will necessarily eliminate to a large extent the usefulness of any division superintendent, or you may call him supervisor, superintendent of transportation or general supervisor, or whoever may be the transportation head. He must do one of two things. He must either tell the division superintendent or supervisor that he is responsible for the operation of the road, and if he is not operating it satisfactorily he will have to get some one else, or else he must assume himself the responsibility for that operation to a large extent. As soon as you take away from a division foreman the power to discharge men within certain limitations, then you limit the responsibility to a large extent of people individually in your system. In other words, John Smith is operating a line of 2000 employees, carrying 150,000 or 200,000 people a day. He sees a man whom he considers he has disciplined or taught to the extent where he thinks that the employee will never make an efficient man, and he considers that that man should be discharged. If this man should be sent to the superintendent of transportation or any higher authority than himself, and if in the opinion of such superintendent of transportation that man should be retained in the service, then the superintendent immediately assumes the responsibility for the operation of that line. In other words, the division superintendent, under such circumstances, in my opinion, is perfectly justified in saying in answer to any criticism: "You would not let me discharge this man; you would not let me hire this man; you are the man that is laying down the policy, and the effect of that policy is shown in the very thing which you are criticizing me for doing."

So far as the pension system is concerned, it is a matter which Mr. Vreeland has had in mind for several years and about which he has often talked to his subordinates, and the system which was finally evolved was the result of four or five years of study on that subject. It is merely carrying out to a logical conclusion the Employees' Mutual Benefit Association which was established on

the Metropolitan system some five or six years ago. It is now arranged so that an employee who enters the service of the company and remains in it is practically taken care of from the time that he enters until he dies. After an employee has been in the company for three months he is eligible to join the association, and unless he is very unfortunate or has long periods of illness the benefit from the association will carry him through the average period of life. But there is a time which comes to a man when he is 65, 68 or 70 years old when he is unable to perform any active duties—unable to make a living for himself. It is to bridge over this period, from this time to the time of his death, that we have established the pension system. The idea which naturally comes to the average man in hearing of the system that has been adopted by the Metropolitan line is that an employee will not remain long enough to receive the benefit of such system. If the methods of ten years ago were still in vogue in street railway companies I should say that that criticism would be perfectly justifiable, but I believe that when enough years have elapsed to show the results of the discipline which is now maintained throughout the street railway companies of this State there will be a very considerable number of men who will remain in the company through the twenty-five or thirty years which is necessary for them to get this pension. Under the system which we have adopted men are retired under two classes, one class necessarily so—the men that have arrived at the age of 70 years; it is compulsory that these men should retire. The retirement between 65 and 70 years depends upon the physical condition of the man and the ability to perform his duties.

The amount which a man receives when retiring under this pension system depends upon his years of service. If he has been in the service of the company thirty-five years he receives 40 per cent of his annual average wage for the previous ten years of his service. If he has been in the service of the company thirty years he receives 30 per cent of his average annual wage for the previous ten years, and if he has been in the service of the company for twenty-five years he receives 25 per cent under the same conditions. There are a great many more points to this system, but these are the fundamental principles underlying the pension system, and we have found that this system has been universally accepted by the men in a spirit of deep appreciation, and especially so when they learned that the company had reserved absolutely all such positions as transfer agent, watchman, janitors and those positions which formerly were held by the efforts of politicians for employees who have reached 45 or 50 years of age and who would not be eligible for the pension system; and we keep these men in these positions where the labor is not so hard until such time as they are able to retire on a pension. The practical result now is that a man entering the service of the Metropolitan system can feel assured as long as he does what is right and remains in the company he will be taken care of during his entire life, even if he is unable to work.

Mr. Ely: I would like to relate a little incident that has come within my knowledge within the last six months that seems to me to illustrate a prolific cause of failure on the part of well-intentioned men toward their employees. I have a friend who is the managing officer of a large manufacturing company. The goods produced are manufactured from iron and steel, and in such manufacture there is a great deal of dust created, and the men come forth from work in the evening, or at the hour of quitting work, in a very dusty condition. This friend of mine was a man of loveliest character and a gentleman in every sense of the word, and he saw this condition of affairs and said that he regretted it. He then went to work and provided a fine, splendid room, fitted up with all kinds of baths, with plenty of room for the men to retire to after ceasing work in order to get cleaned up and in that condition emerge from the work. The thing was put up in splendid shape. Then he destroyed the entire effect of the enterprise by publishing a statement in the works that a lavatory had been provided for the use of the men, and that no man would be allowed to leave the works until he had gone there and washed himself. It almost caused a strike.

Mr. Barnes: I want to call attention to the first paragraph which the able gentleman has presented on discipline, in which he states that he was riding on an open car and had a talk with the motorman. If that was on Root's, Fassett's or Mitten's railway that man would get fifteen days as a breach of discipline.

Mr. Danforth: Concerning Mr. Root's remarks about taking authority away from the foreman or supervisor by referring the final action in regard to the employee to the general superintendent of transportation, it struck me that this was rather in conflict with his later remarks concerning the pension system. If we leave to subordinate the opportunity, perhaps in the heat of passion, to discharge an employee, we may have cases where an injustice is done, and done to an employee who has been in the

service a long time. The general superintendent reviews the case calmly, gladly hears both sides and acts in accordance with the general policy of the company. I cannot see that he is taking away from the division superintendent any of his legal authority, if it is understood by the employee that a visit to the general office means something of considerable importance to him and that the wishes of the division officer are very liable to be followed. From the fact that the division officer is a general officer, and his action is final, he not only to my mind strengthens the position of the supervisor, but protects the company to a large extent against the outside influences which so many of us feel in dealing with our men. Concerning the discipline of the employees, I think the matter has been very well covered. Few of the roads to-day, so far as I can learn, deal rashly or unkindly with the men. The principal feature in administering discipline is fairness and firmness. I believe that has been very well shown on our larger systems.

The President: I will appoint as nominating committee Mr. Allen, Mr. Fassett and Mr. Mitten.

Mr. Vreeland: In the line of some remarks I made last year I would like to say that this has been one of the best attended and most interesting meetings of this association since I have been a member of it. Last year at the American Street Railway Convention in New York City it was said to me a number of times by gentlemen who are members of that association and of this that if the same interest in the business meetings of that association could be secured as in the meetings of the State association of this State it would be in the interests of the railroad men throughout the United States. The attendance has been large and the discussions have been carried on by some of the younger men connected with the smaller and growing systems, and it certainly has been very pleasing to me, and I know it has been very gratifying to the president and to the other members of the executive committee that are here. As I said, last year the executive committee and officers of this association gave freely of their time and attention to the affairs of this association. No meetings of the executive committee of the association have been called except when absolutely necessary, and the only times there have been any members absent from the executive committee meetings have been through illness. Since I have been connected with it these gentlemen come from any distance, give the whole afternoon and evening, if necessary, to the discussion of the important affairs of this association, and if the members of the association want to show their appreciation of the work that the officers and executive committee are doing they cannot do it in any way more gratifying to the officers than by such an attendance and such interest in the convention as we have witnessed here to-day.

Mr. Clark: If I may be allowed just a word in addition to what Mr. Vreeland has so well said and along the same line I think we all agree with him regarding the attendance and interest displayed in the convention this year and last year particularly, and I think that it has been largely due to the announcement of one or more important subjects to be divided into sub-topics to be taken up for discussion at the next ensuing meeting. If I remember correctly, Mr. Vreeland has suggested subjects for two years, and I think the discussions on those subjects has added very materially and very largely to the interest of the meeting; secondly, the sending out of invitations that those subjects would be generally discussed under different sub-headings has given all those in attendance an opportunity to prepare themselves to discuss it, and not to make a motion, but simply as a suggestion, I would like to have Mr. Vreeland select between now and to-morrow morning two subjects to be divided into two, three or more sub-topics, as he sees fit, and present them for consideration and action of this meeting, to be taken up and discussed at the convention next year.

The convention then adjourned until Wednesday, Sept. 10, 1902, at 9 o'clock a. m.

As the meeting on Wednesday morning was devoted almost entirely to a discussion of the rules, and as the space available this week precludes the publication in this issue of these rules, both rules and discussion will be omitted from this issue, but will be published next week.

Tom Johnson has evidently begun to take himself seriously, and he expects others to do likewise even in the great one-act circus with which he is now enlivening the Ohio campaign. In Fremont a few nights ago girls laughed and giggled during his speech and thereby greatly annoyed the star performer, who so far forgot his customary chivalry as to rebuke them, saying: "If I was not so hoarse I would undertake to out-talk all the giggling girls outside of Heaven, but I am hoarse and I wish you would tie a can to your giggling." The girls withdrew and Tom enjoyed the rest of the evening.

Accidents on Electric Railroads—II*

BY C. R. BARNES

From personal observation it is known that every one of the managers of railroads in this State is interested in reducing accidents to a minimum. The Board of Railroad Commissioners is doing all in its power to bring about this condition. Their expert has inspected nearly every foot of track in the State of New York, also the equipment of cars; examined into the methods of operation, and the board has investigated nearly every serious accident that has occurred in the past five years, and on all of these inspections and investigations recommendations have been made with a view of preventing accidents. These recommendations have in most cases been received by the companies in a proper spirit. A large number of them have been complied with, but there are some instances where the managers have thought that, while the recommendation if carried out would be a benefit to the road, the possibility of accident involved was so remote that they have delayed compliance with the recommendation from time to time in order to keep down the operating expenses for this year and intending to comply next year or in the near future. A large number of these recommendations apply to the protection of crossings of steam and electric railroads at grade. It has often been said to me when a suggestion for protection at a crossing of this character is made: "We have operated that crossing for ten years and never had an accident on it. Our men are all instructed to flag their cars over it, and it is impossible for an accident to occur at that point. These are all old men, all live here in the town, and most of them own their homes; they are a good, steady, industrious lot of men, and I know each of them personally." Now that manager was sincere and honest in the statement. He could not be led to believe that there was any danger at that crossing for the reasons which he stated. The fact is, no matter what class of motormen are employed, or what wages paid, an accident is likely to occur at a crossing of that kind unless it is so protected that the car crew is obliged to come to a stop, the conductor going ahead on the steam track before the motorman can proceed over the crossing. As an illustration of what motormen and conductors may do: On an inspection tour I visited a certain town in this State, arriving there about noon. I called up the road superintendent by telephone, told him my business and arranged to call on him at his office after lunch. At that time I boarded a car, and on the way to his office we met another car on a switch. The conductor of that car entered the one in which I was the only passenger, and looking at me, and seeing no other person in the car, called out to the crew of the car: "Boys, be sure and flag the crossing, as there is a railroad commissioner in town this afternoon." From that remark I drew two conclusions; one, that it was not customary to flag the crossing; the other, that I did not look like a railroad commissioner. No matter how long motormen and conductors have been in the employ of the company, or how reliable they may be, accidents will occur at crossings which are not properly protected. The commission's efforts to prevent accidents on electric railroads cannot be effective without the willing and ready co-operation of every person interested in the operation of these roads, and while a large majority of the managers of roads are in hearty co-operation with them we find that there is not a proper realization of the danger connected with the operation on the part of some of the officials.

In stating the number of accidents which have occurred on electric roads in the past five years, a partial classification of them was made. In suggesting means of preventing their occurrence it is not necessary to consider each class of accidents by itself. The remedy which will prevent the occurrence of a head-on collision would be a remedy for almost all of the other kinds of accidents; this remedy is a proper organization of the operating force of the road, proper discipline of employees, proper track construction, proper equipment of cars and proper methods of operation, and this statement is applicable to all roads, no matter what the extent of them. For proper organization and discipline of the operating force, so as to prevent head-on collisions, only competent and properly qualified men should be motormen and conductors. It is not meant by this statement that none but experienced motormen and conductors should be employed, but it is intended that a better class of men would be secured if more care was taken in investigating their past records and physical condition before employment. In order to do this, proper printed blanks, furnished by the company, should be filed out by the applicant, these giving all of the necessary information in regard to their previous employment, reasons for leaving it, references as to character, etc.,

and in addition a thorough physical examination, especially as to eyesight and hearing, by a doctor employed for that purpose by the company; more care should be exercised, and a more thorough system of "breaking in" or instructing motormen than is the custom at present on most roads. It is found that the general custom on a majority of the interurban roads is to take a man, no matter what his previous occupation was, put him on a car with an old motorman and let him run ten days, then make one or two trips with the superintendent, inspector or master mechanic, after which he is reported qualified and is given charge of the front end of a car. This easy method of making motormen was all right in the early days of electric railroading, with the 16-ft., 6-ton car, but is all wrong with the heavy equipment of interurban roads of the present time. It is inviting accident to place such a man in charge of an 18-ton or 20-ton car, loaded with fifty or sixty passengers, descending 5 per cent grades with sharp curves, such as exist on almost all of this class of railroads. The motormen should not be compelled to serve the apprenticeship which is required of the steam railroad engineer, but should receive a training by which he would have some general knowledge of the construction and operation of the apparatus under his control.

Another matter of importance which devolves upon the management of a railroad is the matter of discipline. The first step in this direction is the compiling and furnishing to employees of a complete set of rules. It is the usual custom to require motormen and conductors to learn the rules before they are given permanent employment, but very few companies require these men to remember them. In investigations of accidents the question is asked a motorman: "Are you familiar with the rules contained in the company's book of rules?" The usual answer is: "I knew them when I went to work for the company, but don't know as I could repeat them now." The discipline and efficiency of employees in the United States mail service is as near perfection as possible. In that service employees are required to pass an examination at stated intervals, based on their knowledge of the business and the rules governing it. Motormen and conductors should be obliged to do likewise. These rules should be made as explicit and clear as possible, covering every emergency which can arise, leaving as little to the judgment of the motorman or conductor as possible. The importance of proper rules cannot be overestimated in behalf of safe operation of a railroad. As an illustration of this: An accident recently occurred on one of the roads in this State where fourteen persons were killed and sixty injured. This accident might have been prevented had the conductor of the car used proper judgment and set the rear brake after the front one had become disabled by the breaking of a brake rod. When asked why he did not do this, he answered, "Because I did not receive four bells from the motorman," and he considered it would be a violation of the rules for him to do it without that signal even in an emergency. The rules, among other things, should especially provide for the safety of trains when operated in more than one section. Usually the book of rules prescribes a 500 ft. or 1000-ft. spacing distance. Experience has shown that this rule alone is not sufficient to insure safety of operation where one car is following another, as the construction of country roads is such that in many cases the view is limited to less than this distance. There should be a rule compelling the conductor of the head car to protect the rear end by means of fuses or in some other way while in motion and by a flag or lantern while standing still.

Next in importance to rules and discipline is the question of train dispatching, block signal or telephone systems. The ideal method of operation on any suburban or interurban railroad is the running of cars under a telegraphic train dispatching system. On most of the roads in this State this is impracticable, and the telephone is in a number of cases substituted for the telegraph, the motorman or conductors acting as operators. A reliable block signal system, the cost of which would place it within reach of electric railroads, is something which is much needed, and it would be an important factor in reducing accidents. There is no such system in extensive use on any of the railroads in this State. Improvements have been made within a short time on several of the roads in the method of handling train orders by telephone. Formerly either the motorman or conductor would call up a train dispatcher, receive from him an order to run to a certain point, he would repeat this back, and receive "O. K." from the dispatcher. Several serious accidents occurred through a misunderstanding of orders, and this system has been changed on some of these roads. Now a motorman receives the order from the dispatcher and writes the body of the order on a printed blank; this is manifolded, a copy given to the conductor, who then repeats it back to the train dispatcher, giving the name of the motorman and conductor, he receiving "complete" and time from the dispatcher. Another important matter in connection with the safe operation of an

*Paper read at the twentieth annual convention of the New York State Street Railway Association, at Caldwell, Sept. 9, 1902.

electric road is a proper timetable. The management of every road, no matter how many cars are operated on it, should prepare and have printed a proper timetable, showing the time of each car at the terminal and at every turnout switch or station on the line of the road, the meeting points shown in prominent type, with rules governing the movements of cars, based on steam railroad timetables, shown on it. This matter of telephone equipment and time tables is one to which the managers of some of the smaller roads object. In replying to a suggestion of this kind some have said: "I consider that unnecessary, as in our regular operation we only run two cars." This is not a valid excuse for not equipping a road with a telephone system and running cars under the authority of a timetable, for it takes only two cars to cause a collision, and the results of a collision on a road of this character may be as serious as on a road where a larger number of cars are operated. This is illustrated in a collision which recently occurred on a road 4 miles in length, where in regular service only three cars were operated. This collision resulted in the death of fourteen persons and the injury of sixty.

The question of derailment of cars is one on which it is not necessary to occupy a great deal of the time of the convention. Derailments are caused by defects in track or equipment, or by carelessness in the operation of cars. Defects in track are so apparent that the manager of a road is aware of their existence and knows the poor spots in his road better than anyone else. These are often not repaired, not because he does not know that they add to the possibility of derailment, but in a number of cases on account of the financial condition of the company. It has been stated to the representative of the Railroad Commission after an inspection of a railroad:

"I know that that derailing switch should be put in; I know that that track should be raised up; I know that this section should be ballasted, and I know that that curve is in bad condition, and I have asked our folks for the money to do this work. I am glad you have made the recommendation for it, as they think that we can get along without it for another year." This is poor policy, as the putting in of a derailed switch at the foot of a grade might prevent a runaway car from going around the curve below it and tipping over. The raising and ballasting of the track, the alignment of a curve; any one of these might prevent a derailment which would place the road in the hands of a receiver.

On the question of failure of bridges and trestles, the Board of Railroad Commissioners have made an examination of nearly every bridge and trestle in the State over which electric cars pass, and in case of apparent weakness, have made recommendations for the strengthening of the structure, or its replacement by a modern one. In cases where there was any question as to the strength of the structure, it has recommended that it be examined by a bridge expert. These recommendations have been generally complied with.

Another important matter relating to accidents on electric railroads is the brake equipment of cars. This matter has been so thoroughly discussed and everyone is so familiar with the subject that it is not necessary to do more than to say that, on country roads, and by country roads I mean the suburban and interurban roads in this State, it is almost criminal carelessness on the part of the management to operate the class of cars which are usually operated on these roads with only a single chain hand brake on them. There are very few of these roads on which there are no heavy grades; most of them have grades running from 2 per cent to 10 per cent, and in some cases more than that, and there are sharp curves on nearly all of them, these frequently occurring at the foot of the grades. Cars on these roads should be equipped with the best braking appliance obtainable in addition to the ordinary hand brake, and in cases of extreme heavy grades and sharp curves, they should be equipped with additional emergency brakes, and all cars, both open and closed, should be equipped with a sand box on each end.

Accidents are less likely to occur on a double-track road than on a single-track one. The number of accidents would be reduced if all suburban and interurban roads in this State were double track. The financial condition of the majority of these roads will not permit the construction of a second track, but where physical and financial conditions are such that this can be accomplished it should be done. All extensions of old roads and the construction of new ones over which cars are to be operated at high speeds, should, as far as possible, be on private right of way. The reduction in the accident account will more than pay the interest on the investment required for this purpose.

In addition to the above suggestions in reference to improvements in methods of operation, discipline of employees and equipment of track and cars, to reduce the number of accidents occurring it is necessary that managers of railroads make a study of the business in which they are engaged. There are some roads in

this State on which the Railroad Commission is seldom or ever called upon to investigate an accident. When we visit the manager's office of these roads we invariably find a business office, everything indicating that the man in charge is attending to his business and is thoroughly posted in it. One of the indications of this is that, somewhere in the office, you will see on file one or more of the different periodicals devoted to electric railway interests. On the other hand, the manager's office of railways on which a large portion of the time of the Railroad Commission is spent in the investigation of accidents is devoid of anything in the shape of literature pertaining to electric railway operation. The successful managers of electric railroads have been found in attendance at the street railway conventions for a number of years past; the managers of the roads on which most of the accidents are occurring are rarely or ever met at these conventions unless the convention happens to be held in a city near which he is located. This is justification for the advice to managers to be in touch with the business in which they are engaged, by keeping posted through the electric railway publications and by attending the conventions of this association and entering into the discussion of the different subjects presented. And on this line this association owes a duty to the public, which as the representative of the railroad interests of the State of New York it should fulfill.

First—The Railroad Commission recommends to every railroad company the adoption of a book of rules based on the standard rules. When the companies ask the Commission for a copy of the standard rules they are unable to furnish them, as there are no official standard rules. There should be a standard set of rules adopted by this convention immediately.

Second—In nearly every head-on or rear-end collision which occurs one of the cars telescopes the other. This is caused by difference in heights of buffer and difference in construction of cars. This association should adopt a standard set of specifications for the construction of the various sizes of cars, all to be of uniform height of buffer and uniform construction for each size of car.

The recommendation has been made to railroad managers to keep posted on the current literature affecting their interests. One word to the editors of journals devoted to the interests of electric railroads; they have a duty to perform as well as others interested in the safe operation of roads and to some extent are responsible for the conditions which exist to-day that make possible the number of serious accidents occurring. While they have been the means of educating a large number of the managers of our railroads, and are to-day keeping them posted on the improvements in appliances and methods of operation which are being introduced in different sections not only of this, but of the old countries, once in a while they allow an article to creep in which adds to the fancied security of electric railroad managers whose roads are operated without sufficient safety devices or proper precautions in methods. As an illustration of this, a short time ago there appeared in one of the most influential electric railroad publications of the day an article describing a train despatching system for interurban work. This was a telephone system. The article set out by discarding the telegraph system as being too cumbersome to meet the requirements of an electric road, and, continuing, the writer said: "It has been urged against the use of the telephone in train despatching that there is more chance for error in receipt of message than by telegraph. It is hard to see that this objection has much weight. If desired, messages can be written down and repeated back for approval to guard against errors, as in telegraph messages. However, these points are hardly worth arguing, because the telephone has now become generally used and recognized as the proper instrument for despatching on electric interurban roads." This article, therefore, resolves itself into a review of the methods of using the telephone in train despatching. Then follows a description of the system, occupying three columns of the paper, all of which demonstrate the merit of the system, which is summed up in the fact that a train can be handled in ten seconds. Articles of this kind appearing in a publication of the standing of the one in which it was printed are likely to result in the adoption by electric railroad managers of a system of train despatching such as is described. This would be a step in increasing, rather than diminishing, the number of accidents. The ideal method of train despatching for electric railroads is that which, after years of experience, has been adopted by the steam railroads of this country. The expense of maintenance of operators at different points along the road prevents its general adoption by electric railroads. The closer this principle of train despatching is followed the smaller the number of accidents which will be caused by errors in handling train orders, and any method of handling such orders where only ten seconds are consumed in transmission is a dangerous one, and should not be employed by any railroad in this State.

The disagreeable portion of this paper has been written. Let us now turn with satisfaction and pride to the operation of the city roads of this State. These are managed and operated in a manner to challenge the operation of steam railroads. During the year 1901 there were 1,162,614 passengers carried on electric railroads in this State, and 81,909,000 on steam roads. The record of fatalities and injuries shows that passengers are relatively safer on these electric roads than on the steam railroads. The everyday transactions of the metropolitan street railroad, carrying the immense number of people which they daily do, with the small number killed and injured, is one illustration of the safety of operation of electric railroads. The comfort, convenience and safety with which the large crowds at the Pan-American Exposition were handled by the Buffalo Traction Company last year is another illustration of the careful operation of an electric railroad. That the managements of city roads realize the importance of reducing accidents to a minimum is shown in the case of the Brooklyn Heights Railroad. For some years past a large portion of the time of the Railroad Commission was occupied in investigating accidents on this system. At present the large crowds going to and from the summer resorts on Long Island are handled in comparative safety and very few persons are killed or injured, as compared with the number riding. There are summer resorts located near all of the smaller cities in the State, such as Rochester, Syracuse, Utica, Albany, Binghamton, Elmira, Jamestown and Auburn, to and from which there is unusually heavy traffic during the summer season. These crowds are carried and managed in such a manner that it is very seldom that a person is killed through any defect in the method of operation or the equipment of these railroads.

In conclusion, I may express the hope that, through the combined efforts of all interested, next year's convention will find your lines throughout this State equipped and operated in such a manner that the confidence of the public will be restored in the safest and most comfortable of all methods of transportation, the electric railroad.

Economical Methods for Removing Snow and Ice*

BY R. E. DANFORTH

Those of us who are connected with railways in Northern and Western New York, find our "great problem" in handling snow. The question of removing it from our tracks to allow for the passage of cars, and often in keeping open cuts between small mountains of hard wind-packed snow, is usually more serious than that of caring for it after we have heaped it up along our lines.

We congratulate our more fortunate brethren who not only live where a milder winter climate prevails, but who are furnished with an equipment of snow-handling machinery, and we regret our inability to adopt their methods and obtain their results.

Many roads, having an average passenger car headway of 7½ minutes to 10 minutes, do not often have the number of plows or sweepers required to maintain over the system a headway of even 60 minutes. This fact, together with climatic conditions, render the problem of snow removal in our smaller cities and towns, and also in all cities and towns of Northern and Western New York, one of serious importance.

With us it is a question of ways and means; a question of number and types of plows, of capacity of rotaries, of strength of sweeper brooms, of means of throwing the snow over banks, from 5 ft. to 15 ft. high, and of providing electric power to operate both plows and cars.

In our towns we cannot haul all the snow off the streets, because there is too much to possibly handle; we therefore confine our efforts in this respect to the business centers, crosswalks and junction points. Along the remainder of the lines the snow is piled up between curb and walk, or spread between track and curb, as the locations warrant. The snow we do remove is hauled away in sleighs, and sometimes on flat cars.

In considering our snow-fighting equipment we find that all types of machines for removing snow are useful. We even require horse-plows or walkaways for leveling back banks of snow thrown out by the plows and for cutting down drifts and opening gutters—work which cannot always be readily done by a track-plow.

In localities where winter commences early in December and lasts until April, where storm follows storm, and where a "thaw" means a rise in temperature slightly above 32 degs., and closely followed by more snowstorms, severe cold and usually high winds, the accumulation of snow from one storm almost never disappears before it is buried beneath another. In the outskirts of the

cities and on the suburban lines, the high winds continuing for days are the cause of most of the trouble, as huge drifts of hard sandy snow are formed as rapidly as removed, and successfully defy ordinary snow-plow apparatus.

To combat our local conditions we have drifted away from rattan brooms and followed, more or less intelligently, modern steam road practice. First we dragged a board along the track; but finding this little better than our sweepers, we placed the board ahead and shoved it along. The board soon changed its form from a vertical plank, placed diagonally across the track, to a warped surface shear, tending to cut, lift and then roll a mass of snow along its length.

Finding this snow-plow ineffective in banks over 5 ft. or 6 ft. high, an ingenious friend produced an electrically-driven boring machine, and called it a rotary track cleaner. With this machine we are able to cut our way slowly but surely through banks of snow of almost any depth and of any condition, short of hard ice.

We have, also, placed upon all our passenger cars track cleaners or scrapers, which will, without difficulty, remove snow from the rails to the depth of 4 ins., unless the snow has been packed down to this depth by the street traffic; and it may be well to say that scrapers which will remove even hard-packed snow are in use in Toronto and elsewhere.

Each type of plow has its place and cannot economically be used in any service for which it is not adapted. It is as improper to attempt to remove 6 ins. of snow with a rotary as to attempt to cut through 2 ft. of snow with a rattan sweeper. In either case the feat may be accomplished, but in neither case with the greatest economy.

Considering first, the removal of snow in cities, it may be said that experience in Western New York has shown that, with the equipment at hand, the work should be performed about as follows:

On the appearance of a snowstorm, when the streets are free from snow, light plows and sweepers should be gotten in readiness and should commence work when not more than about 2 ins. have fallen. If the storm continues and the snow falls so rapidly that there is a probability that the accumulation between trips of the plows and sweepers will exceed 3 ins., the heavy shear-plows are sent out. When the ridges formed by the plows and levelers approach 24 ins. in depth, walkaways are used to level off the same, and shovelers are sent out to clean all crosswalks. At the commencement of a storm a force of trackmen are sent out to clean switches.

In storms of recent years, when snow has fallen to depths of over 30 ins., it has been found impossible to depend upon the light plows and sweepers to do more than follow after the heavy plows, and to clean the street to the pavement. The work of the rotary commences when the banks of snow on either side of the tracks become so high that the plows can no longer shove them back.

The rotary is a slow-moving machine, because of the power limitations of the ordinary street car motor, but its work is positive and effective. As our storms are usually accompanied or followed by high winds, the new-fallen snow is soon piled in drifts in the thinly settled portions of the city. The snow thrown out by the rotary is spread over a large surface and does not materially add to the height of the bank until the snow has become wind-packed and sandy, and then, for the reason stated, the height of the bank is only slightly increased. Teams and shovelers commence the removal of snow at junction points as soon as it accumulates. When the storm is over the work of removing the banks of snow in the business section, thrown up by the plows and from the sidewalks, is undertaken by the railway and city forces jointly.

When the storm ceases our work has just fairly begun. Although there remains little to be done in the centers of the city drifts are being rapidly formed in the outskirts, and plows and rotaries must remain in constant operation for days to keep the lines open.

Suburban lines which cross the line of prevailing winds and those which are run along the highways require constant, and at times heroic, effort to keep them open. When snow fences are liberally used and properly placed along the exposed portions of the line the saving in snow expense is marked.

The Rochester snow-plow equipment consists of eight antiquated sprocket-driven mould-board plows, equipped with Westinghouse No. 3 motors, three combined rattan sweepers, one double track four-motor Wason nose plow, one double-end tin fan rotary, two single track heavy shear plows and six walkaway or horse-plows. With this equipment was kept open, throughout the severe storms of last winter, 100 miles of track, including 25 miles of side or boulevard track, placed between rows of trees on one side, and hydrants, stepping stones and hitching posts on the other, with less than 10 ft. between the two. This peculiar location of tracks

*Paper read at the twentieth annual convention of the New York State Street Railway Association, at Caldwell, Sept. 9, 1902.

renders the use of wings or levelers impossible, and the snow is therefore soon piled up close to the tracks and the cars are operated in a cut, the width of the car body. Under these conditions the removal of snow is made difficult and expensive, and because of the narrow space between rails and sidewalk the number of shovelers and the expense of snow is greatly increased. The cost of removal of snow and ice for the winter of 1901-1902 in Rochester was \$90 per mile, a large percentage of which may be attributed to the 25 miles of boulevard tracks. A double-track line, 5½ miles long, between Ontario Beach, Charlotte and the Rochester city line, and running north and south, lies on the west side of the highway, between the curb and fence lines. The hedges and line fences form a snow fence, which stops the drifting snow and heaps it up to great depths on the tracks. This line has been kept in continuous operation for eight years by two to four men with a rotary plow. During the most severe weather cars are obliged to closely follow the rotary over the line, but are never stalled. Although this plow is equipped with small motors (four G. E.-800), it has been operated for three seasons without a burn-out. A section gang of four men has been used to clean switches and crossings on the 11 miles of track.

The Rochester & Sodus Bay Railway, operating about 40 miles of line, mostly along a highway, is kept open by two rotaries and ten shovelers, but with considerable difficulty. The location of this line is peculiarly favorable for its obstruction by snow drifts, which form along almost the entire line, often higher than the roofs of the cars. The plows on this line are overtaxed and require a considerable expenditure for their maintenance. Under the conditions existing on this line each car should be provided with a pilot plow—a heavy nose-plow with long side wings or levelers should be provided for use through the villages, and the rotaries should be the single instead of the double-blade pattern, so as to be able to lift the snow higher.

The cost of removal of snow and ice during the winter, 1901-1902, along this line was \$2,300, or \$57.50 per mile.

When the average life of a rattan-filled broom is considered, as with its extreme flexibility, the additional cost of a steel broom, properly reinforced by steel plates, is more than made up. Those who have operated steel brooms, driven by 50-hp motors, know that they will cut through drifts of moderate depth and sweep the track clean, with no apparent injury to the brooms. For comparison it may be well to state that the steel brushes cost \$42 per set, and last from two to five years with ordinary care. A sweeper thus equipped will readily go through 2 ft. of loose snow and at good speed, and will cut all packed snow to the pavement, when properly operated.

Storekeeping and Lost Property*

BY A. C. TULLY

In the preparation of this paper I have not recommended any particular method in the handling of supplies, for the reason that every storeroom of a railroad must have its own peculiarity of construction and arrangement, resulting from location and the material to be handled. I have, therefore, confined this article in a mere outline of the system adopted in the Interurban Street Railway Company, omitting details, as the president of the association asked me to make my paper short.

The general storeroom was constructed not only for convenience, but also with a view to safety and security from burglary and sneak thieving. This is one of the things we are obliged to guard against in a thickly inhabited portion of a large city. No one can enter an office in the storeroom without being admitted by a clerk, and no person, wagon, truck or car can be admitted on the ground floor without the door being opened by a store-tender, which is immediately closed after entrance. All the floors have fire protection in the shape of fire hose, fire pails filled with sand, and fire extinguishers, all judiciously placed; and during the night each floor is patrolled by a watchman, an electric watchman's clock being used as a check on the stations he is directed to visit.

A storeroom should be kept clean. We do not allow any material used for packing, which comes out of boxes or barrels, to remain on the floor. Iron waste cans with covers are provided for all such material. Waste paper from the offices is collected every evening and consigned to like receptacles. Our storeroom is swept every night and dusted in the morning, and we are never in a condition where we are obliged to go at work and clean up for a tour of inspection by any officer of the company.

I believe in a place for everything and everything in its place.

*Paper read at the twentieth annual convention of the New York State Street Railway Association, at Caldwell, Sept. 9, 1902.

After arranging the articles we have never changed their location to a different part of the storeroom, so that each store-tender becomes familiar with their location, and could go in the dark to the place where he wishes to find any article. We do not allow any article to be placed on the shelves in front of an article of a different character.

The store-tenders are changed on the two principal floors each day, so that they are familiar with the material on each floor.

The stationery is kept in a separate room, and the closets and shelves are arranged particularly for the size of the forms in use, which number over five hundred. The closets beneath the shelves are used for the very large forms, such as receiver's sheets and the large books used in the different departments. Above the closets the shelves extend to the ceiling with sliding glass doors and rolling step-ladders. Every form in use has a number, and this number is indicated in large figures in front of the form and in numerical order. Similar cases also contain the stationery supplies, blank books and typewriter material.

The general storeroom is the source through which all supplies must pass, both in material received and the distribution of same.

The line of supplies kept in stock are for three systems, viz.: The underground electric, storage battery, and the horse-car lines, with over five thousand horses, each system having its own peculiarities of equipment.

The purchasing agent has his office in the general storeroom and also acts as the general storekeeper. This enables him when requisitions are made for material to ascertain at once what is in stock and what is necessary to be purchased.

Every order for the purchase of supplies is printed in copy ink and numbered by the printer consecutively, and copied consecutively in an impression copy-book, so that it is practically impossible for a clerk to make a mistake in numbering an order, and a missing blank could at once be detected. When the order is sent, a duplicate billhead is enclosed for the firm from which the material is purchased, and this duplicate is filled out by the firm and returned with the original invoice, and becomes a record in the office of the general storeroom for future reference, being filed alphabetically and bearing the number of the order, by whom examined, in what book and page entered, and the list number when the original was sent to the auditor.

The invoice when received is first checked with the impression copy, and if found correct is then passed to a clerk, who checks up the material to ascertain if it agrees with the invoice. No invoice for supplies can be passed without a formal order having been made.

All ordinary supplies when received are first taken to a receiving room, where they remain until checked. After this is done and the price verified every article is priced with a cost mark, and is then placed in its proper location. No article is delivered without an order from a superintendent or head of a department, and this must state for what purpose it is to be used or to what account to be charged.

A receiving book is used which gives full particulars as to the description of material, when and from whom received, quantity or weight; and this book is checked with the purchasing agent's order number, date and amount of invoice and any memoranda relating thereto.

When material is delivered in quantities to our division trucks or freight cars an itemized list is made in a triplicating book, the pages being numbered consecutively. The original is kept by the storekeeper, and the two duplicates are sent with the material to the department ordering the supplies. One is signed and returned to the storeroom and the other retained by the party who ordered the material.

Everything is received on the first or ground floor. All the heavy material, such as castings, bolts, nails, etc., are kept on this floor. A platform of proper height enables us to load and unload from trucks and freight cars, and an overhead trolley, with differential pulley blocks, and chains, enables one store-tender to take heavy barrels or boxes to any section of the floor without extra help. An electric elevator, of 2 tons capacity, with a platform 7 ft. 10 ins. x 14 ft., is located in the center of the building, as the most convenient place for loading and unloading and carrying material from the first to the fourth floor.

The distribution and accounting for all material used, whether for power houses, car shops, track, buildings and offices, is done in the office of the general storeroom, and the statement rendered each month to the auditor.

LOST PROPERTY

The lost property found in the cars of our street railway system is a part of the work of our general storeroom.

The Legislature of the State of New York, in 1899, passed an "Act authorizing the sale of property left in Street Surface Rail-

road cars, and the disposition of the proceeds thereof." This act became a law, with the approval of the Governor, on May 2, 1899. One year ago, at the convention held in Rochester, I was surprised to find that some of the railroads, even in our larger cities, had not organized a department in conformity to this law. The act is short and explicit, and reads as follows:

It shall be the duty of every street surface railway corporation doing business in this State which shall have unclaimed property left in its care to ascertain if possible the owner or owners of such property and to notify such owner or owners of the fact by mail as soon as possible after such property comes into its possession. Every such corporation which shall have such property not perishable in its possession for the period of three months may sell the same at public auction after giving notice to that effect by one publication at least ten days prior to the sale in a daily newspaper published in the city or village in which such sale is to take place, of the time and place at which such sale will be held, and such sale may be adjourned from time to time until all the articles offered for sale are sold. All perishable property so left may be sold by any such street surface railroad corporation without notice, as soon as it can be, upon the best terms that can be obtained.

All moneys arising from the sale of any such unclaimed property, after deducting charges for storage and expense of sale, shall be paid by any such corporation to the treasurer of any association, composed of the employees of such street railroad corporation, having for its object the pecuniary assistance of its members in case of disability caused by sickness or accident; and where no such association of the employees of any such street railroad corporation is in existence at the time of any such sale such moneys shall be paid to the county treasurer of the county in which such sale took place for the benefit of such county.

Immediately after the passage of this act, President Vreeland directed the general storekeeper to take charge of the lost property, and as the Metropolitan Street Railway Company had a flourishing benevolent association, it was not necessary to turn over the proceeds to the county treasurer.

It may be interesting to know a few facts connected with the lost property of a street railway in a cosmopolitan city, and the system under which it is managed. The results arising from this organization have been, I think, a surprise to the officers of the company.

All property left by passengers in the cars, if found by the conductor, is taken by him, on the completion of his run, to the receiver's office, where it remains until the next day, so that passengers who detect their loss can go to that office and obtain the same. The following day all unclaimed property is sent by a messenger to the lost property room, which is located in and is a part of the general storeroom.

Each receiver is provided with a book, with coupons printed and numbered in triplicates, and each set of coupons is numbered consecutively, the original remaining in the book, the duplicate being attached to the article, and the triplicate being sent in an envelope to the lost property clerk. The conductor fills out the coupons, giving the date, number of run, direction of run, badge number, the hour, description of article found, and signs the same. A space is left for the name and address of the owner, who must always sign after identifying the article and proving the ownership, and this duplicate is filed as a voucher. The triplicate coupon is copied into the lost property book, according to consecutive numbers and with all data relating thereto, a space being reserved in the book on the same line which states what disposition is made of the article, and thus an accurate record is kept of each transaction, and any article can be readily obtained in the storage room by reference to the number of the coupon, the articles stored being arranged according to months. Each coupon, after being copied in the lost property book, is filed according to the number.

When property is delivered by the receiver he must send the duplicate and triplicate coupons, properly signed, to the lost property clerk. As these coupons are all copied consecutively a missing coupon is at once detected.

When anything reaches the lost property room that contains any information that indicates the address of the owner, we send a printed postal card, of which an impression copy is always taken, requesting the party to call relative to lost property, and to bring with them the postal which states the hours during which the office is open, and also that articles are only kept for three months. The card does not indicate the nature of the article, leaving that for the person to describe who brings the card, so that if the postal came into the possession of another party they could not describe the property that had been lost. Certain letters and figures are written on the card, which are only understood by the clerk, and these have a reference which enables him at once to refer to the page in the record book and the location of the articles in the storage room.

The property accumulates so rapidly that we are obliged to have a second storage room, where all articles are stored after the lapse of three months and until we dispose of them at public auction.

Our auction occurs twice in a year, and generally lasts without

intermission from 10 a. m. to 8 p. m. The auctioneer opens each package, assorting the articles and arranges them according to his judgment, and has full charge of the sale.

Rewards are frequently given by parties recovering their property, and are given to the conductor who found it, taking his receipt for same; and a record is kept of all such rewards. These rewards have run from 25 cents up to \$1, \$2, \$3, \$5, \$10, \$15, \$25, \$35, and in two instances \$100 and \$250.

Since the organization of this department we have returned in cash to the owners the sum of \$12,608.39; there has been paid into the treasury of the benevolent association unclaimed cash amounting to \$5,011.60, and from auction sales, \$2,440.54. The rewards for conductors have amounted to \$1,091.81. So that the total cash transactions have amounted to \$21,152.34, not taking into consideration the value of merchandise and articles returned to the owners. We receive on an average about 1200 articles each month, and return to the owners about 500.

The articles found on street cars in a city like New York comprise a heterogeneous mass, and may be termed "good, bad and indifferent." We have received in live stock a monkey, puppies, kittens and canary birds.

Trunks lost from express wagons during the night have been picked up on the street and returned to the railroads that had them in transit.

The large amount of clothing and wearing apparel of every description, and the number of satchels, dress suit cases, pocket-books and umbrellas would surprise most of you.

We have sent articles to the owners living in the West and as far South as Texas.

Valuable jewelry when found is generally sought for by the loser, and the largest rewards have come from the return of this class of property.

It is a difficult department to handle, as the clerk comes in contact with many unreasonable people, and we are obliged to act almost continually on the defensive to protect the company from delivering articles to unauthorized claimants. It has its pathetic as well as its humorous phase. The clerk is obliged to listen to tales of woe, and endeavor to pacify the excited and explain to the unreasonable. We come in contact with remarkable cases of forgetfulness and the peculiarities of the working of the human mind relative to locating articles which have been lost. A lady left her pocketbook, which contained quite a large amount of money, in a car—some papers in it gave the information as to her address. When she brought the postal card notifying her to call she gave an accurate description of the contents, but insisted she had not left it in the car, for she knew she had it in her hand after leaving the car and had lost it walking home. A detective from another State left his satchel on a Broadway car, which on being opened was found to contain a revolver, a box of cartridges, a pair of handcuffs, and a requisition from the Governor of that State on the Governor of New York for the return of a fugitive from justice. Not having been called for after several days, we notified the Governor's office of that State, and the answer came that it was important, and giving the name and address of the sheriff of the county to whom the document had been issued, and asking us to communicate with him, which we did, and a telegram came in reply to send all at once by express C. O. D., with any expenses attached.

A bank messenger, on completing his tour of collections, reached the bank before he missed a satchel which contained \$1500 in bills. His last recollection of it was that he had it in his possession on a car on one of the main lines of the company, but could not give the number of the car or conductor. The bank kept the telephone busy every few minutes making inquiries relative to it. The conductor on the completion of his run turned it into the receiver's office, and the bank received their property the same day.

It requires the employment of one clerk whose time is fully occupied each day answering questions, keeping record of the articles, replying to correspondence, and sending out postal cards. In addition to this one clerk it has been found necessary to keep two other clerks from the office thoroughly posted as to the records and the manner of conducting the system adopted. This is done so that they can act as relief clerks in case of sickness or absence.

The question may be asked why the receiver of any division could not attend to the delivery of the articles found and avoid a separate office and the employment of a special clerk. The answer to this is, that on account of the great number of articles lost in a large city and the persons frequently not knowing to a certainty where it was lost, they commence in a day or two to think what store they visited, what place of amusement they attended, and what line of cars they traveled on; and then make a tour of investigation, and as all missing articles are not lost on

street cars the great number of people calling and the time consumed in answering questions would so seriously interfere with the receiver that he could not attend properly to his duties without the aid of a clerk. On the largest divisions of our system it would also require a separate room for the storage of articles lost, so that on the question of economy it is advisable to have one central place where persons can call.

I have consumed considerable of your time in an outline of lost property, which to some of you may be something new in connection with operating street railways, as the result shows that where in a smaller road lost articles might be deemed a trifling matter, yet in a large corporation like the Interurban, a close watch of such articles in a thorough system of record shows an aggregate of such proportions as to yield a revenue to a benevolent association and is a protection to the company.

Accidents on Street Railways from the Legal Point of View*

BY HON. JOSEPH F. DALY

When it is considered that, notwithstanding the extreme care exercised by the management the claims of all character presented to the New York city surface railway system exceed seventy-five for each working day, it is manifest that from a lawyer's point of view the possibilities of fruitful litigation assume vast proportions. That these opportunities are not neglected is evidenced by the number of actions annually commenced and the time consumed in the courts of disposing of them. During the year ending June 30, 1902, there were 4170 suits for negligence commenced. This shows that of the numerous complaints or claims made less than one in fourteen resulted in a law suit, the remainder being satisfied by adjustment or abandoned. Of the suits brought 1161 were settled without trial in the same period. This seems to me to be extremely creditable to the company, as indicating a desire to deal equitably in such matters, and it further appears, from the results of the cases which are contested, that the legal department is justified in referring them to the courts for decision; for out of 1189 causes tried in the same period there were 695 judgments for the company, as against 494 for the plaintiffs. There were but twenty-eight appeals taken from judgments in favor of the company, and these appeals resulted in but eleven reversals.

The extraordinary proportion of judgments recovered by the railway unquestionably shows that very many suits commenced against the company are induced by the hope that the natural sympathy of jurors for the injured will help a weak case and support it against evidence which in an ordinary commercial action would prevent any recovery. At one time in the early history of street railroads and "accident suits" a verdict for the plaintiff was a foregone conclusion, and many amusing stories are told of the defiant attitude of the jurors and the attorney for "the company" growing out of the invariable character of the verdicts. It is related of one counsel, after a succession of exasperating defeats by the same panel, that he happened finally upon a case which required a verdict in his favor, and that he began his summing up, "Now, gentlemen of the jury, *I've got you!*" The jury, after some deliberation, acknowledged that he had.

The number of verdicts for the defendant now rendered in accident cases proves that the old-time reliance upon the sympathy or prejudice of jurors as a substitute for that measure of proof which the average mind requires in ordinary cases must be abandoned; but there still remains an uncertain quantity to be dealt with in the deliberations of juries in negligence cases, and which may affect plaintiffs and defendants alike. An instructive instance is found in the case against a butcher whose wagon, driven by a very young boy, ran over a child playing in the street. The proof of gross carelessness or incompetence on the part of the driver was clear, for the injured boy with his companions was playing in the gutter, and the wagon had the rest of the street unobstructed to pass in. The negligence imputed was not only the act of the driver but the employment of so youthful a servant in such a responsible service. Eleven jurors were immediately for the plaintiff, but the twelfth calmly met all their arguments with the remark: "It's no use, gentlemen; I have been in the retail butcher business myself and I know that the profits won't afford a man to drive!"

Now, in that case the solitary juror believed that the infliction of injuries was an incident of the business, and was the share which the public ought to bear of the inconveniences growing out

of the economic conditions of the industry. But was he doing more than unconsciously offsetting, for the benefit of his trade, the theory we hear advanced that employers of labor, especially common carriers, in all cases of accidents in their business, whether the fault of the party injured or not, ought to make compensation as part of the operating expenses, on the ground that accidents are the unavoidable concomitants of the business.

While it is satisfactory to reflect that jurors are not yet given over to such theories, it is nevertheless extremely difficult, if not impossible, to obtain, in the jury box, a proper appreciation of the rule as to contributory negligence, which precludes a recovery where the injured party is in any degree to blame for carelessness or inadvertence. It is doubtful whether a verdict in favor of the railway company is ever rendered in a case in which the jury is satisfied that both parties are in fault—and yet the law requires a verdict for the defendant in such a case. Notwithstanding the explicit charge of the judge that any negligence of the injured party, no matter how slight, which contributes to the accident will preclude a recovery, the verdict depends upon the defendant exonerating its employees from blame. This, of course, throws the whole responsibility upon the defendant, and though opposed to law must be reckoned with in considering claims for accidents; for it may be set down as a certainty that no matter how rash and careless the injured party may have been, if the evidence shows that the defendant's employees were also careless the result of the trial—if the case is left to the jury—may be foretold with certainty. In short, it is to be feared that the doctrine of contributory negligence prevails in the deliverance of the court, but finds little favor in the jury box.

Notwithstanding this fact the courts feel bound to cling to the theory that juries, although satisfied that the defendant was negligent, turn from that side of the case to weigh the proof as to the contributory negligence of the plaintiff. Practical experience of counsel will, I think, fail to recall instances of respect for the theory. The utmost that can be hoped in such cases is a failure to agree upon a verdict. It explains the cases of verdicts so grossly inadequate that the courts have been compelled to set them aside.

In order to sustain verdicts for claimants rendered in the face of the clearest proof of contributory negligence, the attempt has been made to extend a principle applicable to a few special cases to all actions for negligence. This is the doctrine that, notwithstanding negligence on the part of the injured party, he may recover if the defendant, after such negligence occurred, could, by the exercise of ordinary care, avoid inflicting the injury. The doctrine was applied in Weitzman's case (33 App. Div.) where a child, negligently attempting to cross the track, was caught on the fender, carried a long distance and rolled under the advancing car, which might have been stopped before the child rolled off. It was properly applied in Totarella's case (53 App. Div.) where a child stumbled and fell upon the track at such a distance that the approaching car could have been stopped in time to avoid injury. But the court refused to apply it in Goodman's case (63 App. Div.), where a boy negligently stepped in front of an approaching car; and in the Catto's case (70 App. Div.) it was pointed out that the principle is only applicable where, after the occurrence of the accident to which the negligence of the plaintiff contributed, a new situation or condition is created calling for the exercise of care appropriate to the new circumstances.

This decision was most salutary, showing a firm adherence to the established doctrine of contributory negligence, a doctrine which could always be evaded by the claim that owners of vehicles could always use such care as would relieve pedestrians from the necessity of looking out for themselves. As well might the defendant urge that accidents would be impossible if pedestrians were always on the alert to prevent them, and therefore there should be no recovery in any case, as the wayfarer is always to blame.

It frequently happens that the weight of evidence in these cases so overwhelmingly disproves the charge of negligence on the part of the defendant that it is manifest that if a verdict should be rendered against such preponderance it would be the duty of the trial judge to set it aside; and it has been contended, with much reason, that in such a case it is equally the duty of the judge to dismiss the complaint, if not to direct a verdict, and thus relieve the jury from the formality of deliberating upon an issue which can be legally resolved in only one way. The court of last resort has, however, decided that the proper course is to submit the case in the first instance to the jury, and if they find against the weight of evidence, then to set their verdict aside and order a new trial before another panel.

The submission of the case in every instance to the jury is in accordance with the English practice and the theory of the jury trials; but it ought to be considered that English judges exert

*Paper read at the twentieth annual convention of the New York State Street Railway Association, at Caldwell, Sept. 9, 1902.

a very decided influence upon their juries, and do not hesitate, in a plain case, to indicate upon which side lies the strength of the proof; the very opposite of the American practice, in which the judge studiously refrains from giving the jury any of his own impressions. It has been said that it certainly is a serious question whether in a case which is altogether one-sided, and which logically requires a verdict for that side, it is fair to the jurors to leave the matter to them as if there were room for a fair difference of opinion. Experience shows that in many such cases the jurors are misled by the practice, and are surprised by the subsequent strictures of the court upon their want of intelligence in disagreeing or giving the wrong verdict in a plain case.

The practice of leaving every case of obvious preponderance to the jury and then setting aside their verdict if against the weight of evidence, in the expectation that another jury, upon the same evidence and with a colorless charge from the court, may do better, is likely to lead to great cost in time and money to the community as well as to the individual suitors, who are thus tossed like shuttlecocks from one jury to another, with no hope on the part of any person that any logical result will be finally arrived at. While it must be conceded that the practice favored by the court of last resort is warranted by precedent, it cannot but be admitted that the former practice of the trial courts was in the direction of speedy justice.

As under the present system the granting of new trials will be multiplied to the great cost of the public in the time wasted in mistrials, the delay in clearing the calendars and the expense to the litigants; it is probable that if, in order to avoid these evils the trial judges should exercise greater freedom in discussing the weight of evidence in the charge to the jury, any disinterested person will be likely to complain.

The number of accident suits in the city of New York, which is greater than ever before, is undoubtedly due to the enormous increase of travel induced by the advantages offered by the consolidation of the metropolitan lines. The first fruits of consolidation was the transfer system, which for a single fare enabled the passenger to travel on several routes formerly operated by distinct companies; but from the increased travel in every direction and the haste, bustle and crowding, have resulted mishaps which would never have been experienced if the increased accommodation to the public had never been offered. Of course, the novelty of the electric system is responsible for many accidents, which will become less frequent with familiarity with the new order. It may be set down with certainty that no community will tolerate a return to antiquated systems because accidents will be less frequent. The comfort of street railway travel at the present day is largely due to the feeling that it is not purchased by the suffering of beasts of burden pulling the crowded car up hill in sweltering midsummer or ploughing through wintry storms.

And accidents were in the same proportion in the days of horse cars as now. Then, as now, the plaintiffs asserted that the car, invisible to their careful eyes as they stepped upon the track, swooped down with lightning speed and overtook them before they could clear the other rail; then, as now, the car started with a terrific jerk before the alighting passenger could complete the descent, and just as the ascending passenger had one foot on the step; then the jingling horse-bell was as inaudible as the motorman's gong in these times. In short, in the days of the old jogging horse cars, with their wearied steeds, the swift and deadly approach and the precipitate start, were the themes of forensic eloquence as they are now.

The number of suits commenced against the street railways without justification, as the result of litigation show, far exceed the proportions in other classes of cases. The cause of this indiscriminate suing may be found in the fact that there is a so-called "accident bar" or group of lawyers whose business is practically confined to the bringing of negligence actions, and who have corps of assistants engaged in seeking retainers in such actions. Not only is a person who has sustained an injury pursued at once by a persistent agent for a law firm, but practically all the "accident firms" run him down, some displaying printed lists of large verdicts obtained for personal injuries. No opportunities for litigation can possibly slip through the meshes of this commercial system. It is stated that in the case of one street accident nine attorneys started for the game. Four rushed to the hospital and four to the "blotter" at the station house. The ninth wisely saved himself and everybody further trouble by rushing to the office of the railroad with a summons. Every accident, whether the facts will support a claim or not, is made the subject of an action, in the hope that in the weak cases the company may find it cheaper to settle than to fight, and with the certainty that in every case the "50 per cent" basis of dividing the recovery will amply pay for the attorney's trouble.

It is not necessary here to repeat the strictures which have from

time immemorial been passed by judicial writers and the highest authorities of the profession upon those members of it who make it their business to incite litigation for a share of the proceeds. Many grave abuses have resulted from the practice so condemned. No one will argue that there is any impropriety in taking a just case upon a contingent fee; but when that fee is so large as to become a temptation to the lawyer and his agents, or an injustice to the client or an injury to the adversary, the evil cries for remedy.

In a late article in a legal publication it was suggested that the knowledge which has now become familiar to juries that the lawyer will get a large share of the recovery in the case may influence the verdict and make it, perhaps, double what the jurors would otherwise deem a "just compensation for the injury." In such a case the injustice to the defendant in compelling him to pay double damages for an injury unwittingly inflicted is too manifest to dwell upon. As to the remedy for the propensity of certain professionals to make an unconscionable contract of this kind there is room for a difference of opinion. The loss of character in the profession, the exclusion from honorable association, the rebukes of the bench may not suffice. One suggests itself as practical, and that is to empower the court in every case to add to the verdict what is a fair reward to the attorney and counsel in lieu of the "extra allowance," which is now but a mere addition to the exorbitant share of the verdict which the speculative attorney expects to get. If this plan will prevent the evil of having the jury swell their verdicts by attempting to provide for the lawyer as well as the client it will be of substantial benefit. The damages in such a case being exclusively for the benefit of the client might be paid into court.

Viewed from the standpoint of the lawyer, who has other interests than those connected with accident suits, the multiplication of the latter seems to have so engrossed the time of the courts as to delay other issues beyond reasonable limits. The number of such suits, brought by infants and administrators, which have a preference, adds to the unreasonable obstruction of the calendars. To these conditions are largely due the necessity for devising some means of relieving the courts and clearing the calendars, which has appealed for legislative satisfaction. The appellate divisions and the courts of appeals are now well abreast with their business, and cases are now speedily reached in those tribunals. It is in the trial court that the block of cases produces delay. This is owing to no fault of the trial justices, who do all they can to expedite business. If their calendars were relieved of all the "speculative" litigation their task would be easy. Every accident case, if contested, is stubbornly litigated, and for a very good reason, as results have shown. Every such case must be tried before a jury, and trial by jury is a tedious process in the preliminary qualification of the panel in order to eliminate bias; in cross-examinations, prolonged on old lines familiar to the practitioner but novel to the novice in the jury box; and in the long summing up and charge, with its line of requests, exceptions and modifications.

There can be no suggestion for relief to the crowded calendars which will not be open to some exception, but much is to be said in favor of having a special tribunal to deal with the great mass of accident cases which now oppress the courts. What that burden is may be inferred from the bringing of 4170 suits against the street railways of one city. And street railways do not cause all the accidents. In a column entitled "Run-over Accidents in One Day," in a recent daily paper there were six such casualties, and only one caused by a "trolley," the others, if I remember rightly, were charged to a brewery wagon, an automobile, a delivery cart, a mail cart and an express wagon. It may be imagined how the accidents in all branches of contractors' work, in factories and workshops, where machinery is used, and in crowded tenements, swell the list of speculative cases and add to the crowded calendar. Under these circumstances it would seem that a special tribunal might be constituted for the speedy and economical disposition of these cases. There are practically no questions of law now remaining to be settled in such cases, and for the cumbersome machinery of the law courts might be substituted a court of claims. If relief lies in that direction a constitutional tribunal could be enacted consisting of a presiding legal member and two lay members, to take cognizance of the so-called accident cases against individuals as well as corporations. Such a tribunal could dispose of five cases in the time now spent in trying one with judge and jury. Trials would be speedy, and the injury caused by the death and dispersion of witnesses would be avoided. It is reasonably certain that the awards of such a tribunal would be neither excessive nor inadequate. They would at least be consistent. It is within our experience that appellate tribunals have been called upon to affirm one day a verdict of \$5000 for the death of a child and the next day \$500 for the same

injury—and in both cases because “the question of damages is for the jury.” We have seen courts disapprove of verdicts which constitute a capital affording provision for life, and leaving an estate for the heirs of a party who never in the best of health could have accumulated such a fortune. We have seen a trial court compelled to order a new trial because a jury found a verdict for defendant with a recommendation that the company give the plaintiff \$300! In short, in no respect is the imperfection of the present system of disposing of such cases more apparent than in the matter of award of damages.

If such a special tribunal as is suggested were authorized it could be so authorized as to inspire the same confidence in its decisions as is now deservedly felt for the rulings of our judges. Its members could be elected by the people for fixed terms as long as the judicial tenure, and be removable for cause by the Legislature, and could be compensated in proportion to the important duties to be performed. Whether this is the proper solution of the problem of relieving the courts or whether a more efficient substitute for the present system can be devised there is no question that the conditions call for improvement. I have not been solicitous to inquire whether interests of the legal fraternity will be unfavorably affected by a change, but I know that the Bar generally will favor such a plan as benefits the community.

Car Dispatching on Interurban Lines*

BY THOMAS E. MITTEN

Since the introduction of high-speed electric service between cities there has been a great demand for a satisfactory method of car dispatching on interurban lines. So many lines of this description have been constructed within the past few years, either independently or in connection with existing city systems, that the subject has become one of common interest; there has, however, up to the present time, been apparently little, if any, concerted action, the management of each road having adopted some method with a view of meeting the particular requirements of the line to which applied.

Theoretically, the ideal system would be that controlled by an automatic block, operated independent of trolley circuit and absolute in its action, which would permit of but a single car or train upon a section of track at one time. Up to the present time such a system has not, to my knowledge, been satisfactorily worked out as applied to electric lines.

Experiments with electric signals, operated in connection with the trolley circuit, have been made from time to time, and some lines are now being operated, relying almost entirely upon the protection afforded by such signals. This practice, however, seems to be confined to the shorter lines where but a few cars are operated, the results obtained not seeming to have been such as to warrant its general adoption.

In the operation of the longer and more important lines, where high speeds are attained, and cars run with greater frequency, the disposition is rather in the direction of following steam railway practice, and it would seem that much might be gained by a careful study of the system in general use by steam railways, representing, as it does, the result of much thought and many years' experience.

The accidents occurring on interurban lines have shown that as we more nearly approach the speed of steam railway trains, we become correspondingly subject to the same class of accidents. It would, therefore, appear that we should make our rules looking to their prevention, conform as nearly as may be practicable to those which the steam roads, by long use, have found most effective. Believing that the solution lies in this direction the writer has, for some years past, been endeavoring to perfect a system which, while closely patterned after steam railway practice, has greater flexibility and can be simplified to conform to the requirements of the line and service to which applied.

Under the system referred to, a printed timetable, containing the running schedule, meeting points, and all rules necessary to a proper understanding, is provided, a copy being supplied to each motorman, conductor and such other employees as are interested therein.

Trains are of two classes, regulars and extras.

Regular trains are given a number and shown on timetable, and are designated by a corresponding red figure displayed, in a conspicuous place, on front and rear of train by day, and, in addition, a red light at either end of train at night.

Extra trains can occupy main track only upon written orders from the dispatcher, and are designated by a green letter “X” by day and green light at night.

Regular trains, having a second section following, carry in addition to their red number or red light signal, a white sign, worded “Car Following” by day and a white light at night.

Trains, running in sections, are required to keep 3000 ft. apart by day or 5000 ft. at night, or during foggy weather when running at speed, distance and speed being correspondingly reduced when approaching meeting points.

Extra trains are required to be in on siding to clear at least five minutes before the regular train is due.

A red flag and a red lantern are carried on front platform at all times, lanterns to be kept lighted at night and during foggy weather, ready for immediate use.

Trains which are disabled in the vicinity of curves, where the vision is obstructed, are required to be immediately protected by the conductor (using red flag by day and red lantern at night), proceeding at least 1000 ft. in the direction from which danger may be expected.

Under ordinary conditions, where no unusual delays are encountered, this timetable is found to be all that is necessary.

A dispatcher is located at a central point, who, by telegraph or telephone, issues the necessary orders under the prescribed form, when, owing to the operation of extra cars or unusual delay, such are found to be necessary.

Operators or receiving agents are maintained at certain stations on the line for the purpose of copying and delivering train orders to passing cars.

When receiving an order the operator or receiving agent makes three copies on manifold paper, the original is retained by him, the duplicate and triplicate being passed to the motorman and conductor to whom addressed. As soon as the operator or receiving agent receives an order, by telephone or telegraph, he at once repeats it back to the dispatcher, who, at that time, copies it into a book of permanent record, the orders being numbered by him consecutively, commencing with No. 1, at 12 a. m. each day. The plan described affords protection to both the front and rear of trains.

The complete timetable herewith, that of the Buffalo, Lockport & Olcott division of the Interurban Traction Company, representing, in a concrete form, the method which has been proved satisfactory after nearly two years upon a single-track line over 30 miles in length, where at times the patronage requires the operation of the largest number of cars possible at a maximum speed of 45 miles per hour.

The timetable submitted with the paper shows the regular running times and in addition the meeting points of cars in heavy type. Each run is numbered, and the timetable indicates for each meeting point the number of the runs which pass at that point. The following rules and whistle signals are also given in the timetable:

RULES

1. A regular train is one shown on timetable and may be run in one or more sections.

All regular trains will display on front and rear dash a red dash sign designating run number by day, and, in addition, a red signal light at night.

When a regular train is run in sections, first train is called first section; following sections being numbered in order.

Every train having another section following must display in addition to its red dash signs and its red signal lights, immediately to the left thereof, a white sign “Car Following” by day and a white signal light at night.

A space at least 3000 feet by day and 5000 feet at night or during foggy weather will be maintained between sections when running at speed, each section to be under full control when rounding curves where vision is obstructed, both distance and speed to be correspondingly reduced when approaching meeting points.

2. An extra train is one not shown on timetable and must not occupy main track except under written order of dispatcher.

Extra train will display on front and rear dash a green dash sign “X” by day, and, in addition, a green signal light at night.

3. Regular trains will meet as shown on timetable, unless written orders to the contrary are received from dispatcher.

When impossible to make meeting point on time motorman will notify dispatcher from first telegraph station.

Motormen whose cars meet at Mill Street, Lockport, or Main Street, Buffalo, will secure a clearance card from operator, unless sure of their own knowledge that the opposing train has arrived.

Red flags and red lanterns will be used for danger signs and for signals at telegraph stations. Motormen must never pass by such signals or semaphores when set against them.

Motormen will invariably compare watches with relief at time of change and must set to agree with dispatcher's clock at Main street or Lockport when passing station on their first trip.

4. When first train arrives at meeting point motorman will run to extreme end of siding (when possible), allowing sufficient room for passing train to clear. Conductor will step off train, examine switch, and, if it is properly set for opposing train will signal motorman on opposing train that track is

*Paper read at the twentieth annual convention of the New York State Street Railway Association, at Caldwell, Sept. 9, 1902.

clear. Motorman, when approaching meeting point, will bring car to a dead stop before reaching switch, unless he receives a "come ahead" signal from conductor of train on siding, in which case speed will be reduced to four miles per hour while passing over point of switch.

When a train displaying a "Car Following" sign arrives at meeting point motorman will reduce speed to two miles per hour and call the attention of the crew going in opposite direction to the "Car Following" sign by pointing thereto and tapping gong.

Motorman, when passing at meeting point, must use extreme care to avoid mistaking an extra for a regular train.

Motorman operating extra train under orders from dispatcher must not attempt to make a siding against a regular unless he can arrive at such siding and get his own train into clear at least five minutes before such regular train is due.

5. Motorman must shut off power and reduce speed when passing over switches and railroad crossings and also observe instructions contained in signs provided and displayed by the company at points on the line.

Motorman when approaching highways and road crossings north of Main Street station must sound his gong 1000 feet therefrom and continue to do so until positive that the road is clear. Instructions contained in "Rules for Trainmen," dated April, 1901, Nos. 27 and 33, will govern when passing over city streets.

6. Main line switches, showing white target by day and white switch light at night, denote that switch is closed and main track O. K. Red target displayed by day and red switch light at night are danger signals and denote that switch is set for siding.

Trainmen must report to dispatcher at once all main line switches found open or unlocked, switch targets defective, switch lights not burning, also any defective rail or obstruction found on the line and liable to cause accident.

7. "Come ahead" signal is given with the right arm in a horizontal position swung forward from the back.

"Stop" signal is given with both arms on a level with shoulder at right angles from the body and dropped to the side. These signs are to be repeated until answered by the motorman tapping the gong twice, signifying that he has seen and understood the signal.

8. The instructions as to the approach and flagging of railroad crossings contained in book "Rules for Trainmen," dated April, 1901, Nos. 23, 29 and 39, will govern, except where semaphores or gates are provided, viz.:

- 1st. Main Street station.
- 2nd. South Tonawanda—Eastern Lumber Co. switch.
- 3rd. South Tonawanda—Buffalo Steel Co.
- 4th. North Tonawanda—Oliver Street crossing N. Y. C. for north-bound trains only, located at right of track. Right hand side signal governs this company's trains. Deraul operating in connection with this semaphore is located 100 feet north therefrom.
- 5th. North Tonawanda—Oliver Street crossing N. Y. C. for south-bound trains only, located at right of track. Left hand side signal governs this company's trains. Deraul operating in connection with this semaphore is located 100 feet south therefrom.
- 6th. One-quarter mile east of Paynes Avenue, at crossing of N. Y. C., a one-arm semaphore governs our trains. Deraul operating in connection with this semaphore is located 100 feet on each side from crossing.
- 7th. Pendleton Center.
- 8th. Paynes Avenue telegraph offices.
- 9th. Mill Street dispatcher's office.
- 10th. Corwin station telegraph offices.
- 11th. Charlotteville station telegraph offices.

On all the above semaphores red arm in horizontal position by day and red light at night block our tracks. Arm must be dropped to diagonal position and red light replaced by white before car proceeds.

Flagmen are placed at Goundry, Thompson, Robinson and Oliver Streets, North Tonawanda, to guard crossing. When they display a white flag B. and L. car has right of way; if they display a red flag cars must be brought to a stop. At night, white and red lanterns will be used in a similar manner.

9. A red flag and a red lantern must be carried by motorman on front platform at all times and will be hung in place provided directly over air gauge. Lanterns must be kept lighted at night and during foggy weather ready for immediate use.

The headlight, as well as signal lights, must be lighted at dusk, or when vision is obstructed by fog. Motorman is held responsible for the lights on front end and conductor for those on rear end of train.

10. Extra trains encroaching upon the time of regulars, and regular trains which become disabled in the vicinity of curves or where vision is obstructed, must be immediately protected by conductor (using red flag by day or red lantern at night), proceeding at least 1000 feet in the direction from which danger may be expected.

11. Motorman will run car at reduced speed, with car under full control, expecting to find main track occupied in yard limits, which are as follows:

- Buffalo, between International Junction and Main Street.
- North Tonawanda, between Goundry Street and Division Street.
- Lockport, between west end of long siding and Lockport station.
- North Lockport, on Mill Street between Clinton and Mill Street junction, on Gooding Street between Gulf line and Mill Street junction.

12. All trains will be brought to a dead stop before crossing Paynes Avenue junction, Niagara Falls cars having right of way.

13. In case of wreck, or where car is disabled so as to be unable to proceed, motorman will take place of conductor and protect car by flagging as provided in Rule No. 10, the conductor going ahead to next meeting point or nearest telephone from which dispatcher can be notified.

Upon reaching meeting point, should telegraph line be down and telephone not available, conductor will notify crew of waiting car that his run (giving number) is disabled. Car will then move to scene of trouble and

push disabled ear into first available siding and then proceed, stopping at each meeting point and notifying opposing trains of their action. Crews of cars so notified will then proceed under timetable rights in the same manner as though disabled train had been annulled.

Where telegraph line is known to be down and wreck or derailment occurs requiring service of wrecking crew, conductor and motorman will both proceed in opposite directions to the nearest meeting points, notifying crews of waiting cars, who will then proceed until reaching disabled car, exchange run numbers, transfer passengers around wreck and then return under time table rights, notifying all opposing trains that the wrecked train (giving number) is disabled and should be considered annulled, the meeting point thereafter to be at the point of wreck instead of the nearest meeting point thereto in either direction.

Should the action prescribed in either of the foregoing be taken, notice must be given when passing each station so that information may reach dispatcher at earliest possible moment.

14. Motorman will be permitted to use seat provided except when running within limits of Buffalo, Tonawanda and Lockport.

TRAIN ORDERS

Special orders, directing movement of trains varying from and additional to the timetable, will be issued over the signature of the division superintendent, viz.:

"A" Fixing Meeting Point for Opposing Trains—

"Run 1 and Run 3 will meet at Hinman."

"Run 3 and X car 64 will meet at Paynes Avenue."

"Run 1 will meet 1st, 2d and 3d sections of Run 2 and X car 46 at Pendleton Center."

"B" For Sections of Regular Trains—

"Cars 46-50 and 58 will run as 1st, 2d and 3d sections of Run 1, Lockport to Main Street."

"C" For Extra Trains—

"Car 48 will run X from Lockport to Main Street, keeping out of the way of regular trains."

"Engine 1 will work as an X from 7 A. M. until 2 P. M., March 15, between Lockport and North Tonawanda, keeping out of the way of regular trains."

"D" For Annulling Trains—

"Run 2, due to leave Lockport at 10:20 A. M. March 15, is annulled between Lockport and Main Street."

Dispatchers will endeavor to have train orders copied before the arrival of train at telegraph station. Operators will, where practicable, deliver both copies to motorman on front platform. Motormen will read and understand the order before proceeding. Block must be removed or clearance card secured before train proceeds. Upon approaching block motorman will call conductor to front platform, so as to be prepared to receive train order.

One long blast of the whistle (thus —) is the signal for approaching stations, railroad crossings and junctions.

Two long, followed by two short blasts of the whistle (thus — — —) is the signal for approaching road crossings.

One long, followed by two short blasts of the whistle (thus — — —) is the signal to be given by trains when displaying signals for a following train to call the attention of trains of the same or inferior class to the signal displayed. To be answered by two short blasts (thus — —) by opposing trains.

Four long blasts of the whistle (thus — — — —) is the signal to call in flagman from the north.

Four long, followed by one short blast of the whistle (thus — — — — —) is the signal to call in flagman from the south.

A succession of short blasts of the whistle is an alarm for persons or cattle on the track

Whistle must not be used in the cities of Buffalo, Tonawanda, North Tonawanda and Lockport.

SPECIAL RULES

Speed not to exceed 2 miles per hour crossing road at entrance to terminal and going over switches at Olcott Beach.

Speed not to exceed 20 miles per hour over switches and when passing cars must not exceed 15 miles per hour.

Speed must not exceed 2 miles per hour going over switch at junction of Olcott freight track.

Trainmen must not pass any depot on line without looking for signal.

The Most Economical Management of the Repair Shop*

BY CHARLES S. BANGLIART

The subject given me for consideration, "The Most Economical Management of the Repair Shop," is one in which I am greatly interested.

The repair work of an electric road, operating twelve or fifteen cars, is, generally speaking, as varied in character as that of a much larger road. But, since it would be impossible for small roads to maintain a repair equipment equal to that of a larger road, much of their repair work must be done outside. I will, therefore, speak of the large road—one which operates from seventy-five to several hundred cars.

In the list of machinery and tools which I have prepared I have aimed to give those which are most generally useful in a repair

*Paper presented at the meeting of the Pennsylvania Street Railway Association, Sept. 10, 1902.

shop. Many small conveniences for the quick and easy handling of the work will suggest themselves and can be added to the equipment.

The machine shop, with its auxiliaries, the blacksmith shop, truck shop and armature and coil room, naturally take first place in repair work. The value of a convenient arrangement of these departments and the proper location of work benches and machinery to give ample working space cannot be overestimated. In a repair shop you never know "what a day may bring forth." A good rule to observe, in this connection, is to take as much room as you think you may need and double it.

A lathe equipment, consisting of one 24-in., one 20-in. and one 10-in. speed lathe, will meet ordinary requirements for that class of work. The large lathe should be provided with crane fitted with chain blocks for the safe handling of heavy work.

One large drill press, 26-in., and one speed-drill press will answer for that class of work.

The other machinery necessary may be listed about as follows:

A good milling machine.

A shaper.

Hydraulic wheel press.

Vertical wheel boring machine.

Power shearing machine.

Power hack saw.

Power thread cutter (right and left).

The grinding work can be done with an emery wheel and ordinary grindstone. There should also be a set of buffing wheels for finishing car and electric fittings. Also a good babbitting outfit. This is essential.

A good arrangement regarding tools is to have a special tool room, in charge of a competent man, and a check system for the purpose of holding workmen responsible for tools drawn.

In the armature room, besides the necessary work benches and armature stands, a binding machine, field winding machine and bake oven are required. At this point I would state that it is an unnecessary precaution to bake armature after rewinding, as in motors of modern type the coils are wound and painted with insulating compound and then dried before being inserted in the core. But the oven is essential for baking armature and field coils.

An overhead trolley with chain blocks is necessary for the proper handling of armatures, also a full outfit for testing work, such as instruments for testing open circuits, and for short circuited coils on completed armatures. Armatures, when completed, should be given an insulation breakdown test of not more than 2000 or less than 1500 volts, alternating current. All armatures should, after being completed, be given the generator test. The system is very simple, and the entire process can be carried on by one man and helper.

The coil department, besides work benches and form holders, should be fitted with taping machine, pair of rollers for flattening leads, a press for pressing completed coils, and tanks for insulating compound for dipping armature and field coils.

The truck shop, besides assembling tools, should have an overhead hand-power crane, with sufficient capacity for the safe handling of motors and truck frames.

The following outfit will do for all ordinary carpenter work: One planer, one resurfacing machine, one jointer, one mortiser, one boring machine, one shaper, one wood turning machine, one band saw, one circular saw, one emery wheel, one grindstone.

In the space devoted to work on car bodies see that there is plenty of room for necessary trestle benches and convenient handling of work. Pit room in this department for half a dozen cars is a necessity.

The paint shop should be constructed so that it will have a good roof light, and the space between the tracks should be such as to allow the work to be done on cars standing parallel and not to crowd the workmen. The floor should be concrete, with smooth surface, so as to be easily kept free from dirt, and graded to be readily drained.

In the maintenance of motor equipments to-day, where almost continuous service is demanded and high mileage made, only those equipments fitted with both oil and grease boxes will safely run over thirty or forty days without a thorough overhauling. With a large road it is necessary to do this work at several different points, but a smaller road can concentrate it.

To overhaul a motor car thoroughly it is advisable to have at each overhauling shop trucks with motors mounted, and in first-class order, ready to run under a car body whose trucks and motors need overhauling. For the purpose of lifting the body from the trucks, four chain hoists, conveniently located, together with two cross-timbers and four stirrup irons, form a good combination, and will do the work with the least possible injury to the car body.

When the car is lifted, the truck to be overhauled is run out,

the good truck substituted, car lowered, connected up and turned over to the operating department. The whole operation should take about one hour, and for that length of time only is the use of the car lost. A suitable crane, equipped with a carriage and chain blocks, will be found a great convenience in overhauling.

This department should be fitted with a wheel pit, with necessary jacks, to be able quickly to renew broken and worn-out wheels without removing car from the trucks. Motor shells should be thoroughly cleaned out, either by compressed air or kerosene. The grease in grease boxes should be taken out and put in the gear case, and grease box thoroughly cleaned. Brush holders should be taken out, thoroughly inspected and cleaned. At this time you have the best opportunity for truck inspection.

To prolong the life of an equipment and to reduce the number of crippled cars, new fields and newly wound armatures should be put in motors by themselves.

I have found that overhauling done with a car standing over the pits, with the bottom half of motor dropped, does not allow as thorough an overhauling as is necessary to keep the motor equipment in perfect shape, besides tying up the car body while the work is being done.

In the matter of general inspection a car started out, say, to-day, in perfect order, can run safely for several days without it being necessary to inspect it, with the exception of cars run at high speed on suburban and interurban lines. These should be thoroughly inspected after each day's run.

In this connection, to inspect from twenty-five to thirty cars per day, one man can be responsible for the proper inspection of all trolleys, including the taking out and replacing of any defective poles, wheels or springs and the straightening of all bent poles. Another man should be responsible for the proper inspection of all circuits, together with hood switches, fuse boxes, circuit breakers and lightning arresters. Another should give his whole attention to controllers, while the brakeman and his assistant should be able to keep all brakes in good shape and replace all worn-out shoes. This arrangement of inspection and overhauling should keep the truck and motor equipment in good shape, if the night inspection of carbons, grease and oil boxes be done after an equally thorough system.

At a car house operating seventy-five to one hundred cars three or four men should be able to grease motors, inspect brushes and make small trolley repairs. I recommend doing as little work as possible at night. The night car cleaning should be limited to sweeping and dusting cars and cleaning windows, while all washing should be done during the day. If the cars are of the closed type, with drop sash, the space under the seat should be cleaned once a week.

My experience has been that the "Car Report" system, by which the conductor on housing his car reports it in good shape, or designates some portion of the equipment in bad order, is a great assistance to both day and night inspection and to the shop work in general.

All cars should be taken to the general repair shop once a year and the body thoroughly repaired, and the car varnished or burnt off and painted anew, as the case may demand.

While the car body is in the carpenter's hands the truck should be run out and gone over thoroughly. In case it is a built-up truck all rivets and bolts should be carefully inspected and renewed, where necessary. The brake rigging at this time should be taken apart, and if it is a truck with brake beams working in slides, the beams should have what we call "Dutchmen" jumped into the ends, to bring the wearing parts back to their original thickness, as the beams will probably have worn wedged shaped. If the brake beams are hung by links these should be renewed if they show any sign of wear.

At this shop should be concentrated all classes of repair work. It pays all railway companies operating fifty or more cars to make their own repairs on electrical apparatus, including the making of armature coils and renewing of commutators. Regarding the latter we find that the dropped forged bars make the best commutators. Most roads will find it cheaper to buy the ordinary repair parts to controllers, hood switches, etc., and assemble them themselves.

I would advise that car body repairs—painting, rewinding armatures, making commutators, armature and field coils—be made by piece work. If good inspection is provided and the prices honestly matched, both the company and its employees are gainers by this method.

There are two more things which I think very essential to the economical maintenance of car equipment: First, that all material of any consequence be bought by specification, subjected to a rigid chemical and physical test. Second, that the employee who operates the equipments be properly instructed and schooled in handling them.

The Track Construction of Suburban and Interurban Electric Railways*

We have two systems of suburban and interurban electric railways now in operation—the one constructed upon the public highway, and the other through private property; each has its advantages and disadvantages. The adoption of each depends largely upon local conditions.

In locating and building a railroad, be it steam or electric, it is not only the engineer's province to give the investor the best for the least money, but he must also think of the manager, and consider fully the safety and economy of operation and maintenance.

In the public highway system the engineer starts out to build a railway under the supervision of not only his own employer and the local civic authorities, but also of every resident along its route, and in a short time he runs up against a mass of grievances in number almost as great as the number of residents. If he is not a successful diplomat he finds himself trying to build a sectional railway, differing radically in many parts from his original well-thought-out plans, or else he encounters the broken link in his system with exasperating delays in the courts or in attempts to effect compromise before he secures a completed roadway; but we had better start to build our road and leave these generalities to the manager.

A preliminary survey of the highway is necessary, to get a proper conception of the grades and alignment, and in projecting a location on this information it is frequently advisable to make many minor changes in the original roadway in order to avoid many small "kinks" in surface and line, and by judicious management with the local authorities this can be frequently accomplished. These changes may slightly increase the first cost of construction, but are justifiable.

In the construction of a railway through private property much more judgment is required of an engineer than is necessary in building one upon the fixed line of a public highway, and more time should be accorded him in making a location than is generally given, principally for the reason that after the rights of way have been secured it is very difficult to make such revisions as subsequent developments may require or make desirable.

In securing rights of way care should be taken that a width is adopted which will not only protect your roadbed but also afford sufficient material for future repairs.

In the selection of a general route by the projectors of a road is where the engineer often encounters his greatest drawback to making a good location. The practice of the investor, as a rule, is to seek the poorest land on a farm for his railroad, at the sacrifice of his roadbed, under the impression that it cheapens the cost of the right of way, whereas my experience has been that the land occupied by a railroad is, in the eyes of the average farmer, "the best on the farm," his price being fixed on this basis, and very often where money may be saved on land damages, it entails much additional cost in the construction and future operation and maintenance of the road.

In making a location it is advisable to keep away from bottom lands in the vicinity of long, tortuous water courses and territory of rapid water sheds, as in such localities you find that it is necessary to erect many bridges, that material for embankments is very scarce, and that the roadbed, especially light embankments, will be in constant danger of wash from high water and sudden downpours of rain, forming rapid and uncontrollable floods.

Another thing to be avoided, wherever practicable, is a sharp curve in or at the foot of a heavy descending grade. This combination is the fruitful source of many accidents, as is so frequently attested by newspaper accounts of accidents caused by runaway cars.

Long, straight lines or tangents are with many the great desideratum, and frequently to gain this end sharp curves are resorted to, whereas by the introduction of some additional lighter ones those with very short radii might often be avoided, and when the factor of safety, together with the wear and tear of roadbed and rolling stock are considered, relative economy results. The same rule applies to heavy grades, which should be avoided wherever practicable. It is much better to spend a little more money once to make the cuts a few feet deeper and the banks a few feet higher, than to be constantly spending it for additional power to climb excessive grades. In general, simply because electric cars can be operated around sharper curves and over heavier grades than steam cars does not imply that these are desirable things to have in an electric railway.

In constructing the roadbed, the cuts should be made wide

enough, say a minimum of 15 ft., to admit of a ditch along either side of the track, to keep water from the ends of the ties.

The embankments should be of sufficient width to support the ballast under the ties and leave room beyond, on either side, for examining or "jacking up" a car, should the running gear or machinery become disabled while running on the same; a minimum width of 13 ft. should be maintained upon all embankments. The slopes of both cuts and embankments should be made sufficiently flat to resist the erosive effects of the elements.

Should it be necessary to construct an embankment through marshy ground that cannot be drained it will pay to make it of stone, if available, but, if this cannot be had, the next best plan is to cover the ground to the full width of the embankment, including the slopes, with a thick mattress of brush and build the embankment upon it; this will force the water out of the ground and secure a firm foundation.

In bridge work the masonry should be put up in a substantial manner, not necessarily of expensive cut work, but with an eye to solidity. Especial care should be taken to make the foundations broad enough to sustain the load to be carried, and deep enough to resist the action of frost and of abrasion or undermining by the periodical visitations of continuous high water and sudden floods. Should quicksand be encountered in foundations it is best to bridge the same with a cement concrete floor; in fact, I prefer making all foundations of concrete, giving ample time for the cement to set and harden before building upon it. In the point of durability stone or concrete arches, steel or iron superstructure and wooden construction rank in the order named, the use of either depending largely upon local conditions and the amount of available funds.

Cast-iron pipe drains can often be used to advantage and with economy, but when you have decided upon the size of pipe to use at any point, don't fail to put one in of double its capacity, and under no circumstances use any of less than 12-in. diameter.

A thorough system of drainage should be adopted for all roadbeds, not one which will concentrate the water upon your right of way and carry it along for an indefinite distance, as is often done in borrowing material for embankments out of ditches along and against its sides, but such a system as will provide ample openings at frequent intervals to carry across, if necessary, and away from the roadbed, all water wherever intercepted before it accumulates into large destructive volumes. All roadbeds should be so constructed as to admit of placing of 6 ins. of clean gravel or broken stone ballast under the ties for the promotion of sub-drainage and for tamping the ties to a firm and elastic bearing, from the ends to about 10 ins. or 12 ins. inside the rail bearings, the middle of the tie repairing untamped.

The ties should be placed 2 ft. apart between centers; they should have a top and bottom face of 8 ins., a depth or thickness of 6 ins., and be not less than 7 ft., preferably 8 ft., long. They should be made of sound white or rock oak timber, if it is available, on account of its wearing qualities and its tenacity in holding spikes, but other woods, such as white chestnut or spruce pine, if seasoned, must be substituted when the white oak cannot be obtained. The rails should be of a weight corresponding to the rolling stock and service required, but no mistake has ever been made in using a too heavy rail. The weight of new rolling stock, according to present practice, never lessens after a road has been put in operation, and it is very difficult to keep a track in even fair surface or line when the rails begin to depress between the tie bearings.

The joints of rails should be made as strong as possible, splice plates, called "the continuous rail joint," giving the most rigid construction. The joints proper, or the ends of the rails, should come between ties, with good tie bearings under the ends of the splice plates.

The rails should be laid with broken and not even or opposite joints to prevent the double hammer on the joint ties, which the latter method produces, and which, in time, gives a slight downward bend to the end of each rail that can never be removed; hence, rough riding.

I know engineers and managers frequently disagree upon the policy of "even" or "broken" joints, but I am willing to take my own experience with steam road work and that of old track repairmen to back up my position on this point, whether a T or girder rail is used. "Special work" should be the best obtainable, long radii being always used on the switch ends in preference to the quick, jerky, short leads and points one often sees, and the best efforts should be put forth in securing dry and uniformly firm beds throughout the full length of the frog and switch pieces to eliminate as much as possible the tendency to wear out in spots.

In order to maintain the proper gage in the girder rail construction, the rails should be braced at about every fourth tie with the outside "pressed steel braces;" the reason for my preferring

*Paper presented at the meeting of the Pennsylvania Street Railway Association, Sept. 10, 1902.

this kind being that the weight of the car on the rail assists the brace in doing its work, there is no obstruction in the track to interfere with paving and there are no screw threads to rust out or nuts to become loosened as with the tie-rod.

Concealed joint bonding I consider the best for a track and the least liable to be loosened by vibration or careless interference by trackmen at their ordinary repair work, as well as affording protection against robbery, yet the utmost care should be exercised to secure a clean and full contact in the barrel of the hole in the rail, and such bond should be selected as would best produce this result. Rivetting or bolting against the face of the web will retain contact about as long as it takes to attach the bond, for vibration will very soon cause the harder metal to compress the softer, and thereby destroy the contact. Cross bonding and bonding around special work should be as carefully done as the joint bonding using well-tinned copper for the purpose, and the lines of wire should be carried down and buried in the sub-grade to protect them against the midnight prowler and careless repairmen; but this work belongs rather to the electrical than the civil engineer, and I'll turn the subject over to him.

At road crossings, excepting those with long skewers, I would dispense with the use of wood or plank, substituting a length of rail on the inside of each running rail, to form a groove for the wheel flange, and packing the space inside and outside the track with broken stone, covered with screenings, or, if this cannot be obtained, with gravel and sand.

On all curves of less than 500 ft. radius, I would recommend, for safety, the use in T-rail work of a guard rail along the inner running rail, and bolted to it in like manner to the guard rail of a spring frog; this will give the assistance of the weight of the car on the running rail to hold the guard in place instead of depending entirely on spikes for that purpose. Grooved rails should be used in girder work under similar conditions.

The outer rail of curves should be given sufficient elevation to overcome the centrifugal force generated by the highest rate of speed which the cars are capable of developing, in order to protect the passengers as well as the company against the careless or indifferent motorman, who tries to make up lost time without consideration for possible consequences, yet, there may be unavoidable parts of the roadbed where "slowing up" is essential to good running, and managers should never be lenient with discipline in dealing with a motorman who disregards instructions covering such points.

After the track is laid, tamped and surfaced, the space between the ties, to the top of the same, should be filled with broken stone, gravel or sand, materials which retain the least moisture, to hold the track in rigid position and prevent the shifting about which always results when this space is left open.

For safety, all private rights of way through pasture lands should be fenced, and cattle guards should be placed at all road crossings, even though they are not absolutely effective, in order to reduce to a minimum the danger from roving cattle, particularly on high-speed roads.

The proper section of rail to use where no paving is to be done is unquestionably the T, but in cities and towns where much wagon travel parallel to the track is encountered, and where special work is necessary in a wagon road, it is essential to use the girder, and this should be deep enough to dispense with the use of chairs wherever possible.

All tracks in cities should be paved inside and outside the rails to the limits of the ties, and this paving should consist of a material and be so shaped as to shed water as rapidly as possible, to prevent it seeping through to the ties.

To insure this result it is best to cover the bed and ties with a cement concrete base, tamped in well against the web of the rails, which will not only keep the moisture from the ties but also, by giving a uniform and firm foundation to the paving surface, materially prolong the life of the whole roadway. If good material and workmanship have been put into the track, and it has been properly ballasted, the most improved and lasting pavement is, with time consideration, the most economical to lay.

With the "Right of Eminent Domain" accorded the steam road charter, which should also be extended at least to the interurban electric road, it is possible to build an electric road capable of being operated safely and successfully at any rate of speed to which the electric system of the future may be developed.

It has become necessary for the Northern Ohio Traction Company to announce, through the newspapers, that it will not be responsible for hats blown from the heads of passengers while on its cars. The claim agent of the company has recently received several demands for new hats from people who claim to have lost their headgear while enjoying trolley trips on the company's lines.

Exhibits at the Caldwell Convention

Several supply houses and manufacturers were represented with exhibits at the Caldwell convention, although no organized effort was made to present an elaborate display of railway apparatus. The following is a list of some of the companies exhibiting:

The Consolidated Car Heating Company, of Albany, exhibited a car heater, in charge of F. C. Green and C. S. Hawley.

The General Electric Company's exhibit comprised line material and overhead supplies. It was represented by F. H. Gale, J. G. Mahoney and W. R. Darly, of the New York office, and W. G. Carey, of Schenectady.

Heywood Bros. & Wakefield had a car seat on exhibition, in charge of Bertram Berry.

H. K. Doolittle, of Watertown, exhibited his patented car window, which can be taken out and replaced without taking apart the sash.

The Brady Brass Company, represented by Daniel Brady, Fred. C. Cameron and C. P. King, showed a line of motor bearings, car bearings and trolley wheels.

The Continuous Rail Joint of America was represented by William C. Chapman, who showed a joint illustrating the company's product.

The Ohmer Car Register Company, of Dayton, had on exhibition a cash register. William F. Briedenbach was present in the interests of this company.

The Detroit Trolley & Manufacturing Company's exhibit comprised a ball-bearing trolley base, in charge of W. L. McDonald.

Harold P. Brown was represented by J. Maxwell Coots, who exhibited the flexible copper bond.

The Gold Car Heating & Lighting Company displayed heaters and switches. The exhibit was in charge of J. G. Schmidt.

The Hale & Kilburn Company showed sample plush and rattan seats. S. A. Walker represented the company.

The Atlas Railway & Supply Company showed rail joints. J. G. McMichael was in charge of the exhibit.

R. W. Conant, of Cambridge, Mass., had new motor-testing and bond-testing instruments. The motor tester is a very simple device, with which no disconnecting of motors is necessary for use. If any portion of the field is short-circuited the instrument will detect and locate it, so that it is necessary to remove only the damaged spool. The bond tester can be operated by one man, is portable and self-contained, with no delicate moving parts to get out of order.

Merger at Springfield, Ill.

The proposed plan of organization of the Springfield & Central Illinois Railway Company, incorporated in Illinois two weeks ago, is announced. The company was formed with power to acquire and operate the Springfield Consolidated Street Railway and to construct and operate lines of suburban railways radiating from that city. The company is to be capitalized at \$1,500,000. The outstanding bonds of the Springfield Company to be assumed amount to \$750,000. There is to be a new issue of 5 per cent bonds amounting to \$2,250,000. Seven hundred and fifty thousand dollars of the proceeds of the bonds and stock are to be held by the trustee for the purpose of retiring the Springfield Company's bonds. To acquire the Springfield stock, \$562,500 will be spent. To build and equip new lines and purchase additional equipment and make improvements, \$600,000 will be necessary. In the treasury, \$337,500 will be retained.

Reports of Consolidation in Michigan

It is reported in Detroit that plans are being arranged for consolidating all the electric railways in the lower peninsula of Michigan, excepting the Detroit United Railway, the Toledo & Monroe Railway and the road now under construction from Monroe to Detroit by the Black-Mulkey interests. The roads to be taken over, it is said, are the Detroit, Ypsilanti, Ann Arbor & Jackson Railway, the Grand Rapids, Grand Haven & Muskegon Railway, the Holland & Lake Michigan Railway, the Battle Creek & Kalamazoo Railway, the city lines of Grand Rapids, Lansing and Ann Arbor, the city lines in Saginaw and Bay City and the interurban between the two cities. J. D. Hawks and S. F. Angus, of the Detroit, Ypsilanti, Ann Arbor & Jackson Railway, who have in the past so stoutly refused to consider offers for the purchase of this road, are said to be interested in perfecting the consolidation, and a prominent New York banking house is said to be associated with them.

Strike on the Hudson Valley Railroad

The first Hudson Valley trolley car to reach Ballston from the north in seventeen days arrived on the afternoon of Sept. 15. On the same day cars were sent out on several divisions, all well guarded, but there was no trouble, and it is thought that the strike will soon collapse.

More than the usual amount of interest has been taken in this strike owing to the recent convention at Caldwell of the New York State Street Railway Association. Several misleading paragraphs as to the causes which lead to the abandonment of the work by the employees of the company last month have been published in the New York daily papers and elsewhere, and it may not be generally known that the cause of the strike was the discharge of two employees who had occasioned accidents and was not due to a dispute as to wages. Thoroughly to understand the situation it should be said that on May 16, 1902, the company entered into a written agreement with its employees, of which the following is a copy:

MEMORANDA OF AGREEMENT, made this 16th day of May, in the year one thousand nine hundred and two, between the Hudson Valley Railway Company, of Glens Falls, Warren County, New York, party of the first part, and the Amalgamated Association of Street Railway Employees of America, Division 132, located at Fort Edward, New York, party of the second part.

WITNESSETH:—Sec. 1. The party of the first part, through its properly accredited officers will continually treat with the employees of Division 132, of the Amalgamated Association of Street Railway Employees of America, of Fort Edward, N. Y., through their properly accredited officers.

Sec. 2. Any man who may be suspended or discharged shall be entitled to appeal from the General Manager to the Executive Committee of the Company, and to have a hearing by that Committee, and all suspensions or dismissals shall be subject to reversal by the Executive Committee of the Company.

Sec. 3. The party of the first part will pay all employees for lost time when they have been suspended by an officer or appointee of the Company and are reinstated.

Sec. 4. All conductors and motormen shall be members of Division 132, of the Amalgamated Association of Street Railway Employees of America, of Fort Edward, N. Y.

Sec. 5. The party of the first part hereby agrees to pay all conductors and motormen who have not worked consecutively for the Company two years or over 16 cents per hour; all conductors or motormen who have worked for the Company two years or more consecutively, 18½ cents per hour. To this amount conductors and motormen who run interurban passenger cars are to be paid in addition to the above wages 25 cents per day for inspecting their cars before they are taken out on the road to insure their being in proper condition in all respects, except in the case of such conductors and motormen as are paid 18½ cents per hour, and in each instance 15 cents per day shall be added to the wages of such employees. Engineers, pitmen and steam fitters to have 10 cents per day in excess of present wages. Blacksmiths \$1.85 per day. Firemen 16 cents per hour. Battery men 16 cents per hour. Machinists 21 cents per hour. Barn men and pitmen's helpers 16 cents per hour. Laborers 15 cents per hour. All time on cars to be paid for whether cars are moving or not.

Sec. 6. All regular or day trips shall be ten hours, as near as possible, said ten hours to be worked within twelve consecutive hours, if practical. Runs 6 and 7 on the Glens Falls Division to be made day runs. The oldest men on all divisions to have the preference of runs. All timetables shall be posted a reasonable length of time before taking effect.

Sec. 7. The party of the second part agrees that in consideration of the several agreements herein contained to be performed by the Company that the members of said Division will discharge their respective duties in an efficient, faithful and skillful manner until July 1, 1903, at the scale of wages above enumerated, said scale of wages to take effect June 1, 1902.

Sec. 8. No employee shall be dismissed upon the unsupported testimony of one inspector.

In witness whereof, the parties hereto have hereunto set their hands and seals the day and year first above written.

Hudson Valley Railway Company,
By Addison B. Colvin, President.

Witness, H. E. Smith.

Amalgamated Association of Street Railway Employees of America,
Division 132, of Fort Edward, N. Y.

By D. H. Hall, President.

Witness, W. W. Brown.

It should also be stated that since April 26 of this year the company has had a number of unfortunate accidents on its lines. In these accidents five persons have been killed, some ten or twelve limbs have been broken, about seventy people have suffered various injuries from broken ribs to broken backs in addition to the limbs above mentioned, and twenty cars have been smashed. The company has already paid about \$12,000 in damage claims, suits are pending against it for upward of \$100,000 and about twice as much as that has been threatened.

With this condition of affairs the board of directors of the company, believing that something should be done to protect the lives of the public traveling upon its cars, as well as its property, after considerable investigation employed F. A. Boutelle as general superintendent. Mr. Boutelle, at the time of his appointment, had

been in charge of the train despatching of the Susquehanna division of the Delaware & Hudson Railroad Company for the past sixteen years and trainmaster for two years, and his record for safe and conservative management and avoidance of accidents was his chief recommendation. Mr. Boutelle was employed to have exclusive charge of the operation of cars and the men engaged in their movement.

Various complaints had been made by the men as to dismissals prior to Mr. Boutelle's incumbency. On Aug. 16 Mr. Boutelle and a committee of the motormen and conductors went over the entire list of grievances they had and adjusted the whole matter up to date. Among the things which Mr. Boutelle did at the request of the men was to put back into the service of the company a motorman named Fulton who had been previously discharged for the negligent running of his car. On this date it was stated by the men that all grievances had been satisfactorily adjusted.

On Aug. 21 this same motorman, Harry Fulton, was the cause of a collision which occurred on Lincoln Avenue, near Hamilton Street, in the village of Saratoga Springs, and after a written report had been made to Mr. Boutelle by Motorman Fulton and the inspectors, conductors and passengers on both cars Mr. Boutelle discharged Fulton, sending him the following notice:

Glens Falls, N. Y., Aug. 25, 1902.

Harry Fulton, Esq., Saratoga Springs, N. Y.

Dear Sir:—My conclusions in the matter of the collision at Saratoga, on the 21st of August, are that you were guilty of inexcusable carelessness on that occasion, and are alone at fault for the accident. You are, therefore, advised that your services are no longer required.

F. A. BOUTELLE, Superintendent.

On the same day, Aug. 21, a collision occurred at a place called Smith's Crossing, south of Fort Edward, in which an express car operated by Howard Osgood as motorman, running as second section, ran into the rear end of a passenger car. Mr. Boutelle investigated this accident, taking the written statements of the passengers and employees on the car, as well as personally examining Mr. Osgood and hearing his explanation of the cause of the collision, and believing that his conduct was grossly negligent Mr. Boutelle discharged Motorman Osgood, sending him the following communication:

Glens Falls, N. Y., Aug. 25, 1902.

Howard Osgood, Esq., Stillwater, N. Y.

Dear Sir:—After careful inquiry into the circumstances of the collision at Smith's Crossing, on the 21st inst., I am convinced that you were guilty of gross carelessness in following the regular car too close in approaching the crossing where the first section might be expected to stop without having your car under control. The point at which the accident occurred I consider one where the greatest care should have been observed, and I can find no excuse for exercising clemency in this case. You are, therefore, advised that your services are no longer required.

F. A. BOUTELLE, Superintendent.

On Aug. 28, 1902, a committee of the motormen and conductors called upon Mr. Boutelle and served him with a notice, of which the following is a copy:

Division 132.

Meeting is called to order and the following resolution is adopted:

That we, as a Committee, having heard our brothers state their grievances, and have taken a vote, decide that they were discharged without cause, and, we, as a committee, supported by our brother workmen, demand that our Brothers Osgood and Fulton be reinstated on or before the following Friday, at 6 o'clock p. m. Said reinstatement to be in their old positions and with their former badges, or that we as a body, as one man, shall refuse to operate cars on any division of the Hudson Valley Railway Company.

(Signed) M. Frost, L. Williams, William Burritt, E. Bailey, J. Gorman, D. Sadler, L. Myers, Leroy Veale, C. Murray, J. Malin, S. King, W. Haynes, George Demorest.

To this Mr. Boutelle replied as follows:

August 28, 1902.

M. F. Frost, President Division 132, Amalgamated Association of Street Railway Employees of America, of Fort Edward, Glens Falls, N. Y.:

Dear Sir:—Confirming my statement made to your committee this morning, made verbally at the time, I desire to say that I regret my inability to see just and sufficient cause for reversing my decision in the case of Osgood and Fulton, discharged by me. After investigation of their offenses it is my honest belief that the Hudson Valley Railway Company, who has the lives of the traveling public entrusted to their safe keeping, cannot afford to overlook the serious offenses of these former employees. The argument advanced by your committee that such offenses have been overlooked in the past has no bearing whatever on these cases. It is a matter of public record that serious inexcusable accidents have happened on the lines of this Company in the past few months, resulting in the loss of life and great expense. It is to avert a recurrence of such unfortunate affairs that I have been placed in charge of the operation of the cars of this Company and the employees operating said cars. This decision, as far as I am concerned, is final, but is, as you know, subject to revision by the Executive Committee of this Company by your appeal, as contract with this company provides.

F. A. BOUTELLE, Superintendent.

The employees met at Mechanicsville Friday evening, Aug. 29, and without availing themselves of the privilege given by the contract permitting appeal to the executive committee, which was

called to their attention in Mr. Boutelle's letter, ordered this strike.

The position that the executive officers of the company has taken is that the cars must be operated with safety, that accidents and collisions must be stopped and the rules and regulations of the company providing for the safety and convenience of the public enforced, otherwise it would be much better that cars should not be run. The unfortunate record of the summer is most appalling.

Since the strike was ordered on Saturday morning, Aug. 30, 1902, every possible effort has been made on behalf of the company to reach an amicable adjustment of the differences between the company and its former employees consistent with the question of public safety and convenience. Various attempts have been made by the men to get away from the cause of the strike, as enumerated by them in their notice, and they have undertaken to bring in and make an issue of the strike the question of wages. In this regard the company's position has been that the contract with the men above set forth, which provided in detail the wages to be paid until July 1, 1903, and which provided that the men should work "in an efficient, faithful and skillful manner" until that time, controlled that question and it was not open for discussion or argument. It is true that a disagreement arose as to the payment of wages of firemen under the agreement of May 16. As to this, during the progress of negotiations the company offered to arbitrate the question, leaving it to the committee of its former employees who had adjusted the rate of wages to be paid at the time the contract was entered into, and finally to effect a settlement offered to waive any question there was in the matter and pay the rate of wages to the firemen which they had claimed was due them under the contract. The company, as a last step, offered to arbitrate the question of the dismissal of Mr. Osgood, the Fulton case having been abandoned by the men, but this was refused.

As will be seen, there is no question at issue in the strike as to "union" or "non-union" or as to the wages paid any of the former employees. That was settled by the written agreement of May 16 and was as binding on the men as it was on the company. The only question at issue and upon which the company stands is the right to enforce discipline and operate its cars in such a manner as to avoid accidents and protect the lives of the public riding on its cars. It is needless to say that in this it should have the active support of every citizen along the line.

Test of 300 H. P. Turbine Dynamo

Dean & Main, the well-known mechanical and mill engineers of Boston, at the request of the De Laval Steam Turbine Company, of New York, recently made some tests of a 300-brake tip De Laval steam turbine, at the company's factory in Trenton, N. J. In view of the great interest taken at present in the subject of turbines some results of the test are given below.

The De Laval steam turbine was described in the STREET RAILWAY JOURNAL for Nov. 2, 1901, and, as will be remembered, regulation of speed is accomplished by a throttling valve, operated by a centrifugal governor. The machine tested had twelve nozzles, but seven gave the rated capacity. In connection with economy of steam and the ability to throw nozzles into and out of action, it is at once apparent that each nozzle performs its function as perfectly when operating alone as when any other number of nozzles is in operation. For this reason the turbine does not change its economy of steam per indicated horse-power, if such could be determined, as does a reciprocating engine. The principal cause of diminished economy with lighter loads than the rated load is the fact that friction is constant with all loads. At overloads there is even greater economy than with the rated load for the reasons that the extra nozzles are of maximum economy and the friction losses are constant.

The turbine rotates very rapidly, and the speed is reduced by the employment of a spiral spur pinion on the turbine shaft gearing into one or two spiral gears, as the case may be, depending upon whether the power is desired on one or two shafts. The pinion and gears are both double, with the teeth inclined in opposite directions so that there will be no end thrust to either shaft.

The power, the measurement of which was desired, was the brake-horse power of the turbine, as it might have been measured by some form of friction brake simultaneously applied to each shaft on which the electric generators were secured. For this purpose the generators might have been disconnected by means of a flanged coupling in each shaft, but as the electrical power was needed for operating the shop, the generators were used and their efficiencies determined for each load carried. The friction of generators was determined by driving them as motors by another

generator. Other resistances were computed by well known methods and under the actual conditions of temperature, speed and output. Into these features of the tests this report does not enter, as the steam consumption per brake-horse power only is desired. The computations for powers, efficiencies and brake-horse powers were made by Messrs. Stone & Webster, of Boston, and by the De Laval electrical engineer.

No tests were made to ascertain the instantaneous effect in speed of change of load or to see how quickly the normal speed was regained after a change. In regard to the permanent effect of change of load on speed, this can best be observed from the data given in the tables or results further on. The speeds and loads are here tabulated for convenience with percentages of variation of load and speed referred to these with eight nozzles in operation.

TABLE OF DIFFERENT LOADS AND SPEEDS
(When using superheated steam except with three nozzles.)

Nozzles open	Loads	Relative	Speeds	Differences in Speed
		Loads		
	H. P.	%	R. P. M.	
8 Nozzles	352	100	750	
7 " "	298	85	756	+ 8/10 of 1%
5 " "	196	56	745	+ 7/10 of 1%
3 " "	119	34	751	+ 1/10 of 1%

TABLE OF RELATIVE STEAM CONSUMPTIONS FOR DIFFERENT LOADS, PER BRAKE HORSE POWER

Nozzles Open	Loads B. H. P.	Relative Loads	Steam per Brake Horse Power	Increase for
				Diminishing Loads, Referred to Maximum Load
<i>Superheated Steam</i>				
	H. P.	%	Lbs.	%
8	352	100	13.94	
7	298	85	14.35	2.9
5	196	56	15.53	11.4
<i>Saturated Steam</i>				
8	333	100	15.17	
7	285	86	15.56	2.6
5	195	59	16.54	9.0
3	119	36	16.40	8.1

By comparing the results of the tests with superheated and saturated steam, the saving by the use of the former can be determined for the particular amount of superheating existing. As the tables show, the superheat steadily diminished as the load became lighter. This was caused by the fire and draft being very light with the lighter loads. The superheat for the eight-nozzle load averaged 84 degs. F., while that for the five-nozzle load only averaged 16 degs. F. There is, therefore, scarcely any propriety in making a comparison for the effect of superheat, except with eight and seven-nozzle loads.

TABLE SHOWING THE SAVING BY THE USE OF SUPERHEATED STEAM FOR EIGHT AND SEVEN-NOZZLE LOADS

No of Nozzles in Use	Amount of Superheat	Load with	Load with	Steam Used	Dry Steam Used	Saving by Use
		Superheated Steam	Saturated Steam	per Brake H. P. with Superheated Steam	per Brake H. P. with Saturated Steam	of Superheated Steam
Eight	84°	H. P. 352	H. P. 333	Lbs. 13.94	Lbs. 15.17	8.8%
Seven	64°	H. P. 298	H. P. 285	Lbs. 14.35	Lbs. 15.56	8.4%

In all of the statements made in this report of the consumption of superheated steam, the actual consumption without reduction to dry saturated steam as a standard is given. This is customary, while with the results by saturated steam the moisture is deducted.

THE RESULTS WITH SUPERHEATED STEAM

Nozzles Open	Hour	Steam Used Per Hour	Pressure Above Governor Valve	Pressure Below Governor Valve	Vacuum	Superheat Above Governor Valve	Revolutions per Minute of Generator	Brake Horse Power	Steam Used per Brake Horse Power per Hour
8	8-2 2-10	Lbs. 4,906	Lbs. 207.0	Lbs. 198.5	In. 27.2	F. 84°	750	352.0	13.94
7	4-10	4,282	207.4	197.0	27.4	64°	756	298.4	14.35
5	8-45 -11-45	3,033	200.7	196.6	27.5	10°	743	196.5	15.44
5	1-45 -4-45	3,062	202.4	197.7	27.4	16°	747	196.0	15.62

THE RESULTS WITH SATURATED STEAM

Nozzles Open	Hour	Feed Water Weighed per Hour	Condensation from Separator	Moisture in Steam at Throttle by Calorimeter	Dry Steam Entering Turbine	Pressure Above Governor Valve	Pressure Below Governor Valve	Vacuum	Revs. per Minute of Generator	Brake Horse Power	Dry Steam Used per Brake Horse Power per Hour
8.....	8.15	Lbs. 5,233	Lbs. 70	% 2.15	Lbs. 5,052	Lbs. 206.4	1 lbs. 196.9	In. 26.6	747	333.0	Lbs. 15.17
7.....	-12.15 12.45	4,587	60	2.15	4,430	207.3	196.5	26.8	746	284.8	15.56
5.....	-2.45 3-5	3,351	51	2.15	3,229	207.6	195.8	27.35	751	195.2	16.54
3.....	6.35 -9.35	2,026	33	2.15	1,950	201.5	197.9	28.1	751	118.9	16.40

All barometer readings are reduced to 32 degs. F.

The Annual Convention of the Pennsylvania Street Railway Association

The annual convention of this association was held at York on Sept. 10 and 11 and there was a large attendance. Among the street railway systems represented were those of Harrisburg, Lebanon, Reading, Wilkesbarre, Williamsport, York, Chester, Holmesburg, Wilmington and Trenton. There was also a good-sized attendance of supply men.

The convention was called to order at the York Country Club at 1:30 p. m., and in the absence of the president, John A. Rigg, Henry C. Moore was elected chairman of the meeting. Hon. M. B. Gibson, Mayor of York, was then introduced and delivered an address of welcome, which was responded to by Mr. Moore. Two papers were then read, as follows: "The Most Economical Management of the Repair Shop," by Charles S. Banghart, superintendent of repair shops of the United Traction Company, of Reading, and "The Track Construction of Suburban and Interurban Electric Railways," by S. S. Hoff, civil engineer, of Reading. These papers are published elsewhere in this issue.

After the reading of the papers the association proceeded to the election of officers, and the following were elected: President, E. H. Davis, of Williamsport Passenger Street Railway Company; first vice-president, Edward Bailey, of Harrisburg Traction Company; second vice-president, W. W. Greist, of Conestoga Traction Company; secretary, Charles H. Smith, of Lebanon Valley Street Railway Company; treasurer, W. H. Lanius, of York Street Railway Company; executive committee, E. H. Davis, C. H. Smith, B. F. Meyers and John A. Rigg.

At the close of the convention, about 4 p. m., the attendants were invited to take a trolley ride to Windsor, a distance of about 10 miles, after which the return to the hotel was made. In the evening a banquet was given at the York Country Club, at which Mr. Bragg, of the Westinghouse Company, presided as toastmaster, and a number of speeches were made.

On Thursday morning, at the invitation of the York County Traction Company, a very pleasant trip was made over the Western Maryland Railroad to Gettysburg. The delegates left the hotel at 9 o'clock in the morning and arrived at Gettysburg about 10:30 a. m., where carriages met the party and the members were driven over the first day's battlefield, and all points of interest were pointed out by well-informed guides. After luncheon at the hotel carriages were again taken and the party was driven over the second day's battlefield and then over that of the third day. Altogether the trip was most enjoyable, and President W. H. Lanius, of the York County Traction Company, who was the host of the occasion, and the other gentlemen connected with the company in attendance—Messrs. Hearsh, Schmidt, Mayer and Mellinger—were tireless in their efforts to make the meeting a successful and pleasant one to all. The York meeting will long remain a most pleasant memory in the minds of those who attended it.

Brooklyn Tunnel Contract Signed

At the meeting of the Rapid Transit Commission last week the contract for the building of the subway between this city and Brooklyn was signed. Under its terms the Belmont-McDonald Company agreed to build the tunnel for \$2,000,000, with an additional \$1,000,000 for terminal facilities. The contract provided for the giving of \$1,000,000 security for the proper construction of the tunnel and \$1,000,000 for security for the operation period of the contract. Mr. Belmont discovered that the surety companies, apparently as the result of an understanding between themselves, demanded a very high premium, so he deposited city stock with

the Comptroller as security for the satisfactory carrying out of the operating part of the contract. For the construction security a certified check for \$1,000,000 was deposited. Chief Engineer William Barclay Parsons is at work on plans for the building of an extension from Forty-Second Street up the east side of the city and for a short line up Broadway from Fourteenth Street to Forty-Second Street. The commission received petitions from people living in the Fordham and Williamsbridge districts asking that the subway should be extended from the present limit north through Jerome Avenue. Chief Engineer Parsons was instructed to prepare the necessary plans for this line. In making the motion Mr. Grout said that the city would have a substantial sum to spend on subways next year and he desired all the preliminary work to be pushed forward so that the contracts could be awarded promptly.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED SEPT. 9, 1902

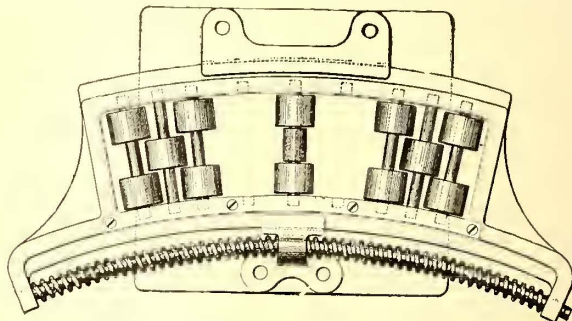
708,523. Swivel Truck for Vehicles; F. Burger, Fort Wayne, Ind. Application filed Feb. 20, 1901.

708,559. Trolley Pole; C. D. Jenney, Indianapolis, Ind. Application filed Dec. 8, 1900. The lower end of the pole is formed by a coil spring which enters a bowl-like socket, affording it support in all directions.

708,601. Roller Side Bearings; J. C. Wands, St. Louis, Mo. Application filed Nov. 8, 1901. The box carrying the anti-friction rollers carries a rod surrounded by a spring which restores the box to its neutral position after being moved.

708,704. Brake-Shoe; J. D. Gallagher, Glen Ridge, N. J. Application filed June 13, 1901. A brake-shoe formed of annealing iron having an outer shell of soft metal and a core of hard metal.

708,724. Operating Mechanism for Motor Controllers; F. A. Merrick and J. D. Forrer, Johnstown, Pa. Application filed Feb. 12, 1901. The construction is such that while it is possible for the motorman to move the reversing switch in all positions of the regulating switch it is inconvenient for him to do so when the regulating switch is in any position except the off position.



PATENT NO. 708,601

708,734. Emergency Brake for Tramway Cars; C. Real, Schwyz, Switzerland. Application filed May 29, 1902. One or more brake beams are lowered from the vehicle, which beams are provided with grippers which anchor themselves in the roadway and thus bring the vehicle to a stop within a very short distance.

708,800. Railway Switch Operating Mechanism; E. Crapper, Jr., Akron, Ohio. Application filed Oct. 22, 1901. Lever mechanism in the roadway actuated by a projection from the car.

708,885. Emergency Brake; W. W. Hopkins, St. Louis, Mo. Application filed Nov. 27, 1901. Tread-plates are connected with the brake mechanism so that when the wheels move on to any of them the brakes will be applied.

708,899. Car Fender; E. C. Moulton, San Jose, Cal. Application filed Sept. 9, 1902. Details.

708,901. Tramway Rail; F. E. Musgrave, Bolton, Eng. Application filed July 16, 1902. A construction by which the tread of the rail can be renewed without disturbing the body portion or the roadway.

708,927. Device for Connecting the Electrical Gear of Electric Cars; A. Siemens, Westover, Milford-on-Sea, Eng. Application filed March 24, 1902. Controllers on adjoining cars are placed in flexibly suspended boxes below the car coupling and their shafts rigidly connected together so that one will partake of the motion of the other without interference from the difference in motion of the cars.

708,929. Sander; S. T. Simmons and W. T. Moore, Columbus, Oho. Application filed June 10, 1902. Conveyors operated by bevel gear by the motorman extend to the distribution points.

708,960. Method of Controlling Electric Motors; J. C. Henry, Denver, Col. Application filed June 3, 1899. A method of starting a pair of motors consisting of first placing them in parallel in opposite relation to each other, each armature being in series with the corresponding field and cross-connecting them so that each armature is in shunt with the field of the other motor.

708,961. Method of Controlling Electric Motors; J. C. Henry, Denver, Col. Application filed April 1, 1901. The method of controlling a plurality of electric motors whose fields are excited by a circuit independent of the armature, which consists in starting with the armatures in series and the fields in parallel and speeding up by changing the fields to series without breaking their circuit.

708,962. Electric Vehicle; J. C. Henry, Denver, Col. Application filed June 3, 1899. The motors are employed to operate and stop a vehicle to regenerate to the battery in the form of electricity the energy ordinarily destroyed by the application of frictional brakes where they are used to overcome the force of momentum of gravity.

708,971. Switch Operating Device; F. E. Quest, Knoxville, Pa. Application filed Jan. 25, 1902. A section of the rail is given a forward movement when a car wheel to which the brakes are applied runs on to it; a spring returns the section, and in so doing sets the switch to the desired position.

ENGINEERING SOCIETY

THE ENGINEERS' CLUB, OF PHILADELPHIA.—A business meeting of the club—the first fall meeting—will be held on Saturday, Sept. 20, 1902. There will be a discussion of the paper "Depreciation as Affecting Engineered Structures," presented by Horatio A. Foster.

NEW YORK RAILROAD CLUB.—A regular meeting of this club will be held on Thursday, Sept. 18, at 349 Madison Avenue, New York. J. C. Brackenridge, chief engineer of the Brooklyn Heights Railroad, will present a paper entitled "The Construction of Perfect Track." Both girder and T-rail work will be considered.

PERSONAL MENTION

MR. E. K. TURNER, consulting engineer of the Massachusetts Railroad Commission, returned to Boston on Sept. 11 after a vacation trip in Europe of several weeks' duration.

MR. CHARLES RODGERS has been appointed superintendent of the Uxbridge & Blackstone Street Railway, which has just been put in operation from Uxbridge to Melville, Mass.

MR. THOMAS A. LEACH, who has been acting as superintendent of Division 1 of the Worcester Consolidated Street Railway Company, of Worcester, Mass., since the resignation of Mr. H. E. Bradford in May, has been appointed to the position permanently.

MR. J. L. GREATSINGER, president of the Brooklyn Rapid Transit Company, of Brooklyn, N. Y., has left for Duluth, Minn., where he will spend the greater part of the coming month in shooting and other pastimes, his recent vacation having been marred by illness.

MR. WILLIAM H. TUCKER, for several years superintendent of the Fourth division of the Old Colony Street Railway Company, with headquarters at Fall River, Mass., has been appointed manager of the Jacksonville Electric Company, of Jacksonville, Fla., and has entered upon the duties of this position.

MR. GEORGE R. FOLDS, for nine years prominently connected with the Twin City Rapid Transit Company, of Minneapolis and St. Paul, and for the last three years claim agent of the company in the latter city, has severed his connection with the company to become connected with the legal department of the Brooklyn Rapid Transit Company.

MR. C. D. PORTERFIELD, manager and salesman for the Atlas Railway Supply Company, has just returned from a very successful business trip in Europe. Mr. Porterfield had charge of the exhibit of his company at the Street Railways and Tramways Exhibition, in London, during the first two weeks in July. Since then he has been traveling over England and the Continent.

MR. B. S. JOSSELYN, who has just assumed his duties as general manager of the Hudson Valley Railway Company, of Glens Falls, N. Y., was presented with a handsome diamond stud a few days ago by the employees of the Kentucky & Indiana Railway, Bridge & Railroad Company, from which company he

resigned as manager to become connected with the Hudson Valley Railway.

MR. GEORGE C. MURRAY has just resigned the position of superintendent of equipment of the Brooklyn Rapid Transit Company to accept that of superintendent of the repair department of Rossiter, McGovern & Company. Mr. Murray has been connected with the Brooklyn street railway system for ten years, and upon leaving that company the employees of the repair shops presented him with a gold watch and chain and a diamond locket.

MR. EDWARD B. GRIMES has resigned his position as managing editor of the *Herald*, of Dayton, Ohio, to accept the position of superintendent of the plant of the Ohmer Fare Register Company, of Dayton, Ohio. Mr. Grimes has been connected with the *Herald* for eighteen years, having succeeded to the editorship of the paper in 1885. Sincere regret is expressed at his retirement from the newspaper field, but his associates extend to him their best wishes for his continued success.

MR. RANDOLPH PEYTON, who for several months has been assistant superintendent of the Berkley division of the Norfolk, Portsmouth & Newport News Company, with headquarters in Berkley, has been transferred to Norfolk for duties in connection with the Norfolk railway and light division of the Norfolk, Portsmouth & Newport News Company. Mr. Allen Mackenzie, now with the Norfolk Railway & Light Company, will succeed to the position made vacant by the transferring of Mr. Peyton.

MR. H. P. O'DOUGHERTY has resigned as superintendent of the San Jose & Santa Clara Railway Company, of San Jose, Cal., to become master mechanic of the Los Angeles Traction Company, of Los Angeles. Mr. O'Dougherty was connected with the San Jose & Santa Clara Railway for six years, and while in the service of the company earned for himself an enviable reputation. As a token of their appreciation of their superintendent the employees of the San Jose & Santa Clara Railway Company presented Mr. O'Dougherty, when he retired from the company, with a handsome gold chain and a beautiful Masonic emblem, in the shape of a watch charm, studded with diamonds.

MR. WINFIELD SCOTT STRATTON, president of the Colorado Springs Rapid Transit Company, of Colorado Springs, Col., and a millionaire miner, died on Sept. 14 at Colorado Springs. Mr. Stratton was born in Jeffersonville, Clark County, Ind., opposite Louisville, July 27, 1848. He was the only son in a family of nine children and was educated in the public schools of his native town. When 17 years old he was apprenticed to a carpenter and draftsman. When he was 20 years old he went to Eddyville, Ind., and was a clerk in a drug store for six months. He then returned to his trade and worked in Sioux City, Omaha and Lincoln, Neb. In 1872 he went from Lincoln to Colorado Springs, Col. His life until 1891, when the tide of fortune changed, was such as befalls the average prospector. In the year mentioned he located a claim which netted him sufficient means to carry on work on his famous Independence mine, and from that time wealth accumulated so rapidly that he is said to have been worth \$20,000,000 at the time of his death.

MR. E. F. FOOTE, of the British Electric Traction Company, is making a short visit to this country on business connected with his company and also to secure several employees, including a superintendent of repair shops, a line man and a track superintendent. Before taking up his residence in Great Britain Mr. Foote was connected with the New Jersey & Hudson River Railway & Ferry Company, and previous to that time had been general manager for the Union Traction Company, of Rutherford, N. J. Mr. Foote entered the employ of the British Electric Traction Company last March, at the time Mr. P. W. Davies, secretary of the company, made a trip to this country to secure American managers for a number of small electric railway systems owned by that company throughout Great Britain. Mr. Foote's first assignment was to Gateshead, which, although a small road, soon showed the results of the introduction of American methods, and within three weeks the traffic had been increased 75 per cent, which increase has been maintained continuously since. Mr. Foote was then sent to manage the road owned by the company in Middleton, and after that to a larger system at Greenock, in Scotland. The history at Gatshead was repeated in both of these cities, the traffic being largely increased and a better system of discipline being introduced, and the schedule and in some cases the fares being entirely changed. As a result of his success, Mr. Foote has recently been appointed general traffic manager of the British Electric Traction Company, in which position his duties call him to visit all the various properties of the company, of which there are between forty and fifty, and to suggest and introduce improved transportation methods.

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, Sept. 17, 1902.

The tight money market of a week ago has developed, as there had been plenty of reason to anticipate, into a well-defined money stringency. Of the causes which are responsible for this condition, and which have already been freely discussed in this column, the government collections of the excessive customs revenue continue to be the most important. So urgent is the need for even a temporary offset to these Treasury withdrawals that the Secretary of the Treasury has authorized the increase of government bank deposits in the sum of \$4,000,000, and in addition has anticipated the payment of the \$5,000,000 interest on the public debt, due the first of October. By these means it is calculated that about \$8,000,000 will be rendered immediately available for the New York market. Every one realizes, of course, that this is a mere drop in the bucket. The Treasury revenue operations alone have drawn from the New York money supply no less than \$13,000,000 during the past fortnight. If this rate of depletion continues it will therefore take less than two weeks for the additional resources involved in the Secretary's emergency measures to be exhausted. The hope is that in the meantime gold will have begun to flow in from abroad; consequently that the anticipated interest payments and the extra deposits of public moneys will serve to bridge over the interval before this more substantial form of relief can arrive. To present appearances, this expectation is well-founded. Sterling exchange, after a sharp decline since the outset of the month, has now reached a point where gold imports from Paris and Berlin are likely to be made at any moment. Already \$2,500,000 gold on its way from South Africa to London has been intercepted and will be transferred to this country. Several millions of gold have also been announced as on their way from Australia, to arrive some time next month. The foreign markets, Paris especially, are well-equipped to spare a considerable quantity of the precious metal, and financial circles abroad are fully prepared for the movement to begin at any time. These indications of outside assistance do not entirely allay the uneasiness over the main problems in the home money situation. It is difficult to draw any very optimistic inferences concerning the future demands either from the Treasury or the Western harvest regions. But the immediate crisis has doubtless been averted. Money rates must continue very high in order to attract foreign capital, but the market is by this time used to the high level. Time loans are quoted generally at 6 per cent, and call loans average from 10 to 12 per cent, with extreme quotations of 20 per cent reported.

The Stock Market

The situation described in the money market has been the absorbing influence on the Stock Exchange during the week. The greater part of the Clearing House banks, having fallen below the legal reserve requirements, have been forced to reduce their loans. Where the trust companies and other outside lenders have been unable to supply an adequate substitute, securities carried on credit have been liquidated. The excessive money rates of themselves, moreover, have induced considerable voluntary selling by the smaller speculative holders. Consequently there has been greater pressure upon the stock market than there was in the previous weeks, and the pools and syndicates of large interests have taken their cue from this change and have ceased their efforts to bid up prices. The natural tendency of the market under these circumstances has been toward reaction, and with few exceptions quotations are substantially lower than they were a week ago. It is hardly necessary to allude to any other outside features of the situation, inasmuch as their influence has been comparatively slight. Reports of damage to the crops by frosts excited some momentary concern, but it was demonstrated satisfactorily that the larger part of the corn harvest, which is the only one of the cereals that has not reached maturity, is far enough along to be out of danger. Railway earnings and trade reports continue pretty uniformly encouraging. The stock market apparently has settled down for a term of quiet until the money outlook becomes more assured. No decided movement for the general list seems impending in either direction.

The local traction shares as a group have moved with a good deal of irregularity. All of them joined in the general decline at the beginning of the week, but Manhattan showed considerably

more resistance in the subsequent dealings than the rest. Undoubtedly the buying in this issue is relatively stronger than in the others. Metropolitan, on the other hand, has displayed rather conspicuous weakness. No definite reason for this is given, except that insiders are evidently determined that the stock shall stand on its merits, and are offering no concerted support. Brooklyn Rapid Transit has merely followed the course of the general speculation.

Philadelphia

Following the tendency of the general speculation, the traction stocks on the Philadelphia Exchange have been inclined toward reaction during the past week. American Railway, which was one of the features last week, advancing to 53, has dropped back $1\frac{1}{2}$ points, to $51\frac{1}{2}$. Philadelphia Rapid Transit is off from $15\frac{1}{2}$ to 15 and Union Traction from $48\frac{1}{4}$ to $47\frac{1}{4}$. It is a noticeable fact, however, that dealings on the decline have been considerably smaller than they were on the previous advance, indicating that liquidation has not been commensurate with the recent buying. There is no news, either actual or speculators' gossip, concerning any of these properties. Fairmount Park Transportation has been an exception to the general movement, holding steady at $32\frac{1}{2}$. Huntington & Broad Top has also been strong, with sales at 30. Odd lots of Pittsburg Traction preferred sold at $52\frac{1}{4}$ and of Consolidated, of New Jersey, at $69\frac{3}{4}$. Reading Traction certificates were strong at an advance to $37\frac{3}{8}$, reacting later to $36\frac{7}{8}$. Railways General was not particularly affected by the poor earnings statement for the year, the stock selling down to $5\frac{3}{4}$, but later rallying to 6. American Railway 5s, after establishing a new high record at 108, broke sharply to 106 without any special reason given for the fall. Other bond sales comprised Consolidated of New Jersey 5s at $110\frac{1}{4}$, People's Passenger 4s at 105, United Railways 4s at 87 and Electric People's Traction 4s at $98\frac{1}{2}$.

Chicago

Toward the end of last week Chicago securities developed considerable strength, many of the traction issues reaching the highest they have sold at for some time. Since the opening of the current week, however, the movement has been partially reversed, owing to the uncertainty of general market conditions. City Railway rose to 224 on active buying inspired by the idea that the vigorous prosecution of the plans for extending the system meant that the company was no longer afraid of the ultimate franchise tax decision. Union Traction was sympathetically strong, the preferred selling up to 54. Lake Street Elevated, on operations supposedly by the old-time pool in the stock, rose from $10\frac{3}{4}$ to $11\frac{3}{8}$, but later on lost most of the gain. Metropolitan common advanced to $40\frac{3}{4}$, but dropped back to $39\frac{1}{2}$, and the preferred, after reaching $90\frac{1}{2}$, declined to 90. Northwestern common sold up to $37\frac{1}{4}$ and then down to $36\frac{3}{8}$, while South Side held its full advance to 114. All of the elevated lines are maintaining their excellent traffic returns. Labor troubles among the surface roads seem to have been settled, for the time being at least.

Other Traction Securities

Boston Elevated, after its recovery to 157 a week ago, fell again under profit-taking sales to 155. The "rights," on heavy dealings, sold down from 50 cents to 25 cents a share. Massachusetts Electric issues have been rather more active but heavy, the common, after touching 39, dropping to 38 and the preferred changing hands around 97. In Baltimore the week has been duller than for some time past. The United Railway securities have been depressed for no particular reason, except the lack of any special speculation stimulus. The common stock sold down from $15\frac{1}{2}$ to 15, the income bonds from $70\frac{1}{4}$ to $69\frac{3}{4}$, while the general 4s have merely remained stationary at $95\frac{1}{2}$. Nashville common stock has been active and exceptionally strong at an advance from $6\frac{1}{8}$ to $6\frac{1}{2}$. The 5 per cent certificates, however, did not share in this rise, continuing merely steady around $75\frac{1}{4}$. Other Baltimore transactions include Lexington Railway 5s at $104\frac{3}{4}$, United Traction of Pittsburgh 5s at $116\frac{1}{8}$ and Anacostia & Potomac 5s at $102\frac{1}{2}$. The week's sales of traction securities on the New York curb comprise Brooklyn City Railroad (100 shares) at $247\frac{1}{4}$, New Orleans Railway common at $18\frac{3}{4}$ to $17\frac{3}{4}$, the preferred at $56\frac{1}{2}$ to $56\frac{3}{4}$ and San Francisco preferred at 60 to $60\frac{1}{2}$.

This has been a very active week on the Cleveland Stock Exchange. Traction sales numbered 9770 shares, as compared with 12,762 shares for the week before. Cincinnati, Dayton & Toledo was again the leading issue, 2870 shares selling on an advance from

31 to 36½. The closing was 35¼, a gain of nearly 7 points in two weeks. The new Springfield & Xenia sold to the extent of about 2000 shares, advancing during the week from 20 to 26½. Aurora, Elgin & Chicago preferred was also active, 1126 shares selling from 83½ to 98, the latter the closing figure. The common sold between 36 and 38 for 641 shares. Northern Ohio Traction common, whose high mark the week before was 57½, experienced a boom and advanced to 64, but declined at the close to 61½; sales, 806 shares. Elgin, Aurora & Southern ranged from 45½ to 49½ on sales of 290 shares. Syracuse Rapid Transit preferred was in demand at several points advance, selling at 75 and 75½ for 220 shares. Lake Shore Electric common advanced during the week from 20½ to 23; sales, 342 shares. One lot of Cleveland Electric sold at 90¾, a drop of 2 points from the previous ruling price. Eastern Ohio Traction, a new stock which succeeds the Cleveland & Eastern and the Chagrin Falls lines, made its first appearance, and a small lot sold at 30.

Security Quotations

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

	Closing Bid Sept. 9	Sept. 16
American Railways Company.....	52½	51½
Aurora, Elgin & Chicago.....	36	36
Boston Elevated.....	156	154
Brooklyn R. T.....	71	68½
Chicago City.....	220	220
Chicago Union Tr. (common).....	18¾	17½
Chicago Union Tr. (preferred).....	51	48
Cleveland Electric.....	91	90
Columbus (common).....	57	60
Columbus (preferred).....	108	108
Consolidated Traction of N. J.....	69¾	69¾
Consolidated Traction of N. J. 4s.....	111	110¼
Detroit United.....	a96	a94
Electric People's Traction (Philadelphia) 4s.....	*98¼	98¼
Elgin, Aurora & Southern.....	44½	46¼
Indianapolis Street Railway 4s.....	87¼	87
Lake Street Elevated.....	103¼	102½
Manhattan Railway.....	137¼	136
Massachusetts Elec. Cos. (common).....	38½	38
Massachusetts Elec. Cos. (preferred).....	97	97
Metropolitan Elevated, Chicago (common).....	39¼	40
Metropolitan Elevated, Chicago.....	89½	89½
Metropolitan Street.....	147¾	145
New Orleans Railways (common).....	18	17¾
New Orleans Railways (preferred).....	57	56¾
North American.....	128	124
Northern Ohio Traction (common).....	61¾	62¼
Northern Ohio Traction (preferred).....	93¾	93½
North Jersey.....	37	34½
Northwestern Elevated, Chicago (common).....	36½	36¼
Philadelphia Rapid Transit.....	15¼	14¾
Philadelphia Traction.....	100	*98
St. Louis Transit Co. (common).....	30½	30½
South Side Elevated (Chicago).....	110	112
Syracuse Rapid Transit.....	28½	27
Syracuse Rapid Transit (preferred).....	71¼	75
Third Avenue.....	131	130
Toledo Railway & Light.....	35½	35
Twin City Minneapolis (common).....	126½	125¼
United Railways, St. Louis (preferred).....	84	84
United Railways, St. Louis, 4s.....	87	87
Union Traction (Philadelphia).....	48	47¼
Western Ohio Railway.....	27½	27½

* Ex-dividend. † Last sale. (a) Asked. (b) Ex-rights.

Iron and Steel

Decline in the domestic output and increase in importations from abroad continue to be the chief characteristics of the market for basic iron. The *Iron Age* estimates that the home production last month was 100,000 tons less than it would be were there no scarcity of the fuel supply. This domestic shortage is being made up by steady imports of foreign-made iron, the most important development in this connection being the announcement by a well-known New York commission firm that they had engaged the entire foundry iron product of the Dominion Iron & Steel Company, of Canada, for six months. The situation is also tending toward increasing imports of rails, as the impossibility of getting any immediate fulfillment of home orders is forcing American roads to pay higher in order to bring in the foreign product. Quotations are unchanged for the week, as follows: Bessemer pig, \$21.75; steel billets, \$31.50; steel rails, \$28.

Metals

Quotations for the leading metals are as follows: Copper, 11.80 cents; tin, 26½ cents; lead, 4½ cents; spelter, 5½ cents.

CHICAGO, ILL.—The directors of the South Side Elevated Railroad have declared the regular quarterly dividend of 1 per cent, payable Sept. 30.

CHICAGO, ILL.—President Clarence Knight, of the Lake Street Elevated Railway, who returned to Chicago a few days ago, after being in conference with J. B. Dennis, of Blair & Company, of New York, declines to make any statement regarding the proposed reorganization of the company.

MOLINE, ILL.—There has been filed for record in the circuit clerk's office a trust deed or mortgage from the Tri-City Railway Company to the German Trust Company, of Davenport, for \$800,000 to guarantee 5 per cent gold bonds to that amount, issued in accordance with a resolution adopted at the last annual stockholders' meeting. Of the \$800,000 issued under authority of this resolution, \$587,000 is to be used to meet maturing bonds of the Davenport & Rock Island Railway Company, payment of which was assumed when its property passed to the Tri-City Railway Company, \$33,000 of bonds of the same company which matured July 1, 1901, and which amount was paid with money borrowed for that purpose, and also to meet \$11,000 bonds of the Moline Central Railway Company, which were outstanding when the company's property was purchased by the Tri-City Railway Company. The balance of the funds accruing from the bond issue is to be used in the extension and improvement of its lines. The mortgage covers all the property of the company except twenty-five acres at different points along the lines, which are specifically excepted. The bonds issued are in denominations of \$1,000, and mature Sept. 1, 1922.

LOUISVILLE, KY.—The Wall Street Journal says: "The Louisville Railway directors will declare a dividend on the common stock Jan. 1 and will place it on a 5 per cent basis. The company will also issue \$500,000 of new common stock at \$50 a share, similar distributions to be made the next two years."

WORCESTER, MASS.—The Worcester & Southbridge Street Railway Company has asked approval of an issue of bonds by the Railroad Commissioners.

BOSTON, MASS.—The Railroad Commissioners gave a hearing, Sept. 11, on the petition of the West End Street Railway Company for approval of an issue of bonds to the amount of \$550,000 to pay indebtedness to the Boston Elevated Railway Company for expenditures on the system from October, 1900, to March, 1901; for authority to use \$7,498.34 and \$12,231 received in excess of proceeds of former bond sales for the same purpose; and an issue of \$3,000,000 in bonds to take up bonds falling due Nov. 1.

PITTSFIELD, MASS.—The petition of the Berkshire Street Railway Company for issue of additional stock will be continued on Oct. 2.

DETROIT, MICH.—The directors of Detroit United Railway have declared the regular quarterly dividend of 1 per cent, payable Oct. 1.

ST. LOUIS, MO.—The total earnings of the St. Louis Transit Company for August, as shown in a statement issued last week, were greater than for any previous month in the history of the company. They were \$579,575 against \$509,948 for the same month last year, showing a gain of \$70,527. Up to September the total earnings of the company aggregate \$4,169,346, as against \$3,795,675 for the first eight months of 1901. This is a total gain of \$363,671. It is said that the percentage of operating expenses to the gross earnings is being steadily reduced so that the proportion of net earnings will be greater than the percentage of the total gain. The gross earnings of the company for 1901 were \$5,777,599, and the deficit at the end of that year \$525,630. Business this year has far exceeded that done by the company in 1901. Every month has shown an increase over the same month of the previous year, and the operating expenses having been materially reduced, there is every indication that a surplus will be recorded at the end of the year.

JERSEY CITY, N. J.—The directors of the United Traction & Electric Company, of New Jersey, have declared a quarterly dividend of 1¼ per cent, payable Oct. 1.

CLEVELAND, OHIO.—The plan for refinancing the Northern Ohio Traction Company which is receiving most serious consideration contemplates the organization of the Northern Ohio Railway & Light Company, with a bond issue of \$7,000,000 and capital stock of like amount, the bonds to be used as follows: \$3,000,000 to retire the present outstanding bonds, \$1,000,000 to retire the preferred stock, \$500,000 for improvements, \$1,500,000 or 60 per cent of the total common stock now outstanding to retire the present common stock, and \$1,000,000 for treasury purposes. The new common stock to be divided between the present common and preferred stockholders, the preferred holders receiving in addition to 100 per cent of their holdings, one-half or perhaps 100 per cent of their entire holdings in common stock. The common stockholders would likely receive, in addition to 60 per cent of their holdings in bonds, 200 per cent in new common stock.

CLEVELAND, OHIO.—It is announced that within a very short time the bankers' committee which has been in charge of the Everett-Moore properties since the embarrassment of this syndicate will shortly surrender whatever control it has exercised over the properties. The sale of the Detroit & Toledo Shore Line is about to be completed, and the financing plan for the Lake Shore Electric Railway has practically been consummated. Five leading trust companies of Cleveland—the Cleveland Trust Company, the Prudential Trust Company, the Savings & Trust Company, the Federal Trust Company and the American Trust Company—have agreed to take \$1,500,000 of the bonds of the Lake Shore Electric Company. With these two obstacles out of the way all that remains for the syndicate to adjust are the affairs of the Federal Telephone Company, and the various properties of this company are fast being disposed of.

PHILADELPHIA, PA.—A dividend of 2½ per cent will be paid on the preferred stock of Union Traction of Indiana Oct. 1.

PHILADELPHIA, PA.—The Philadelphia Traction Company has declared the regular semi-annual dividend of \$2 a share, payable Oct. 1.

SHERBROOKE, QUE.—The syndicate that recently made an offer to purchase the stock of the Sherbrooke Gas & Electric Company is understood to have begun negotiations for purchasing the Sherbrooke Street Railway and the People's Telephone Company. A consolidation of these companies is planned, so it is said.

TABLE OF OPERATING STATISTICS

Notice.—These statistics will be carefully revised from month to month, upon information received from the companies direct, or from official sources. The table should be used in connection with our Financial Supplement "American Street Railway Investments," which contains the annual operating reports to the ends of the various financial years. Similar statistics in regard to roads not reporting are solicited by the editors. * Including taxes. † Deficit.

Table with columns for COMPANY, Period, Total Gross Earnings, Operating Expenses, Net Earnings, Deductions From Income, Net Income, Amount Available for Dividends, and corresponding columns for a second set of companies. Rows include AKRON, O.; ALBANY, N. Y.; BINGHAMTON, N. Y.; BOSTON, MASS.; BROOKLYN, N. Y.; BUFFALO, N. Y.; CHARLESTON, S. C.; CHICAGO, ILL.; CLEVELAND, O.; COVINGTON, KY.; DENVER, COL.; DETROIT, MICH.; DULUTH, MINN.; ELGIN, ILL.; FINDLAY, O.; HAMILTON, O.; LONDON, ONT.; MILWAUKEE, WIS.; MINNEAPOLIS, MINN.; MONTREAL, CAN.; NEW YORK CITY; OLEAN, N. Y.; PEEKSKILL, N. Y.; PHILADELPHIA, PA.; ROCHESTER, N. Y.; SYRACUSE, N. Y.; TOLEDO, O.; and NEW BRIGHTON, S. I. Staten Island Elec. Ry.