

# Electric Railway Journal

A CONSOLIDATION OF

Street Railway Journal and Electric Railway Review

VOL. XXXV.

NEW YORK, SATURDAY, APRIL 23, 1910

No. 17

PUBLISHED WEEKLY BY THE

**McGraw Publishing Company**

239 WEST THIRTY-NINTH STREET, NEW YORK

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PHILADELPHIA OFFICE.....Real Estate Trust Building

EUROPEAN OFFICE...Hastings House, Norfolk St., Strand, London, Eng.

## TERMS OF SUBSCRIPTION:

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, \$3.00 per year; Canada, \$4.50 per year; all other countries, \$6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving old as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

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Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements will be accepted up to Tuesday noon of the week of issue.

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Entered as second-class matter at the post office at New York, N. Y.

Of this issue of the ELECTRIC RAILWAY JOURNAL 8,500 copies are printed.

NEW YORK, SATURDAY, APRIL 23, 1910.

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## The No-Seat No-Fare Hysteria

When Herbert Spencer wrote on "The Sins of Legislators" he had in mind the childish trustfulness of those lawmakers who fondly imagine that they can set at naught the truths of common sense merely by a legislative fiat. The very latest example of this tendency is the absurd no-seat-no-fare ordinance which was supposed to go into effect in Trenton, N. J., on Monday, April 18. This ordinance provided that unless a passenger was given a seat during the morning and evening rush hours, he would not be obliged to pay fare. The city council in its ponderous wisdom, however, overlooked the point that there was nothing in the ordinance to prevent the railway company from treating as trespassers those who refused to pay for riding. Even the legal representative of the city hesitated to deny the force of this fact. In consequence, the turbulent elements which are found in every industrial community showed no desire to take advantage of the provisions of the ordinance, while the people at large treated the whole matter as a huge joke. From interviews with the car crews and personal observation of the traffic conditions over the busiest lines in Trenton, it is evident that the public has a much better appreciation than its representatives of the impracticability of providing a seat for every passenger during the rush hours. The Trenton ordinance also stated that the company should be fined if intending passengers were obliged to wait more than 10 minutes for a car containing empty seats. This clause was inserted in spite of the fact that in Trenton the cars are frequently delayed at steam railroad crossings for 10 minutes or more. The bias which animated the city "fathers" in insisting upon the immediate enforcement of their ordinance may be appreciated from the fact that it was generally known that the company has on order a considerable number of new cars. The council was so unfair in its action that it forfeited whatever support it might have received from the public in an attempt to enforce this preposterous regulation.

## Saving Fuel at the Hoisting Plant

In the surroundings of the average coal-hoisting plant there are ordinarily few incentives toward economical operation. A recent examination of a large installation of this kind, however, showed that small but continuous savings could be realized by the adoption of a few simple expedients. In the plant steam was being constantly kept on long runs of pipe leading from the power house proper to the coal towers, and losses from condensation and frequent leaky operating valves were evident. Inside the pocket no attempt was apparent to cut off incandescent lamps not needed in service, and the wiring appeared to provide little if any subdivision of the illumination. Carelessness regarding the shutting down of conveyor chains after a given run of fuel had been handled, increased the consumption of the electric motors installed for the operation of this machinery. The cost of segregating the lighting circuits, paying

closer attention to the lubrication of the sprocket wheels and placing valves at the boiler house end of the steam mains serving the hoisting engines would be a small matter in proportion to the annual savings in fuel thus made possible. The hoisting plant is comparatively so small a portion of the equipment of a power station that the necessity for securing economies in its different parts is sometimes overlooked. Nevertheless considerable power is required to operate the hoisting plant and it can be wasted there as certainly as in any other part of the system.

### Blown Fuses

The inspection of spare fuses by a simple electrical test during routine examinations of cars is often neglected. It is an easy matter to supply the inspector with a box containing two dry cells, with a small buzzer on the outside, for use in fuse testing. Too much care cannot be taken to maintain the necessary separation between good and burned-out fuses carried on rolling stock. A recent instance is illustrative; a car on the busiest track of a large city blew a fuse in the rush hour. The motorman replaced the fuse with another of the enclosed type which chanced to be burned out. Motor trouble was assumed, and after a delay of five minutes the car was pushed to an inspection track where the facts were quickly discovered. At such a time of day even five minutes' blockade cost the company quite a number of dollars. The lesson is plain that nothing is too small to affect the quality and economy of service on a modern street railway. The smallest loose end in operation may cause costly delays out of all proportion to the expense of forestalling trouble.

### The Mayoralty Election in Milwaukee

The election of a mayor on the Socialistic ticket in Milwaukee has given rise to considerable speculation as to the effect on the public service interests of that city. A careful study of the situation would indicate, however, that practically nothing is to be feared from the socialistic administration. The Railroad Commission of Wisconsin is clothed with a great deal of power with respect to the public utilities of the State, and it would be impossible for any radical action to be taken without the consent of this commission, whose decisions have been marked by ability and conservatism. The most drastic action which the municipality could take has been directed against the company during the past two years through the activity of the representatives of the Socialistic party in the City Common Council. This is the three-cent fare litigation which has been in progress for a long time and has been fully reported in the *ELECTRIC RAILWAY JOURNAL*, but the company presented a strong defense and argument against any reduction in its fares before the Railroad Commission, which now is deliberating on the question. Undoubtedly the Socialists would be glad—if it were at all possible—to attempt to inaugurate their hobby of municipal ownership in Milwaukee, but this is out of the question under the present law because the company is protected by its franchise rights. As regards the political aspect of the election, it is generally believed that the success of the Socialists was due more to internal dissensions in the Republican party of that section of Wisconsin and a certain amount of dissatisfaction which has been current as regards the Democratic administration for several years past, than to any inherent strength in the Socialistic party.

### The Close of the Philadelphia Strike

An illuminating article on phases of the Philadelphia strike by Daniel T. Pierce, executive assistant of the Philadelphia Rapid Transit Company, appears elsewhere in this issue. It is particularly interesting because it gives the viewpoint of one who has been conversant with every step taken by the company during the recent controversy. We shall not attempt to analyze all of the points mentioned by Mr. Pierce, but shall refer to one of them because it is brought up so often by strikers and outsiders during a dispute of this kind. This is the recurrent proposal to settle difficulties between a company and its employees by arbitration. The conclusion of the Philadelphia strike was not effected in this way as the men finally concluded to accept terms offered by the company four weeks ago, but according to Mr. Pierce the constant hope on their part that somebody or some influence would induce the company to arbitrate, did more than anything else to prolong the strike and cause loss to the employees, the company and the public.

A demand for arbitration is always raised at the beginning and during the continuance of a strike by a great many well-meaning persons, as well as by others whose purposes are not so disinterested. To the former, as well as to a large portion of the community, the settlement of the dispute by an impartial and disinterested man or set of men seems the most logical plan to pursue. A disagreement between individuals in civilized communities is no longer followed by a struggle to see which is the stronger. The courts adjudicate their differences. Hence a great many people reason that industrial quarrels should also be referred to competent tribunals for settlement. The idea is attractive and plausible but it is fallacious. The parallel to a judicial case ceases to exist when one of the parties to the suit is responsible, while the other is utterly irresponsible and cannot be penalized by the court if he does not accept its verdict. The practical result is, in most cases, that instead of investigating the merits of the controversy, the arbitrators direct their energies to the only practical way which they have of settling the dispute, that is, by scaling down the demands of the responsible party in the controversy to a point at which they will be accepted by the irresponsible party. In other words, one side has everything to gain and nothing to lose from arbitration, while the other side has nothing to gain and everything to lose.

What then is the proper method of settling industrial disputes? They are an enormous economic waste, and it is a drain upon the community to resort to the primitive plan of the survival of the strongest even in cases when the employers and employees are not engaged in a public utility service. But when, as the result of such a contest, the community as a whole suffers from the interruption of its supply of light, transportation or any other necessity of modern life, the public is even more vitally interested. What can it do to protect itself? It is indeed difficult to reply to this question, but we do not believe that the proper answer is that of peremptorily requiring concessions from the one party of the controversy against whom pressure can be brought. Perhaps if we consider the status of public service corporations, a possible solution of this problem may become evident. By both direct enactment and judicial interpretation, these companies are held to owe duties and obligations to the community far different from those possessed by private corporations and individuals.

Municipalities, States and the national government have insisted upon the right to incorporate a statement of some of these obligations in the charters of such companies, to supervise their accounts, to regulate their fares, to control in many cases with detail the services which they supply and to provide severe penalties for discontinuance of operation without permission. The power of the public, acting through properly constituted authorities, to place public service companies under these obligations has been upheld in so many cases by the highest courts in the land that there can be no dispute as to the general fact. This being the case, it is only a logical step to impose upon the employees a different degree of responsibility as to a proper execution of their work than if they were engaged with a private corporation or an individual. No one is obliged to accept service with a public service corporation, but if a man does so, he should assume, so far as they relate to his own duties, legal obligations corresponding to those which bind his employer. According to this theory of employment, which was advocated by August Belmont at a meeting of the National Civic Federation several years ago during a discussion on trade agreements, an employee who entered the service of a public utility corporation to perform certain duties should not be permitted to abandon his position, except in case of sickness, any more than if he had enlisted in the army. At the termination of his period of enlistment, he would be free to accept some other engagement, if his wages or other terms of service were not satisfactory to him. If this plan should be followed, the law of supply and demand would require the establishment by the company of standards of wages and other conditions of the service corresponding with the duties performed, and equal to or greater than those paid for a similar class of work in other industries.

### Heavy Electric Railway Service

We publish this week an abstract of three important railway papers and the following discussion at the Institution of Civil Engineers. The installations considered are the Mersey Railway, the Heysham branch of the Midland Railway and the Tynemouth branches of the Northeastern Railway, of which the first and last are direct-current systems of the customary third-rail construction, while the Heysham road is a typical single-phase system at 6600 volts. The power station of this latter line is particularly interesting because it is operated by producer gas and being essentially a direct-current station, the single-phase current is obtained through motor generators.

The discussion not unnaturally involved the usual controversy regarding alternating current versus direct current, a controversy which for commercial reasons is apt to wax hot when there is even a distant probability of broaching this tender subject. In this case, however, the presentation of the papers and discussion extended over four meetings of the Institution, so that there was more opportunity for thrust and parry, for lunge and guard and tierce, than when rapiers are drawn and sheathed in a single evening. We do not know whether "electrical month" will become as firmly established in the future programs of the Institution as "electrical night" has been in those of the New York Railroad Club. But we trust that it will, because upon the whole the important portions of the discussion were upon broad lines and dealt with the general phases of electrification. In this larger aspect of affairs the fact of greatest significance was the effect of changing from steam to electric

motive power upon the receipts and profits of the Mersey Railway. The facts disclosed in the discussion leave no doubt whatever of the great commercial value of such a change. The increased traffic in this instance showed rapidly in the earnings on the system, even after the additional capital changes necessitated by electrification had been duly accounted for. A person may theorize about the relative cost of steam and electric traction to any extent that time and the patience of his auditors permit without in the least altering the great salient fact regarding electric traction, that it has been, is and will continue to be a traffic developer to an extent absolutely impossible with any other form of motive power yet devised.

The Heysham single-phase line was warmly praised and roundly abused by various participants in the discussion. Praised for its excellent working results and denounced as a line too light and too short to give valuable data on the subject under discussion and as generally representing a type of apparatus which does not meet the approval of the direct-current engineers. On the whole, the attitude of the participants was more fervid than scientific. However, in the discussion, some interesting figures were brought out. Mr. Dawson, in particular, presented some data on the practical consumption of energy per ton-mile at various speeds with both alternating and direct-current motors, showing that the latter had little the better of it up to 25 m.p.h. for rolling stock of the character under discussion, while above this speed the alternating-current motors came to the front, to an extent quite to over-balance the added weight of the a. c. equipment.

Incidentally in the discussion some interesting figures were given as to the cost of the overhead construction on a thoroughly modern high-speed single-phase line. The data were with respect to three of the important German roads and showed that the total cost of the overhead line construction, inclusive of special work, as determined from the actual building of the roads, came out between \$5,000 and \$6,000 per mile of single track, in one instance even less than this. The Hamburg-Altona Railway, which is a beautiful piece of construction, showed a cost for its overhead work of \$5,500 per mile of single track. These continental roads have mostly latticed poles of light and graceful design, and the familiar Siemens double-catenary suspension. Of course, one could not hope to put up overhead construction as cheaply here as in Germany, yet the experience there shows beyond any doubt that when a line is carefully and scientifically laid out as an engineering structure it can be built using conductors of the cross-section suitable for high-tension work at a figure surprisingly low considering the admirable operating properties of the structure. Anyone who has seen the light bow trolleys of these German lines slipping over the beautifully aligned trolley wire will have little doubt of the working properties of the overhead system whatever he may conclude regarding the motors.

We wish that discussions of this kind might be conducted with somewhat less of evident irritation than generally appears when the a. c.-d. c. question is raised. As was remarked in the course of the present debate, it does not follow that the same system be applied for all purposes, or that a railroad must forever and ever commit itself to a given system before it dares think of electrification. What the public wants is electrically driven trains and it cares very little for the quarrels of engineers over the relative advantages of different forms of electric propulsion.

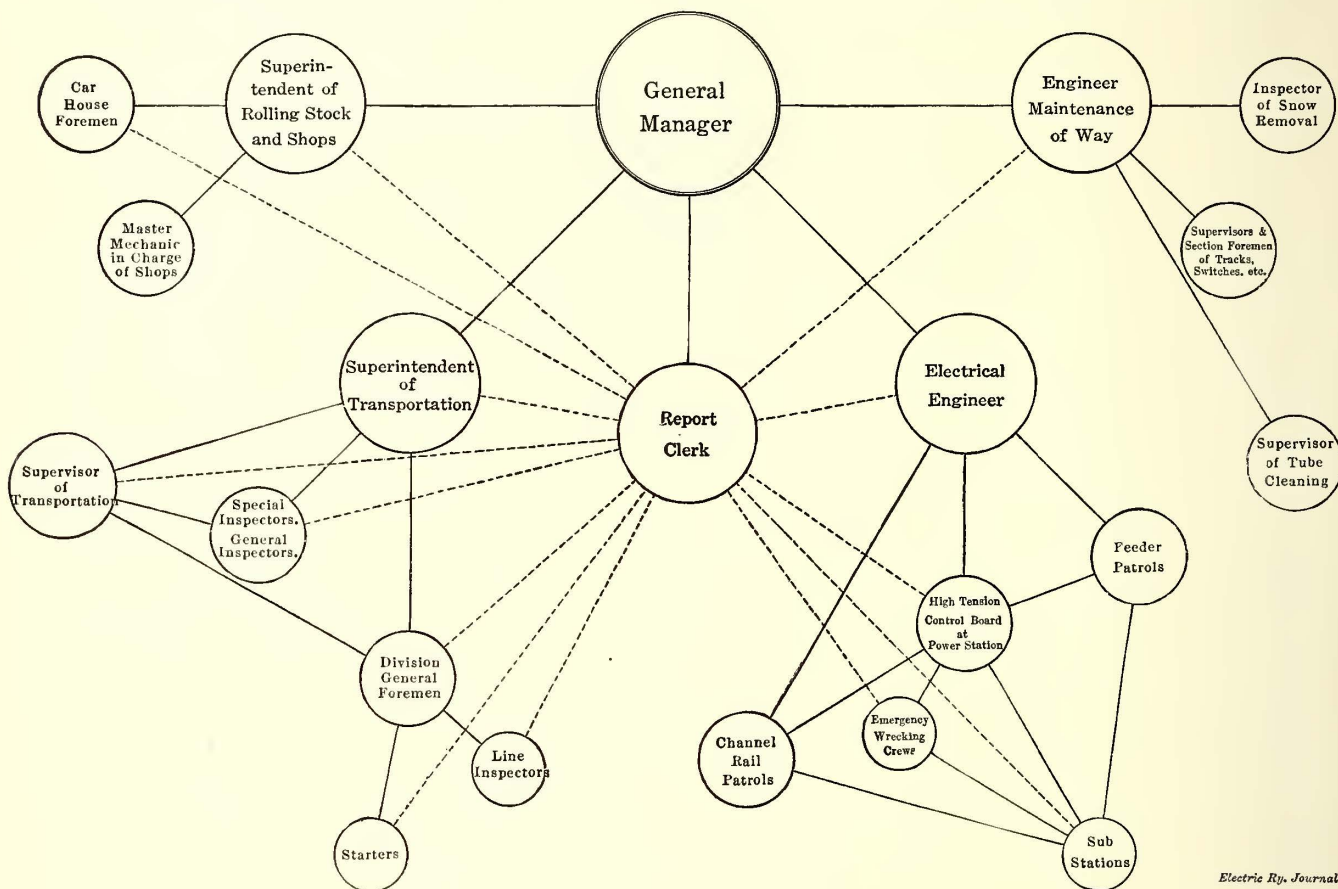
### SNOW FIGHTING METHODS AND ORGANIZATION OF THE METROPOLITAN STREET RAILWAY CO.

Under the terms of their franchises all surface street railway companies on Manhattan Island are required to remove and cart away all the snow and ice which may fall or form upon the area located in, between and for 2 ft. on either side of their tracks. In practice, however, it has been found to be more desirable to all concerned for the railway companies to make an agreement with the city commissioner of street cleaning to clean all the snow and ice which may fall or form upon the entire width of certain streets, from building line to building line, the area thus cleaned to be approximately equivalent to that which would have to be cleaned if the railway companies should adhere strictly to the plan of cleaning only the central strip of the streets in which tracks are laid. Early in the fall of each year an understanding is reached regarding the area which the railway companies are to clean, and the commis-

the damp snow into ice, covering or partially obstructing the slot, it is necessary to pick out the ice by hand. Keeping the conduit always clean and free from obstruction throughout an average New York winter requires much special apparatus, many men and a perfect organization for any emergency.

#### PRELIMINARY ORGANIZATION

As soon as the agreement between the city and the Metropolitan Street Railway Company is signed and it is known from what streets the railway company is to remove the snow, a conference of the operating department officers is held to determine which streets can be advantageously cleaned by the forces and equipment of the railway company and which streets are to be assigned to contractors to clean. Bids are then procured from contractors and contracts for the season awarded on the basis of a fixed price per cubic yard of snow removed. Shortly before the time when snow may be expected, the heads of the maintenance of way, electrical, transportation and rolling stock and shops departments issue general orders



Metropolitan Snow Fighting—Diagram of Organization of Forces

sioner of street cleaning then issues to the railway companies the necessary permits for the operation of snow sweepers and other snow-cleaning apparatus. The city authorities give special attention to the cleaning of those streets occupied by railway tracks, which the railway companies are relieved of cleaning.

With the conduit electric system a comparatively light fall of snow may cause serious delays, and a heavy storm which would have only slight effect on the operation on an overhead trolley system would completely tie up the underground conduit road, unless energetic action is taken. Fine, dry sifting snow when blown by the wind into the trolley slot quickly causes trouble. The task which confronts the operating department of the Metropolitan Street Railway Company is that of keeping the snow out of 130 miles of conduit. The conduit is elliptical in form, approximately 16 in. wide and 24 in. high. Every 105 ft. there are manholes and dumping pits into which the snow is pushed by the scrapers and afterward removed. The slot in the surface of the street, through which the snow drifts, is 3/4 in. wide. When a sudden change in the weather converts

in which the duties of each man engaged in snow fighting and removal are specifically stated.

#### TRACK DEPARTMENT FORCE

The engineer of maintenance of way assigns each supervisor and foreman to a given section of the system and each man in authority is told what work he will have to perform, so that he may arrange for the necessary emergency forces. Each is also told where to report when it begins to snow, and where on his section during the night, when most business places are closed, he can obtain access to a telephone by means of which he can transmit an hourly report to the engineer of maintenance of way. All of the men of this department, with the exception of watchmen and sprinkler and building inspectors, constitute part of the snow fighting force. With the exception of emergency work, their entire energies are devoted to keeping the tracks clear until the snow has ceased falling and enough has been removed to insure no interference with the operation of cars. The power scraping cars, which scrape the snow from the conduit and dump it into

the manholes, are in charge of the track department. They are made ready for service in the fall, and all auxiliary snow-fighting apparatus such as shovels, picks and brooms is distributed ready for instant use.

**ELECTRICAL DEPARTMENT**

As a preliminary step the electrical department prepares instructions in blueprint form, indicating at what point each officer and foreman of the department will report as soon as it commences to snow, and where extra emergency wagons will be stationed. For the information of all concerned, particularly the report clerk, who despatches the emergency wagons, a blueprint schedule is prepared indicating what emergency wagon is to be sent out in the event that short-circuits occur at any point on the system. This sheet also shows what wagon is to be sent in case the wagon which is assigned to the given territory is out on some other trouble. The sheet also shows a third wagon to be sent in the event that both the regular and substitute wagons are away from their quarters. In this way the method of dealing with feeder troubles, or short-circuits of any character, is determined in advance, thereby systematizing the relief measures which are to be taken in any emergency.

who regulate the service by switching back cars; a list of grades which are to be sanded and the points where sand can be procured in addition to that carried in the sand boxes of passenger cars and in the sand cars; the assignment of general inspectors to various sections of the system, a tabulated list of questions to be answered by inspectors in making telephone reports of the conditions existing on the sections in their charge; an outline of the duties of each class of employees engaged in operating snow-fighting equipment, and specific instructions for despatching cars and regulating destination signs when the snow schedule is in effect.

**ROLLING STOCK AND SHOPS DEPARTMENT**

In the fall this department prepares instructions for the men regarding the prompt repairing of any disabled snow-fighting equipment which may be run into a car house. These instructions include blueprints showing the correct and incorrect method of adjusting brooms on sweeper cars, and other information. All car house foremen are informed in advance of their duties when the snow schedule is in force. They obtain the addresses of all their men, and arrange to communicate with them promptly in an emergency. The men who are assigned to duty on sweepers are subject to call as soon as it begins to snow, whether day or night. All of the snow-fighting equipment is placed in the car houses where it can be run out immediately, and each piece of apparatus is equipped with a full set of auxiliary tools, etc. Extra equipment parts are procured and distributed for emergencies, and arrangements are made for extra repair gangs in the car houses and shops, prepared to deal with any breakdowns.

**FIGHTING SNOW**

When snow begins to fall in the day time the men in all departments report without special orders at their proper stations, and take up their duties as outlined in the instructions of the department in which they are employed. If a storm begins during the night, however, the report clerk, whose office is at Fiftieth Street and Seventh Avenue, approximately in the geographical center of the Metropolitan system, advises by telephone the heads of departments and their immediate assistants, that a storm is in progress. The report clerk has a complete list of officers to be called. The department heads when advised of a storm communicate in turn with their subordinates, many of whom are supplied with a list of employees to be summoned.

Within a few minutes the entire snow-fighting force of the company is ready to commence work.

The power scraping cars are first sent out. Usually two cars are assigned to each section and operated in opposite directions. Several scraping cars are held in readiness for service at different car houses, and are called out if conditions require them. Sweepers and wing cars are sent out on their regular routes as the storm progresses, the sweepers brushing the snow away from the track and the wing cars pushing the snow back about 9 ft. from the outside rail.

As fast as snow-fighting equipment goes into service a report is made by telephone to the report clerk, who enters on a special snow log sheet the character of the apparatus, its serial number, the direction in which it started, its starting point and the time; later, the time when it is taken off the road, the cause of its removal and the time when it was repaired and again made ready for service are entered. This log sheet thus shows exactly what snow-fighting apparatus is in service at any time. It also shows the time when a sweeper, scraper car or wing car

ADRIAN H. JOLINE, DOUGLAS ROBINSON, Receivers,  
**Metropolitan Street Railway Company.**  
MAINTENANCE OF WAY DEPT.  
**SCRAPING CAR REPORT.**

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Rec'd by \_\_\_\_\_ Time \_\_\_\_\_  
Name \_\_\_\_\_ Location \_\_\_\_\_  
Car No. \_\_\_\_\_ Depot \_\_\_\_\_  
Time of leaving \_\_\_\_\_ Direction \_\_\_\_\_  
Motorman \_\_\_\_\_ Badge No. \_\_\_\_\_  
Crew \_\_\_\_\_  
Any trouble with car? \_\_\_\_\_  
Time to repair \_\_\_\_\_  
Condition of conduit \_\_\_\_\_  
Any ice in conduit? Where? \_\_\_\_\_  
Cutters needed? Where? \_\_\_\_\_  
Hand scrapers needed? Where? \_\_\_\_\_  
Condition of handholes \_\_\_\_\_  
Condition of manholes \_\_\_\_\_  
Manholes in need of immediate attention \_\_\_\_\_  
Scraping cars needed? \_\_\_\_\_  
Location of cars on section \_\_\_\_\_

ADRIAN H. JOLINE, DOUGLAS ROBINSON, Receivers,  
**METROPOLITAN STREET RAILWAY COMPANY.**  
MAINTENANCE OF WAY DEPT.  
**SNOW REPORT.**

---

Rec'd by \_\_\_\_\_ Time \_\_\_\_\_  
Name \_\_\_\_\_ Location \_\_\_\_\_  
No. of men Regular \_\_\_\_\_ Extra \_\_\_\_\_  
Kind of work \_\_\_\_\_  
Are more men needed? Where? \_\_\_\_\_  
Too many men? Where? \_\_\_\_\_  
Condition of section \_\_\_\_\_  
Tight slot? Where? \_\_\_\_\_  
Any other trouble? Where? \_\_\_\_\_  
Time required to remedy trouble \_\_\_\_\_  
Cars running regularly? \_\_\_\_\_  
If blocked, cause \_\_\_\_\_  
Scraping cars needed? Where? \_\_\_\_\_  
Location of scraper cars on section \_\_\_\_\_  
Sweepers needed? Where? \_\_\_\_\_  
Condition of Conduit \_\_\_\_\_  
Condition of handholes \_\_\_\_\_  
Condition of manholes \_\_\_\_\_  
Streets being cleaned \_\_\_\_\_

**Metropolitan Snow Fighting—Forms for Foremen's Reports to Engineer Maintenance of Way**

All the foremen in the electrical department, including those in the main power station, substations, channel rail, line and feeder departments, are assigned special duties. The power station and substation foremen remain at their respective stations. The line foremen and their gangs are divided into day and night shifts, each being responsible for a certain section of the city. These sections are divided into patrol beats, and men are assigned to each patrol. The feeder men are also assigned to patrols. Both the feeders and the channel rails are carefully watched by these men, who report for duty as soon as the storm begins.

**TRANSPORTATION DEPARTMENT**

The transportation department makes up a schedule showing the distribution among the car houses of all snow sweepers, wing cars and miscellaneous snow-fighting apparatus, together with a statement of the tracks over which each piece of equipment is to be operated. The schedule also shows the location of all extra sand shakers, push poles and drag ropes at various points on the system. Other information given on the schedule includes the posts assigned to each of the special inspectors,



In the office of the electrical engineer, the clerical force receives and tabulates reports and sends out such instructions as the electrical engineer may issue. A log sheet is kept, on which all reports are entered. This shows the employee's name, his patrol number, the time the call was made, and the substance of the report. After trouble is reported, the measures taken to correct it are stated, together with the nature and cause of the trouble, the time it commenced, the time it was remedied, and by what means.

The men in the electrical department are called out for snow duty at night by the operator on the high tension switch-board, who notifies certain employees assigned to duty in different sections of the city, and these men in turn call out the balance of the department's forces. The names, addresses, and nearest telephone calls of all employees are recorded in the office to insure prompt communication.

Present Tickets, with Bill, at Office of E. M. W., 775 Seventh Avenue.		Form 296, 12/109-75,000.	No. <b>36801</b>	<b>4</b>	Date.....19																			
ADRIAN H. JOLINE, DOUGLAS ROBINSON, RECEIVERS, <b>METROPOLITAN STREET RAILWAY COMPANY.</b>		WILL PAY..... for hauling <b>FOUR</b> cubic yards of snow from location punched below.		(Signed) <i>AD Robinson</i> E. M. W.																				
WEST	109th St.	86th St.	53d St.	34th St.	14th St.	Wash. St.	Gracie St.	Canse. St.	9th Ave.	Hudson St.	7th Ave.	Bway.	Madison Ave.	Lex. Ave.	Avenue A.	Essex St.	Clinton St.	2d St.	EAST	34th St.	23d St.	14th St.	10th St.	8th St.

**Metropolitan Snow Fighting—Snow Removal Ticket**

Every foreman of the maintenance of way department is required to report by telephone to the office of the engineer of maintenance of way once each hour while the snow schedule is in effect, giving a full report of the situation on his section. These reports are entered on a printed form, showing what questions must be answered. The foremen knowing what is expected of them, are able to give briefly all of the essential information in a comparatively short conversation over the telephone. One printed form is used for reporting the progress of snow removal, cleaning of switches, etc., and another is used to report the work done by the scrapers in cleaning the conduit. The substance of these reports is then transferred to a log sheet, so that the engineer of maintenance of way is constantly informed as to conditions on all parts of the system, the number of men at work, what they are doing, and where additional men are needed.

As illustrated by the chart on page 730, showing the snow schedule organization of the Metropolitan, each head of a department is not only in close touch with his subordinates, but is also promptly made acquainted by the report clerk with developments in any way affecting the operation of the system. The report clerk therefore not only acts as a disseminator of information, but is a most important agent in co-ordinating the work of all the departments, effecting the desired results in the shortest possible time. He makes it possible for the men engaged in fighting snow to perform their work with the greatest efficiency and at the same time without waste of money through misdirected efforts or unnecessary expenditure of physical strength, the conserving of which, as every railroad man knows, is of the utmost importance in snow storms.

To this snow organization may be attributed the fact that notwithstanding the heavy snow storms of 10 in. and 14 in. of last winter, the records indicate that there was no interruption to the operation of the surface lines of the Metropolitan, even with its handicap of the contact electric system; while, on the other hand, the severity of the storms caused the suspension in some instances of overhead trolley operation on other systems in the neighborhood of New York.

**SNOW REMOVAL.**

As soon as it has stopped snowing the contractors with whom the receivers of the Metropolitan Street Railway Company have entered into agreements for the removal of snow

are notified to begin the cleaning of the streets assigned to them. They begin at the most important points and clean as directed by a representative of the engineer of maintenance of way. When a contractor begins to clean a street a ticketman and an inspector assigned to that street by the maintenance of way department report to the contractor and issues tickets for each cart load of snow removed. The vehicles used by the contractor are measured up by the engineers of the maintenance of way department, and the ticketman issues tickets of the correct denomination, according to the cubic measurement of the wagon boxes given him by the engineers. At the same time that the contractors begin cleaning up and hauling, arrangements are made to start on the streets which are to be cleaned by the forces of the railway company. The transportation department furnishes the trucks and drivers required, and the foremen of the maintenance of way department, with their own gangs and such extra men as are required, attend to the piling of snow and the loading of the trucks.

Each morning at 9 o'clock a report is sent in to the office of the engineer of maintenance of way, showing the number of men and vehicles at work on those streets which are being cleaned, either by the railway company's forces or by contractors. These reports enable the engineer of maintenance of way to keep a check on the progress of the work and the speed with which it is being carried on. Each afternoon at 4 o'clock a report is made to him, stating what portion of each street has been cleaned up to that time. Each evening, based upon the 4 p. m. report, a report is made by the maintenance of way department to the general manager, giving a complete list of the streets which must be cleaned under the agreement with the commissioner of street cleaning, and showing just what progress has been made up to that time in the cleaning of those streets. A copy of this report is also transmitted to the superintendent of transportation, for his information.

As soon as it stops snowing or, in the case of an extraordinarily severe storm, as soon as they start to fill up, the cleaning of conduit manholes, handholes and special pits is begun. The regular track men, with such extra men as are required, are used on this work, which is kept up until all manholes and pits have been thoroughly cleaned out.

A comparatively small force is regularly employed by the maintenance of way department during the winter season, and it is necessary to depend to a considerable extent on extra

COMMENCED WORK													
1	2	3	4	5	6	7	8	9	10	11	12 A. M.		
2	No. <b>3381</b>										3		
3	ADRIAN H. JOLINE, DOUGLAS ROBINSON, RECEIVERS,										4		
4	<b>METROPOLITAN STREET RAILWAY COMPANY.</b>										5		
5	Department of Maintenance of Way.										6		
6	Date.....190.....					Check No.....					7		
7	<b>SNOW TICKET.</b>										8		
8	Foreman.....										9		
9	Foreman to return envelopes to office each night.										10		
10	1 2 3 4 5 6 7 8 9 10 11 12 P. M.												
11	SHOVEL DELIVERED			COMMENCED WORK						BROOM DELIVERED			12
12	RETURNED									RETURNED			12

**Metropolitan Snow Fighting—Envelope Containing Emergency Laborer's Time Ticket**

men in cleaning up after a snowstorm. When the storm begins to look dangerous, two of the regular men, who are Italians, are sent through the Italian settlements to pick up such men as they can from the various employment agencies. These men are sent to the Fifty-third Street yard of the railway company, from which point they are distributed as required. Arrangements are made so that these men can be promptly paid on the day after they have worked, and this accommodation makes many of them prefer to work for the railway company rather than for the city or city contractors, who make them wait some time for their money. As a man is put to work he is given a sealed envelope containing a ticket or time slip. The foreman punches out of this envelope

lope, and on the ticket enclosed within it the time when the man starts working and also indicates by a punch whether the man has been given a shovel or broom. When the man quits work, the foreman punches the time of quitting, signs the envelope, tears it open, gives the man the ticket contained in it and sends the envelope to the office of the engineer of maintenance of way. The ticket is the man's receipt for the work he has done for the railway company, while the envelope is used as a check against the ticket when presented. If the man has been given a shovel or broom, he does not get his money until he has returned the implement and the return is punched on his envelope and ticket. After a man has worked five hours he is given a brass check, the number of which is noted on the envelope. The check serves as a further identification and is honored as a pass on the various lines of the Metropolitan system. Each work ticket is good for only twenty-four hours, and a new set of envelopes and tickets is issued each day.

When a man presents his ticket at the office of the engineer of maintenance of way it is compared with the envelope already sent in by the foreman, and if found to check, the man is given an order on the paymaster, at 621 Broadway, for his money. His brass check, if he has one, is first taken up.

The extra men, hired by the company for snow removal, are laid off as soon as they are no longer required. The work of cleaning snow and ice from the streets is continued, however, until all of the streets have been entirely cleaned, when a final report to this effect is sent to the general manager. After the streets have been cleaned there is sent to the general manager, with a copy for the superintendent of transportation, a complete report, giving the time that it began snowing, when the snow ceased, the official snowfall as reported by the United States Weather Bureau, when the contractors were ordered out, and when they started hauling, together with the time the cleaning of streets was completed. The contractors on completing their work send in their bills, with the tickets which have been given the drivers as vouchers. These bills are checked, and if found correct are certified and sent through to the auditor for payment.

#### NEXT ARTICLE.

The next article on the Metropolitan Street Railway system will describe the Maintenance of Way Department of the company.

### MEETING OF MASSACHUSETTS STREET RAILWAY ASSOCIATION

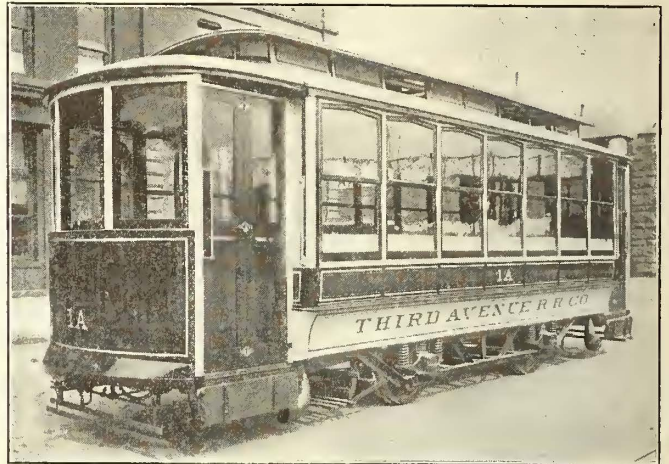
The regular monthly meeting of the Massachusetts Street Railway Association was held at Young's Hotel, Boston, on the evening of April 13, with President R. S. Goff in the chair.

After the usual dinner, the association was addressed by Capt. William E. McKay, consulting engineer of the New England Gas & Coke Company, on "The Mining and Transportation of Coal and the Manufacture of Coke." Capt. McKay described at length the mines of the company in West Virginia, explaining the methods of ventilation, drainage, blasting, lighting, power supply and transportation employed below the surface. The company takes out 11,500 tons of coal per acre. Methods of excavation, accident prevention and tests for dangerous gases were reviewed. The transportation of coal from the mines to the seaboard was discussed, and a description given of the company's steel collier fleet, which plies between Chesapeake Bay and Boston. On account of delays at Cape Cod and other causes, the cost of water transportation has varied within the past few years from 45 cents to \$2 per ton between Baltimore and Boston. The transportation expense between the mine and the seaboard and the cost of mining are practically fixed quantities.

In conclusion the plant of the company at Everett, Mass., was described by the speaker.

### STORAGE-BATTERY AND GASOLINE-ELECTRIC CARS ON THE THIRD AVENUE RAILROAD

For some time past F. W. Whitridge, receiver of the Third Avenue Railroad, New York, has been considering the replacement by some form of self-contained vehicle of the 25 horse cars now operated on several of its subsidiary crosstown lines. Before taking this step it was decided to try in competition one gasoline-electric car and one storage-battery car. With this idea in view, a gasoline-electric equipment was placed in service in November, 1909, and this is now followed by the storage-battery car, which has been running since March 28, of this year. Both cars, although intended eventually for some of the present horse-car routes, are in operation on the important 125th Street electric crosstown line so that they can be tried



Storage Battery Car with Vestibule Doors Closed and the Steps Up

out under conditions more severe than the actual requirements will demand. A description of the gasoline-electric car was published in the Nov. 6, 1909, issue of the *ELECTRIC RAILWAY JOURNAL* and a tabulation of some of the excellent operating results was given on page 48 of the Jan. 1, 1910, issue. At this writing the gasoline-electric car has been in service for over five months, during which period it has operated without other interruption than that due to a broken shaft. The principal question now is whether the storage-battery car will prove equally reliable. The latter car and its equipment have a much lower first cost than the gasoline-electric type. Furthermore, if storage-battery cars are adopted, their total power requirements would not be enough appreciably to affect the output of the power station. In fact, the cars could be charged at night and the only expense involved would be for the extra coal consumed and the cost of charging stations.

#### THE STORAGE-BATTERY CAR

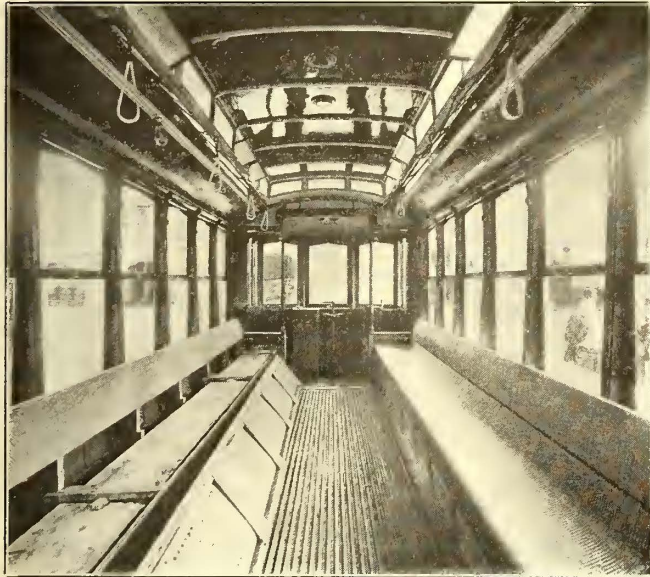
The body of the new storage-battery car was formerly a horse car in service on the Dry Dock & East Broadway line, and with its truck weighed 7200 lb. The construction of the car body has been changed in very few respects, aside from the addition of vestibules with folding doors and disappearing steps to permit prepayment operation. The body is 17 ft. 10 in. over the corner posts and has 4-ft. platforms. It seats 26 passengers and, including all equipment, weighs 6 tons or only 461 lb. per passenger. Owing to the haste with which the car was equipped, the truck was supplied with heavy cast-iron journals and cast-iron wheels, the latter weighing 235 lb. each, but these are to be replaced by cast-steel parts which will weigh only one-half as much. The original horse-car brakes have been retained and are giving satisfaction. It will be noted from one of the accompanying illustrations that this car has been fitted with the H. B. wheel guard.

Because of the light weight of the car and the use of roller bearings in the journal boxes and ball bearings in the armature journals, not more than two 5-hp motors are required for op-



erating at the schedule speed of 7 m.p.h to 8 m.p.h, making eight stops per mile. In fact, the car is so light that it can be easily pushed along a level track by one man. Eventually, this car will be operated on streets where the speeds will be only 6 m.p.h. The car body is mounted on a truck which is made up entirely of commercial riveted angles. Each pedestal carries three helical springs and is made of 5-16-in angle iron. Although the present truck is riveted only, the company would rivet and weld any future trucks in case it should decide to use additional storage-battery cars.

The batteries are of the Gould Storage-Battery Company's type TH, high capacity, pasted design, composed of 29 plates



Interior of Storage Battery Car, Showing Battery Crates Under the Seats

per cell and 44 cells per set. At 84 volts, the battery has a rating of 420 amp-hours. As shown in the view of the car interior, the batteries are placed under the longitudinal seats on each side. There are four crates of five cells each, and eight crates of three cells each. The battery covers are screwed down tightly. The battery gases are carried off by the natural ventilation which is afforded when the movement of the car sends air through a pipe on each side of the car. As this air passes over the batteries it drives off the odors and exhausts them under the step at the back of the car. There is no odor in the car from the batteries.

Other electrical equipment comprises two 5-hp, 1200-r.p.m.

8 in. long. The entire storage battery equipment, including the building of the truck, was carried out by the company at its Sixty-fifth Street shops. The approximate cost of rebuilding the body and manufacturing the truck was \$375.

DATA ON OPERATION OF THE STORAGE-BATTERY AND GASOLINE-ELECTRIC CARS.

Three accompanying tables are presented on the operation of both types of cars over exactly the same route, viz., on the

BATTERY CAR TEST, APRIL 2, 1910.

Total time elapsed (hours).....	10.35
Total distance traveled (miles).....	70.176
Speed, m.p.h. (actual running).....	7.25
Speed, m.p.h. (including stop-overs).....	6.78
Total kw-hours consumed (wattmeter).....	34.84
Kw-hours per car-mile.....	.496
Time lost by stop-overs (minutes).....	40 1/2
Actual running time (hours).....	9.675
Stops per mile.....	8

BATTERY CAR SERVICE RUNS, APRIL 5, 1910.

Total time elapsed (hours).....	9.133
Total distance traveled (miles).....	57.78
Speed, m.p.h. (including stop-overs).....	6.33
Actual running time (hours).....	8.64
Speed, m.p.h. (actual running).....	6.68
* Kw-hours consumed (wattmeter).....	31.24
Kw-hours per car-mile.....	.540
Time lost in stop-overs (hours).....	.492
Total number of stops.....	556
Stops per mile.....	9.62

\*Car run in on account of darkness owing to absence of headlight.

PERFORMANCE OF GASOLINE-ELECTRIC CAR, MARCH, 1910.

Revenue fares.....	12,084
Transfers and passes.....	3,833
Revenue miles.....	2,015
Dark miles.....	56
Gasoline, gallons.....	1,121
Cylinder oil, gallons.....	26.5
Platform expenses.....	\$154.54
Motor grease.....	\$7.32
Other expenses, including two brake shoes.....	\$30.25
Gasoline per revenue mile, .5563 gal. at 11.35 cents.....	6.314 cents
Cylinder oil per revenue mile, .01315 gal. at 38.50 cents....	.506 cent
Platform expenses per revenue mile.....	7.67 cents
Motor grease per revenue mile.....	.363 cent
Other expenses per revenue mile.....	1.501 cents

Total expenses per revenue mile.....	16.354 cents
Gasoline per mile of gross miles, .5413 gal. at 11.35 cents...	6.144 cents
Cylinder oil per mile of gross miles, .0128 gal. at 38.50 cents.	.493 cent
Platform expenses per mile of gross miles.....	7.462 cents
Motor grease per mile of gross miles.....	.353 cent
Other expenses per mile of gross miles.....	1.460 cents

Total expenses per mile of gross miles.....	15.912 cents
Total revenue per revenue mile.....	29.985 cents
Total revenue per mile of gross miles.....	29.174 cents
Total revenue for month of March.....	\$604.20
Total cost of operation, March.....	329.55

125th Street line and according to the same schedule. Two of the tables cover the experimental and service runs of the storage battery car made on two different days of April, and the third table is the log of the gasoline-electric car for March. It will be observed from the data on the test run of the battery car that it was operated for 70.176 miles on one charge at a schedule speed of 6.78 m.p.h., which included eight



Truck and Chain Drive for the Motors of the Storage Battery Car

motors, of the G. E. 1029, automobile type, operated at 40 amp, 84 volts with 50 per cent overwound fields. The platform controllers are of the S-34-D automobile type encased in wood. The car wheels are driven from the motors by two sets of geared chains, furnished by the Link Belt Company, as follows: Two 3-in., 15 teeth steel sprocket flanged wheels, two 2 1/2-in., 113 teeth cast iron, split sprocket flanged wheels, two silent chains, 3/8-in. pitch, 3 in. wide and approximately 10 ft.

stops per mile. The power consumption per car-mile under these conditions was .496 kw-hours, or about 83 1/3 watts per ton-mile. In the service runs, with 9.62 stops per mile, the power consumption per ton-mile was 90 watts.

From these results it is apparent that the car is giving very satisfactory results, so far as speed and power consumption are concerned. The crux of the problem, however, is the upkeep of the storage battery. It is hoped that the present experi-

ments will give the storage battery makers a line on what accumulators can do in this class of service, so that they can eventually make an offer to the Third Avenue Railroad Company to maintain the equipment of a specified number of cars for so much per car-mile. This price would cover the replenishment of battery acid and water, renewals of cells, etc. All that the railroad company would do in this connection would be to send the battery maker daily or monthly statements of the car mileage.

The table covering the March operations of the gasoline-electric car shows that in 27 days the cash revenue amounted to \$604.20, and the cost of operation to \$329.55. A total of 15,917 passengers was carried. The figures for 29 days of January, 1910, and 27 days of March, 1910, compare as follows, the January figures being given first: Total expenses per revenue car-mile, 16.282 cents and 16.354 cents; revenue per revenue-mile, 31.85 cents and 29.985 cents. It would appear that the cost of operation per car-mile for the month of April will be considerably reduced on account of the greater mileage which can be obtained in the same running time due to the elimination of snow, ice and slippery rails.

### PHASES OF THE PHILADELPHIA STRIKE

BY DANIEL T. PIERCE, EXECUTIVE ASSISTANT, PHILADELPHIA RAPID TRANSIT CO.

These notes are written partly in answer to many inquiries for information as to phases of the strike on the system of the Philadelphia Rapid Transit Company, and partly to emphasize some of the most clearly taught lessons of this struggle.

#### I

When the strike was called, at 1.30 p. m. on Feb. 19, there immediately began, even before most of the people of the city knew that a strike had been ordered, a reign of violence which continued to a greater or less extent throughout the strike. One car was burned and another car badly damaged by fire on the afternoon of the 19th. On the day following Sunday, and on Feb. 22, mobs in various sections of the city, but mainly in the territory from Germantown Avenue eastward, attacked cars and car crews with missiles, firearms and explosives. Over 2,000 panes of glass were broken on each of these days. Scores of arrests were made by the police, and it is true of the arrests of the days mentioned, as well as those that followed, that 50 per cent of the persons charged with rioting were 18 years of age or younger. As is usual in such cases, Union officials denied all responsibility for violence, but there was almost daily evidence that the stoning of cars was carefully organized by strikers and those working in the interest of the strikers. Mobs of young men and boys were urged on to violence by older men. A large number of strikers were arrested for inciting riots and using explosives.

During these early days of the strike the police were unable to suppress disorder. The utmost efforts of the men available for police duty were unsuccessful in quelling disturbances that broke out at points as far distant as West Philadelphia, Germantown, Frankford and Kensington. From the first the city administration had determined to protect the company's property, and, while making preparations to do this, requested the Governor to send the State police to the city. This was done, and on Feb. 24, 175 mounted State police arrived and were at once distributed over the section between Germantown Avenue and Front Street. Order was immediately restored in this district and time allowed for the enlistment of additional police. Nearly 2,000 extra policemen were employed by the city and assigned to the duty of protecting the company's cars and depots and maintaining order. The city firemen were also armed and placed on the same duty. When this had been done the State police were withdrawn, and from about March 1 the city police had no difficulty whatever in suppressing disorder. They could not, of course, prevent the occasional stoning of cars and assaults upon car crews, but crowds were not allowed to collect in such numbers as to become unmanageable, nor did

rioting continue after the police had arrived on the scene of the trouble.

One of the facts clearly shown by this strike is that rioting cannot be effectively suppressed except by radical measures. The great difference between the methods and effectiveness of the State and city police was that the State force had a reputation for firmness that made the use of their clubs and revolvers unnecessary, except in a few instances. On the other hand, rioters did not take the city police seriously until they had used their clubs very freely, and occasionally their firearms. During the first few days of the strike the stoning of cars frequently continued uninterrupted, notwithstanding the fact that there were policemen standing on front and back platforms with a club in one hand and a revolver in the other. It was not until both weapons began to be used in earnest that the stoning stopped and crowds quickly dispersed upon the appearance of the police.

A direct wire was placed in operation between the general manager's office and that of the superintendent of police, so that all trouble reports could be 'phoned instantly to the authorities. At 12 o'clock each night the company informed the police department how many cars would be operated from each depot on the following day, so that a sufficient guard could be provided for each car, in addition to the force that remained at the depots to guard property and answer riot calls in the vicinity. Several emergency police stations were also established and provided with automobiles for the quick transportation of police to the scene of outbreak.

The system of picketing adopted by the union constitutes the best answer to the question: How could the men be kept out so long? All strikers were ordered to report twice a day to the depot headquarters, and anyone who failed to do so was closely followed up by "entertainment committees." It is a fair statement that fear of consequences and loyalty to the union were in equal part responsible for the holding out of the men. No regular strike benefits were paid, as claimed by the union leaders. Possibly an average of \$6 or \$8 per man in all was paid during eight weeks.

#### II

On Feb. 27 a general strike movement was inaugurated in sympathy with the carmen. On that date a meeting of the Central Labor Union, comprising 127 locals, was held, and resolutions were passed providing that if city councils, the city representatives on the board of directors of the Rapid Transit Company, or the company's own action did not bring about arbitration of the matters in dispute by Saturday, March 5, a general strike would take place. The concluding paragraph of the resolutions adopted stated that the general strike was a protest against the action of the city administration in protecting the company's property and enabling it to operate its cars, and "We pledge ourselves not to return to work until all rights have been recognized and complied with."

No settlement of the carmen's strike was made by arbitration or otherwise within the time limit set by the Central Labor Union, and a general strike was accordingly called, to become effective March 5. The announcement was then made that "75,000 organized workers had quit their various employments in this city, to remain on strike until the Philadelphia Rapid Transit Company grants arbitration or effects a settlement with its striking employes."

The actual number of men who went out under the sympathetic strike order is impossible to determine. The Committee of Ten in charge of the general strike greatly exaggerated the number of men out, its estimates running at times as high as 140,000. The police reports indicated that perhaps 35,000 men were out for a very few days, but the number steadily decreased after the second day of the general strike, until on March 27, when the strike was formally called off, only a few thousand strikers were still out of work, and these were very largely the employes of textile mills in the northeastern part of the city.

The general strike at no time affected the operations of the Transit Company. Acts of violence did not increase, nor was

there greater difficulty in getting new men. As a matter of fact, the company's difficulties in this and other respects lessened as soon as the general strike was called, and continued to decrease throughout its continuance. The sympathetic strike was an absolute failure as a means of "bringing the company to terms," and as a demonstration of the coercive power of organized labor. The talk of a "State-wide strike" was abandoned after it became apparent that the Philadelphia general strike had failed.

### III

Under such conditions as faced the company when the strike of Feb. 19 was declared, it has been usual to engage new men through strike-breaking agencies. This has always been an unsatisfactory arrangement, for the reason that the agencies through which strike-breakers are employed do not, and cannot, carefully discriminate in the choice of men.

Anticipating in January that there might be a strike upon its system, the company had established offices outside of the city and examined and enlisted nearly 1,000 motormen, who, when the strike was called, were promptly shipped to the city. In this work only the company's own employes were engaged in the choice of men, and the examination of them as to their fitness for work on the cars. After the strike began this method of employing new men was continued at many points throughout the country. Offices were maintained for various periods of time, varying from a few days to several weeks, in Boston, New York, Baltimore, Washington, Norfolk, Richmond, Reading, Pa.; Wilmington, Del.; Cleveland, Ohio, and St. Louis, Mo. In addition to this, the company's employment officers travelled through small towns, picking up men wherever they could be found.

The results of this method were very satisfactory. It was no more expensive than the employment of men through agencies, and undoubtedly resulted in obtaining a better class of men than are received when an order is given to an agency to supply men without any condition being made as to their qualifications.

The enlistment of so many new employees, and the fact that the men at work were constantly molested on the street, necessitated the establishment of sleeping quarters and commissaries at all of the company's nineteen depots. The commissary became a regular department of the company's operation. The feeding of the men and the regular and extra policemen was in charge of a chief commissary, who had several hundred cooks and waiters on his staff. Requisitions were made daily upon the purchasing department for the food supplies. Kitchens were established at all of the depots, where food was prepared at all hours. As many as 2,000 loaves of bread per day were baked in the company's ovens. At the height of the strike the company was feeding approximately 7,000 men, including the policemen and regular employes, nearly all of whom remained at the depots over night.

This condition of affairs also existed on the elevated system, although that division had no trouble whatever, only about a half dozen of the elevated trainmen going on strike. Owing, however, to the intimidation of all men working during the strike, and the fact that the elevated service was continued later than usual, all of the employes of this system were housed and boarded at the 69th Street Terminal of the elevated. On this branch of the system not a trip was lost, nor was the service in any way affected by the strike. By this it is not meant that no difficulty was encountered in maintaining the service of the elevated, but, owing to the excellent management of the superintendent, not only did the great majority of the men remain loyal, but such difficulties of operation as were encountered were promptly overcome. The property was carefully guarded at all times, and the service was not only maintained at a normal level, but was largely increased throughout the strike.

Although the announcement that the company's power house employes would strike, or had gone on strike, was made almost daily by the labor men, the power houses were at no time affected. A few employes left the service, but these desertions

hardly outnumbered those that would have taken place under normal conditions.

Many of the families of men employed in the power houses, as well as those at the homes of loyal carmen, were systematically terrorized by threats of violence throughout the strike. The boycotting of men at work and of shopkeepers who sold goods to them was severely felt in the northeastern section of the city. This boycotting extended even to car riders.

### IV

Following the course of the strike day by day, it is evident that the most serious difficulty the company had—and this, above all, is the difficulty that public service corporations should most carefully consider before entering into a labor controversy—was the constant effort of outside parties to bring about arbitration or some form of settlement by negotiation with the strike leaders. That nearly all activities of this nature were well meant does not change the fact that they all had the disastrous effect of enabling the union leaders to hold the men out on promises that "something was going to happen." The mere fact that men of responsibility and influence consented to confer, even independently of the company, with the strike leaders was sufficient from week to week to hold off a return to work by the strikers. Had no encouragement whatever been given to the hope that outside influences would be brought to bear upon the company to induce it to make terms, it is doubtful if the strike would have lasted more than three weeks.

Apparently the public service corporation must be prepared in the event of labor troubles, not only to combat the strike and to operate under great difficulties, but to ward off constant attempts to force a "settlement"; that is, an ending of the trouble at whatever violation of right, justice and sound policy.

Another disadvantage under which the public service corporation labors is that the press will almost invariably support the striker's position. The influence of advertisers whose business is injured is effective in this direction, and so is the loss of circulation that is likely to follow a policy antagonistic to "labor." The newspapers are furthermore hurtful in that they give prominence and an appearance of truth to the most irresponsible statements emanating from labor leaders. The unexciting statements of a transportation company as to actual conditions cannot compete in interest with the outgivings of strike leaders who are held to no accountability whatever, and can say anything, or one thing to-day and something quite different to-morrow, without being called to account. No prevision, nor the fact that (as was the case prior to the beginning of the Philadelphia strike) public opinion favors the company before a strike, can avoid this condition after a strike begins.

### V

Some months prior to the calling of the strike in February the company had formulated a definite policy aimed to improve the working conditions of its men, to attract better men to the service and to hold them when once they were employed. For some years about one-third of the company's motormen and conductors were one-year men and this proportion of "floaters" seemed to be constant. On the other hand, the company had more than 1800 men who had been in its service six years or more. The desire was, of course, to increase the proportion of long-service men.

On the first of January a free pension and insurance system was inaugurated under which the beneficiaries of all employes received \$500 insurance. Twenty-three such insurance payments have been made so far this year, and seven employes who had reached the age of 65 after a service of 25 years, have been placed on the pension list.

When the strike was called the company was ready to put into operation a welfare department to which all employes could apply in case of need. Lunch rooms and comfortable recreation rooms at all depots were also planned and the establishment of them had begun in February.

With the exception of the pension and insurance systems, it is likely that the welfare work of the company will be greatly

retarded by the strike, but it is not the intention of the company to abandon these plans. The management believes that by the improvement of working conditions and close attention to the needs of the men, its system will come to be looked upon as offering extremely desirable employment. It is hoped also that in some measure at least the *esprit de corps* so noticeable upon some steam railroad systems and so scarce in the street railway world may be encouraged. Although the company's welfare plans have been deprecated by the union leaders, they seem to be appreciated by the men.

The restoration of harmony among its working force is one of the problems now receiving the most careful consideration by the company. It is impossible to tell at this time what will be the temper of the strikers who have been steadily returning to work for the past two weeks. Prior to the strike there was constant friction and conflict between the union and non-union elements, but it is believed that if this feeling has not disappeared, it will at least be kept under cover for some time to come.

### REPORT ON PITTSBURGH RAILWAY CONDITIONS

A report on Pittsburgh conditions by Emil Swensson who was engaged by the Pennsylvania State Railroad Commission to make an investigation in the complaint of the city against the Pittsburgh Railways Company, was made public the latter part of last week. It describes first the topographical difficulties of the Pittsburgh system, which are considered at length.

The next section of the report discusses the operation and construction conditions of the system and gives a sketch of the history of the Pittsburgh Railways Company. According to statistics contained in the report, in January last the company owned 670 motor cars and 140 trail cars, with 530,000 seats, and carried an average of 510,000 passengers. The report states that the key of the traction situation in Pittsburgh is the capacity of the downtown terminals between the hours of 5 p. m. and 6 p. m., when the majority of the people desire to go home and makes the following recommendations, among others:

The purchase of 260 cars of the 56-seat type as an additional equipment, and 80 cars of the same type to replace a number of the existing single-truck cars; 50 of these 340 cars may be trailers. The company should plan to increase the seating capacity of cars operated 5 per cent each year and should also replace each year about 10 per cent of its cars, so that there should be a regular annual addition of about 15 per cent to the rolling stock. The single-truck cars should gradually be retired.

A traffic bureau should be established to compile the information necessary to study the means of routing and operating the cars, and in connection with it a bureau of publicity should publish and distribute freely in the cars and other convenient places information as to the operation and service provided. This information should take the form of description of routes, time tables, transfer points, maps to the terminal district, etc., and pamphlets through which the public can be advised as to the reasons for changes in the service, etc.

A private-telephone system connecting all barns, stations, etc., should be provided, and where the stations are far apart intermediate stopping places should be equipped with telephones.

The routes should be divided into long and short hauls and the most attractive cars should be used on the short-haul routes so as to induce short-haul passengers to keep off all long-haul cars. As it will be impossible to handle all of the cars required in the terminal district between 5 p. m. and 6 p. m. as fast as patrons desire to use them, a limit should be placed on the loading capacity of the cars.

A number of the streets should be widened to permit of more tracks and rules of the road for other vehicles should be adopted giving the street cars the right of way in the street. There should be stricter police supervision of vehicle movement. Grade crossings on steam railroads should be abolished. Signs should be used to indicate all stops. Trucks for motors for 200 open cars should be procured immediately so that open cars can be put in service without removing an equivalent number of closed cars.

### TROLLEY FARMING SPECIAL OPERATED IN MASSACHUSETTS

The first electric railway farming special train to be operated in New England, was run on April 14, 15 and 16 in Massachusetts over the mid-state lines of the New England Investment & Security Company, having headquarters in Springfield. President L. S. Storrs of this organization has for some time devoted considerable attention to the problems of stimulating traffic and developing territory industrially through the agency of the electric railway, notably through the establishment of through passenger and express service between



Trolley Farming—Arrival of the Special at Worcester

the principal centers on the lines controlled by the company, and vigorous publicity of the aims and methods of working to attain the utmost prosperity of the railway system and its interconnected communities. In the belief that the street railway is in closer touch with the public than the steam road through its more flexible service and range of stops in operation, arrangements were made some weeks ago with the Massachusetts Agricultural College and the State Forestry Department, for the running of a special train of four cars over about 300 miles of track on the lines in the vicinity of Springfield and Worcester, for the purpose of bringing into co-operation important factors for the growth of profitable agriculture in western and central Massachusetts. The Springfield Board of Trade and the Country Work Department of the Y. M. C. A.



Trolley Farming—Arrival of the Special at Sturbridge

were also interested in the campaign, which practically placed the agricultural college on wheels for three days for the benefit of the general public.

The advent of the trolley farming special was extensively advertised for some days before the trips were started, the public interest being appealed to through the daily press, the weeklies, by means of dasher signs and large posters placed on car houses and in various community centers. A carefully arranged schedule was planned, allowing stops of from one to two hours each in the towns visited. About a score of the faculty of the Massachusetts Agricultural College, State offi-

cial and prominent men interested in farming and related industries accompanied the special. The schedule of communities visited was as follows:

**SCHEDULE OF FARMING SPECIAL, NEW ENGLAND INVESTMENT & SECURITY COMPANY**

April 14

Amherst .....	Leave	8:20 a. m.
South Hadley .....	Arrive	8:55 a. m.
South Hadley .....	Leave	9:55 a. m.
Russell .....	Arrive	12:35 p. m.
Russell .....	Leave	1:35 p. m.
Huntington .....	Arrive	1:54 p. m.
Huntington .....	Leave	3:57 p. m.
Springfield .....	Arrive	5:49 p. m.
Springfield, evening meeting, Board of Trade.....		8:00 p. m.



Trolley Farming—Cattle Judging at Oxford, Mass.

April 15

North Wilbraham.....	Arrive	9:28 a. m.
North Wilbraham.....	Leave	10:58 a. m.
Brimfield .....	Arrive	11:40 a. m.
Brimfield .....	Leave	1:40 p. m.
Sturbridge .....	Arrive	2:07 p. m.
Sturbridge .....	Leave	4:07 p. m.
Charlton Center.....	Arrive	4:50 p. m.
Charlton Center, evening meeting.....		8:00 p. m.

**TROLLEY FARMING SPECIAL OPERATED IN MASSACHUSETTS**

April 16

Oxford .....	Arrive	8:15 a. m.
Oxford .....	Leave	10:15 a. m.
Holden .....	Arrive	1:00 p. m.
Holden .....	Leave	2:38 p. m.
Sterling .....	Arrive	4:14 p. m.
Sterling .....	Leave	5:30 p. m.

A stop was also made in Worcester about noon, en route to Holden.

Each of the four cars comprising the special was a four-motor equipment with a 30-ft. closed body. About half the interior of each car was devoted to exhibits and reading mat-



Trolley Farming—Spraying Demonstration

ter bearing upon the special branch of agriculture which the car illustrated. One car was devoted to the exhibiting of farm fertilizers and corn; a second contained exhibits pertaining to dairying and animal husbandry; a third contained exhibits pertaining to fruit culture and insect life, and the fourth was devoted to forestry. Summaries of the exhibits follow:

**FERTILIZERS AND FARM CROPS, CORN CAR**

Illustrations of the results of fertilizer experiments with corn; the value of corn as a component ration for egg production; the value of lime for clovers and alfalfa; the use of fertilizers.

**DAIRY CAR**

Exhibit of utensils, coolers, centrifuge, etc., models, charts, feeds, milk tests.

**FRUIT AND INSECT CAR**

Spraying apparatus of all kinds; pruning tools, methods of correct and incorrect pruning; packing, mounts of insect pests and examples of the destruction wrought by insects and the methods of extermination.

**FORESTRY CAR**

Specimens of trees from State nurseries; exhibit of reforestation; browntail moth and other pests; specimens of para-

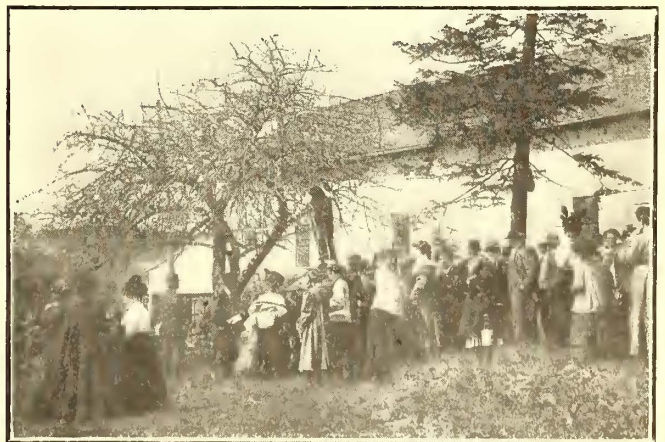


Trolley Farming—An Audience at Sturbridge

sites imported from foreign countries; forest fire fighting equipment, and literature describing the work of the department.

In a publication which the Massachusetts Agricultural College issued entitled "Massachusetts—The Land of Agricultural Opportunity," the roster of the special train lecturers was given, also the schedule of the cars and other facts about the new work. In addition a number of helpful articles were contributed under the titles, "The Passing of the Abandoned Farm," "A New Attitude Toward Farming," "Science and Reason in Farming," "The Crime of Forest Fires," "Danger from Tree Parasites," etc.

In all the cars the sign racks were pressed into service for special placards, and numerous circulars, bulletins and other publications were given away at the various stops. Prominent in the display was a collection of agricultural books bearing



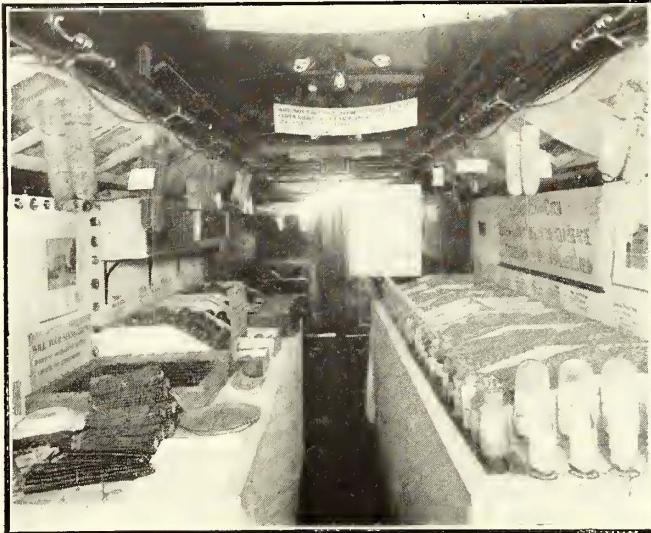
Trolley Farming—Pruning at Brimfield

upon the latest aspects of rural life. At each stop lectures were given upon farming topics by members of the party, either in the cars or out of doors, according to the attendance. The New England Investment & Security Company distributed folders and maps of its lines, with timetables and fare schedules, freight and express charges and classifications. Each person in attendance was also given a neat souvenir of the trip, several thousand of these being disposed of in the three days.

These souvenirs gave a complete list of the special train lecturers, the car schedule, details of the exhibits in each car; out-

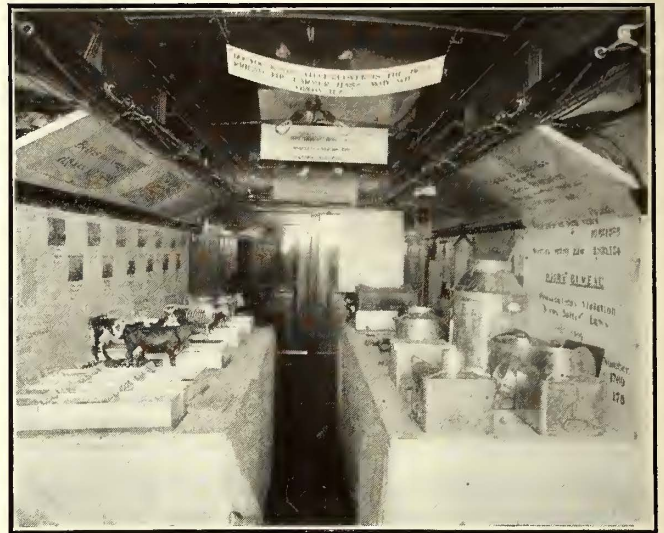
lined the interest of the street railway in the prosperity of the farmer and concluded with a discussion of what the State does for the farmer by reviewing the relation of the Agricultural College, the Massachusetts Agricultural Experiment Station and the State Board of Agriculture to the industry. The booklet pointed out that the extension and improvement of trolley service is bringing the farms closer to the markets as well as placing the farmers themselves nearer the cities, and it contended that an electric railway is not giving to communities the full measure of benefit which may be expected unless

Kenyon L. Butterfield of the Massachusetts Agricultural College, who spoke at length upon a campaign for rural progress, and paid a tribute to the New England Investment & Security Company for its enterprise in initiating the first trolley farming special to be run in New England. He estimated the annual value of the agricultural product in the towns served by the railway company as \$17,000,000, and pointed out the great benefits of a saving of even a few per cent in the cost of transporting these products by trolley. President Brown of the New York Central lines sent a telegram of regret on account



Trolley Farming—Fertilizer and Farm Crops Car

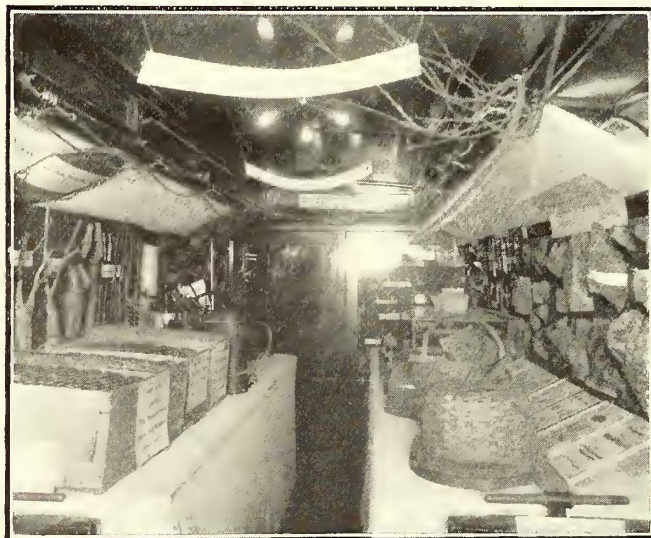
trolley express is a part of its service. The booklet stated that express service at freight rates is about what these facilities offer in the company's territory, and that it has been found that the benefits to the communities which get trolley express service are such that the larger business and increased prosperity of the public create increased passenger traffic for the electric railway company.



Trolley Farming—Dairy Car

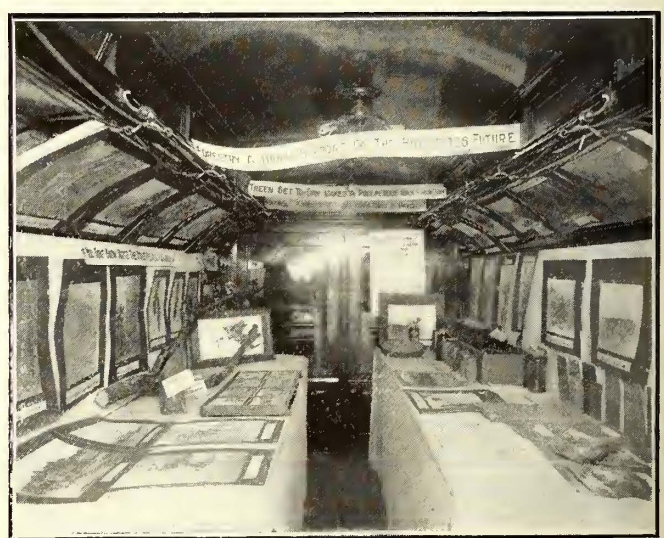
of his enforced absence, and reiterated his well-known views upon the importance of agricultural development.

The special train lecturers included Professors Hurd, Foord, Sears, Lockwood and Gribben, of the Massachusetts Agricultural College; Messrs. Brooks, Haskins, Smith and White of the Experiment Station; Messrs. Ellsworth, Rane, Harwood and Worthley of the State Departments; C. A. Stone; Spring-



Trolley Farming—Fruit and Insect Car

In the majority of cases the lectures at the different stops were well attended and enthusiastically received. The schools in the smaller towns were given special recesses to enable the pupils to visit the trolley special and two evening meetings were held. At the first, which was held in Springfield, President W. C. Brown of the New York Central lines had been scheduled to speak, but on account of his detention in New York C. C. Morrison, traveling passenger agent and immigration commissioner of the Great Northern Railway, gave a talk on the agricultural situation. He was followed by President



Trolley Farming—Forestry Car

field, C. H. Hathaway, Springfield Board of Trade, and H. N. Davison, secretary, Worcester Board of Trade. C. V. Wood, traffic manager of the New England Investment & Security Company, was in general charge of the trip and itinerary, assisted by the division officers whose territory was traversed.

The Belfort-Rechesy-Bonfol Electric Railway, which will be constructed partly in France and partly in Switzerland, will be about 18 miles long. Work is to begin in May, and it is scheduled to be completed in 1912.

**PAPERS AND DISCUSSION ON HEAVY ELECTRIC TRACTION IN ENGLAND**

The Institute of Civil Engineers, London, Eng., has just made available the full text of the three papers on electric traction of which a preliminary abstract was printed on page 43 of the *ELECTRIC RAILWAY JOURNAL* for Jan. 1, 1910. The subjects and authors of the papers were as follows: "The Equipment and Working Results of the Mersey Railway Under Steam and Electric Traction," by Joshua Shaw; "The Single-Phase Electrification of the Heysham, Morecambe & Lancaster Branch of the Midland Railway," by James Dalziel and Josiah Sayers; "The Effect of Electrical Operation on the Permanent Way Maintenance of Railways," by Charles Augustus Harrison. The three lines mentioned, together with the London & South Coast single-phase line of the Brighton Railway, constitute all the high-speed, heavy electric traction undertakings in England. The following abstract will present the more striking data brought out in the three papers which were read on Nov. 9, 1909, and in the ensuing discussion, which was continued from the session of Nov. 9 to the meetings of Nov. 16, Nov. 23 and Nov. 30, before being concluded.

**THE MERSEY DIRECT-CURRENT RAILWAY**

The Mersey Railway extends under the Mersey River, connecting Liverpool and Birkenhead. It was opened in 1886 as a steam railroad, 2 miles, 726 ft. long, but it is now 4 miles, 4092 ft. long. All of the seven stations, including the terminals, are underground. The electrification of the tunnel in 1903 was brought about to overcome the difficulties incident to steep grades, ventilation, pumping, etc., and to regain traffic which was gradually being taken by the ferries. Under steam operation the trains consisted normally of seven coaches, the number of trains per hour varying with the requirements. The electric service provides for a three-minute headway on the main line and six minutes on the two branches. The following table compares the two train services with regard to the number of trains, mileage, seating capacity, weights, etc:

**WEIGHTS OF TRAINS, MILEAGE AND SEATING CAPACITY, ETC.**

	Light traffic.		Heavy traffic.	
	Steam.	Electric.	Steam.	Electric.
Weight of train (unloaded), tons..	137¾	56½	137¾	122½
Number of seats per train.....	310	110	310	250
Weight per seat, lb.....	997	1,148	997	1,097
Number of trains per hour.....	8	20	12	20
Train-miles per hour.....	50.7	127.2	78.3	127.2
Ton-miles per hour.....	6,984	7,186	10,785	15,582
Seat-miles per hour.....	15,717	13,992	24,273	31,800
Stock: Steam—Locomotives, 18; cars, 96; trailers, 33.	Electric—Motor cars, 24; trailers, 33.			
Total seats: Steam, 4,280; electric, 3,156.				
Weight of stock in tons: Steam, 2,172; electric, 1,534.				
Note: One ton equals 2,240 lb.				

The electric cars are of the corridor, two-compartment type, 60 ft. long over the buffers and 8 ft. 8½ in. wide. They are mounted on Baldwin trucks and carry four Westinghouse No. 83, 100-hp motors, geared 56:20. This equipment made it possible to increase the original schedule speeds from 12.6 m.p.h. to 18 m.p.h. in one case and from 20.1 m.p.h. to 28.2 m.p.h. in another. The train make-up varies from two to five cars, the latter containing three trailers. The power station has three 1200-kw d.c. generators and a storage battery having a capacity of 1000 amp-hours and a momentary capacity of 2000 amp. One generator is generally in reserve.

In making a comparison of working results for typical years of steam and electrical operation, the author gives the various kinds of mileage and other data as follows:

**MILEAGE**

	Steam.	Electric.
Train-miles per year.....	310,944	828,674
Ton-miles per year.....	43,843,000	67,330,000
Seat-miles per year.....	96,392,000	127,548,000
Average weight of train (loaded), tons.....	141	81.4
Average number of seats per train.....	310	154
Average weight per seat, lb.....	1,019	1,176
Note: One ton equals 2,240 lb.		

Briefly, the result of the electrification of the Mersey Railway is as follows:

**GENERAL RESULTS**

	Steam.	Electricity.
Number of trains per hour, light traffic.....	8	20
Number of trains per hour, heavy traffic.....	12	20
Average speed, including stops, m.p.h.....	15.6	19.9
Time required for journey, including stops:		
Main line, mins.....	15	11
Branch line, mins.....	10	8
Train-miles per annum.....	310,944	828,674
Ton-miles per annum.....	43,843,000	67,330,000
Seat-miles per annum.....	96,392,000	127,548,000
Average weight of train (loaded), tons.....	141	81.4
Total expenses per train-mile, after allowing interest on additional capital for electric works, cents.....	97.0	47.6
Total expenses per ton-mile, etc., cents.....	0.688	0.5856
Total expenses per seat-mile, etc., cents.....	0.312	0.3096
Passengers carried for six months ending June, 1908.....		5,719,572
Note: one ton equals 2,240 lb.		

The cars are inspected for minor repairs every two days or after running about 300 to 400 miles. The general practice is to examine controllers, lights, car-doors, bells, motors, brake-shoes, brake-levers, motor-suspensions, springs, wheels, and lubrication of bearings every other day. The electropneumatic control is inspected weekly; the multiple-control wiring and connections are examined and tested monthly, the triple valves every three months, and the brake-cylinders every six to nine months. The motor cars are overhauled every 38,000 miles. The trailer-cars run 50,000 to 60,000 miles before overhauls.

The brake-shoes are chilled on the face to a depth of 5/8 inch and have an aggregate life of 10,000 miles for motor-cars, and of 13,500 miles for trailers. When electrical working was first commenced ordinary cast-iron brake-shoes were tried and gave an average life of 2200 to 2500 miles. The life of the motor-pinions averages about four years, representing 200,000 miles. No gear-wheels on the axles have yet worn out, although some of these have done 350,000 miles, and it is anticipated that a further life of two years will be obtained.

**THE HEYSHAM-MORECAMBE SINGLE-PHASE RAILWAY**

The Heysham-Morecambe single-phase double-catenary railway of the Midland Railroad is a 6600-volt, 25-cycle line, equivalent in length to 8.5 miles of double track. The electrification was completed on June 8, 1908, and a long illustrated description of the work was presented in the *ELECTRIC RAILWAY JOURNAL* of July 4, 1908.

The experiments made by the authors on the impedance of the 85-lb. steel rails employed showed that while their resistance to direct current would be 0.085 ohm per mile, their impedance at 25 cycles with about 25 amp is 0.37 ohm per mile.

The rolling stock now consists of three trains, there being one Westinghouse and two Siemens motor cars. Taking the Siemens motors on their forced-draft rating of 210 hp, the weight of the actual electrical equipment is 0.035 ton (one ton = 2240 lb.) per hp, whereas the Westinghouse apparatus weighs 0.041 ton per hp. It has been found that if certain feasible changes are made the weights can be reduced to 0.020 ton and 0.035 ton per hp. This contrasts with the figures of 0.016 ton and 0.02 ton published for d.c. equipments and coming out to 0.020 ton to 0.025 ton per hp in practice. The 60 ft. single-phase, 420-hp motor car, seating 72 passengers, weighs 36 tons on the revised figures, as against 32.25 tons for a similar d.c. car.

Obviously, while the revised a.c. equipment is by itself about 40 per cent heavier than similar d.c. equipments, the percentage by which the weight of a single-phase car exceeds that of a d.c. car is much less, namely, about 12 per cent, and still less is the percentage difference in the weights of the respective complete trains, viz., for the standard Heysham train 5½ per cent.

The motor-cars were specified for a 20-minute service between Morecambe and Heysham, and a 15-minute service between Morecambe and Lancaster, each with a three-car train (trailer—motor-car—trailer), the Siemens train weighing 77½ tons without, and 89½ tons with, 180 seated passengers, the corresponding Westinghouse weights being 74½ and 86½ tons. It was considered by the railway company that two 150-hp motors per motor-car would satisfactorily carry out the work, and the respective contractors supplied motors of their nearest standard sizes to this, the Siemens motors being nominally of

180 hp, and the Westinghouse motors of 150 hp. The former motors are rated by their makers at 210 hp when under forced draft. Various tests made by the authors showed power consumptions of only 88.7, 99.3 and 100.76 watt-hours per ton-mile as against a calculated consumption of 110 watt-hours for d.c. equipments. The accelerations obtained were as follows: Sustained accelerations giving 25 m.p.h. in 25, 22 and 21 seconds, or 1.0, 1.14, and 1.19 m.p.h. per second were given by the 7.7-, the 8.15-, and the 10-hp-per-ton trains respectively, which would with better gear-ratios be improved to 19 m.p.h. in 14, 13, and 10.5 seconds, or 1.36, 1.46, and 1.81 m.p.h. per second. The maximum attained accelerations were 1.1, 1.3, and 1.4 m.p.h. per second, improvable to 1.55, 1.8, and 2.0. The new gear-ratios taken are for the highest gear-ratio and smallest wheel available, namely, 3.7 to 1, and a 40-inch wheel. The results of these tests clearly established (1) the watt-hour economy of single-phase equipments in high-schedule speed service, a result quite contrary to frequently expressed opinions based apparently on inadequate data; (2) that the accelerating possibilities of single-phase motors are in no way less than those of d.c. motors; (3) that single-phase trains in high-schedule-speed service need not be seriously heavier than d.c.

main shaft of the bow was fitted with ball-bearings to make the bow follow the wire better; replacement of main high tension cable in car by bare wires owing to breakdowns of insulation; change to continuous excitation of main transformer during running instead of switching off and on, which caused breakdowns in the insulation of the transformer; hot-wire overload cut-out replaced by magnet-operated tension spring type which takes less time to reset itself; simple pad lubrication substituted for scheme of pumping oil to supply tanks and siphoning through pipes to the bearings; brush-holder connections changed from solid cast rings to bent copper rods to reduce the number of parts and increase clearances. The Westinghouse motors and equipment required no alterations except that to the high-tension cable through the car.

The mileage lost during the 15 months ending Sept. 30, 1909, through electrical defects of any kind whatever due to power house, line, or cars, amounted to 212 miles, and the cars made 99.63 per cent of the total mileage they were called upon to do. Most of the breakdowns of Siemens motors have been due to lack of sufficient surface insulation between the stator end windings. The armature defects have been due to the commutator, there being a gap between the quill and the clamp-

LIFE OF WEARING PARTS OF TWO TYPES OF SINGLE-PHASE EQUIPMENT.

Name of part.	Number in use per car.	Total renewals during period.	Average mileage between renewals per set.		Remarks.
			Total mileage run.	Best mileage between renewals per set.	
<i>Siemens Equipments</i>					
Two cars.					
Bow-collector wearing-strips (aluminum)....	2	14	71,459	10,200	Experiments with materials of varying hardness were made during this period, otherwise the mileage would have been higher. Over 100 of these brushes were renewed owing to breakage brought about by unsuitable attachment of shunts. Since fitting new brush-gear without shunts in June, 1909, no breakages have occurred. Allowing for wear of the broken brushes, the average life comes out at 47,000 miles. Since fitting brushes without shunts one set has run 6400 miles and the wear has been only 1-16 inch, which gives a life of 100,000 miles.
Main motor-brushes.....	64	179	71,459	25,000	
Main motor-bearings (armature).....	..	..	....	....	
Contactors contacts.....	56	5	71,459	....	The lubrication of these bearings has not so far been satisfactory, and several renewals have been made owing to hot bearings. Of the others one set of bearings on car No. 2237 ran 10,000 miles before renewal was necessary.
<i>Westinghouse Equipment</i>					
One car.					
Bow-collector wearing-strips (galvanized iron)	1	6	39,066	6,511	The low average life is due to three of the strips being very soft. Those now in use are harder. A large number of these were broken at first, due to brush-pressure being too great and brushes being of poor quality. Allowing for wear of the broken brushes, the average life comes out at about 20,000 miles.
Main motor-brushes.....	48	195	39,066	9,020	
Main motor-bearings (armature).....	..	..	....	....	One set of bearings ran 19,000 miles before renewal was necessary.
Contactors contacts.....	16	4	39,066	....	

trains; and therefore that (4) single-phase working is perfectly applicable to and suitable for such services. The tests have all been carried out on a forced-draft service-capacity basis, but the installation of forced draft has involved no appreciable complication. It should also be mentioned that there was no trouble from the commutators or other parts of the equipment.

After being erected two years and in use fully 18 months, the contact wire showed no wear.

The transmission-efficiency was difficult to ascertain but appeared to be about 97 per cent from bus-bars to bow. The leakage from the overhead line amounted to 0.5 kw to 1 kw in dry weather; this rose in wet weather to as much as 20 kw for a short time after switching on, while leaks of about 10 kw lasting 1/2 to 1 hour have been recorded. The average leakage appeared to be about 1.5 kw to 2 kw or 0.992 kw-hour per hour per mile of single track. The consumption at the car-collectors, eliminating ohmic losses and leakage in the line and adding the switching mileage, amounts to 50 watt-hours per ton-mile.

One of the appendices contains the accompanying table, showing the life of wearing parts.

The Siemens car equipments were altered as follows: The

ing-ring, up which carbon dust worked to the inside of the segments. Some metal (borings) was also found inside the commutator and may have been a contributory cause.

On Jan. 19, 1909, one of the Westinghouse armatures went to "ground," the fault having the appearance of being caused by some foreign material having got in between the windings and the supporting end drum, and having been driven in with sufficient force to break through the insulating material on the end drum. As this insulation consisted of thick micanite the conclusion that mechanical damage initiated the breakdown seems unavoidable. The motor took current on several trips after the development of the failure and the car took a train of 165 tons on one motor.

EFFECT OF ELECTRICAL OPERATION ON THE PERMANENT WAY

The paper by Dr. Harrison discussed the effect of electrical operation on the permanent way maintenance of railways as illustrated on the Tynemouth branches of the North Eastern Railway. This d.c. third-rail installation, which has been in service for five years, comprises 29.5 miles of route or 75 miles of single track. Stations are 1 1/4 miles apart. The rolling-stock consists of 62 motor and 44 trail cars, each seating 60 passen-



gers. The trains vary from one to nine coaches. Freight is also handled by this company.

The following table compares the train service under steam and electrical working. It will be noticed that, although the train-mileage has been nearly doubled, both the car-mileage and the ton-mileage are slightly less under the new conditions.

	Steam.	Electric.
Average schedule-speed (m.p.h.).....	16.7	20
Increased speed of electric trains (per cent) ..	—	19
Acceleration (m.p.h. per second).....	0.5	0.75
Maximum train-service per hour.....	10	15
Normal train-service per hour.....	1	4
Train-miles per annum.....	600,000	1,199,729
Car-miles per annum.....	3,900,000	3,772,601
Ton-miles per annum.....	115,200,000	104,600,000
Average number of cars per train.....	6.5	3.14
Maximum number of cars per train.....	7	9
Average weight of train (tons of 2240 lb.)..	192	87.2
Passenger coaches in use (normal service)...	84	85
Locomotives in use (normal service).....	14	—

It was not to be expected that the upkeep of the electrical equipment could be dealt with without some increase in the maintenance costs, but the additional cost has not proved to be a heavy one. All repairs and renewals connected with the electrical equipment are carried out under the permanent-way inspectors by the ordinary track gangs, special provision being made by the use of insulated tools and working regulations to avoid danger to the men by shock.

The steam driving wheels were 66 in. in diameter, while the electric driving wheels are only 36 in. The additional hammer of the smaller wheel when going over the intersecting gap of a crossing, coupled with the non-spring borne weight of the motors, has a marked influence on the life of a crossing. Instances have occurred of a crossing which would have lasted nine years requiring renewal at the end of five years. To meet the new conditions of wear, especially on curves and at crossings, Sandberg and manganese-steel rails have been installed. So far as the straight track is concerned, no definite opinion can be formed as to the increase of wear under the new conditions, but it is certain that the effect is not very marked.

With a regular service of trains every 15 minutes in each direction the difficulties of maintenance were naturally increased, and it became desirable to adopt a type of ballast requiring less attention than the ash-ballast with which the branches were laid. After experimental lengths had been ballasted with various classes of stone, it was eventually decided to adopt a hard limestone with an outside limit in size of 2 in. The fact that the stone has a high insulating resistance as compared with the ash-ballast was also a factor in coming to this decision.

With regard to the cost of maintaining the electrical equipment of the track, while it is not possible to give a figure that will be applicable to all lines and conditions of working, a general figure, which is the result of experience, may be interesting. Assuming, as in the North Eastern Railway case, that no special staff is organized to deal with the work—that is, it is dealt with by the permanent-way inspectors—and that the equipment is laid down with proper regard for the service to be met, £50 per annum per mile of single track should cover all likely contingencies. It is more difficult to ascertain the cost of the increased wear on crossings, curves, etc., nor could any assumption be justified until experience has been considerably extended. In any case it would not be fair to debit electrical working with the wear due to the rapid acceleration obtained, as without this acceleration the increased schedule speed would not be possible, and steam locomotives for this acceleration would, owing to the increase of weight, be equally if not more severe on the track.

During the busy hour in the evening, fifteen trains are dispatched from two terminal platforms at the Central Station, while during the "rush" traffic, five trains are dispatched at one-minute intervals, each carrying upward of 500 passengers. In the mornings, when traffic is even more concentrated, trains up to 550 ft. long are employed. During the summer the holiday traffic between Newcastle and the coast is very heavy, upward of 100,000 passengers being dealt with during the day. The cityward traffic in the evening at these times is largely

concentrated into less than three hours, and whereas the present train service deals with such loads with ease, the superseded steam trains were frequently working until 2 a. m. after a holiday. Although the number of trains has been doubled, the train and signal movements at the central railway station have been reduced.

ABSTRACT OF DISCUSSION

Dr. Harrison said that he did not intend to fight the single-phase system, but he did think that one good point in favor of the third-rail system was that repairs could be effected without cutting off the current. He had also been struck with the fact that apparently the motor cars of the single-phase system weighed more than those on the North Eastern line. The latter weighed only about 30 tons, while he understood that the Siemens and Westinghouse cars on the Heysham railway weighed 37½ tons and 40½ tons, respectively. It was well known that electric motor-cars affect the rails to a certain extent and if more weight were added it must have some damaging effect on the rails.

John A. F. Aspinwall said Mr. Shaw's paper was a very good illustration of the way in which an electrical system enabled a great deal more work to be got out of trains. In one case it was shown that more useful work was obtained with a 250-seat electric train than a 310-seat steam train. With reference to Dr. Harrison's paper, he said that he had not the slightest doubt that the rapid wear of the rails upon curves was due entirely to the fact that the center of gravity of the vehicles was so low; hardly any of the weight except that of the comparatively light car body was much more than 2 ft. above the rails. Hence, in going around curves the whole weight was thrown with great force against the outer rail, thereby causing considerable grinding. This would disappear, however, if one were to adopt the new type of electric locomotive designed by the Pennsylvania Railroad in which the center of gravity has been brought much higher, thereby making an electric engine very much like a four-coupled steam locomotive with a forward pony truck. Mr. Harrison stated that the cost of third-rail work might be taken at £50 per mile per annum. He was not quite sure what was included in that figure, but he might say that the expenses of the Liverpool-Southport Railway included the third-rail, the fourth-rail, all the insulators, all the bonding and all the accessories connected with the third and fourth-rail, totaled to about £40 per mile per annum.

Philip Dawson agreed with what Mr. Shaw had said as to the impossibility of making a comparison between steam and electric traction on any basis such as ton-mileage or train-mileage for the simple reason that electricity afforded possibilities of utilizing existing facilities in a way that was impracticable with steam. The only fair comparison was one made on a financial basis. He was a thorough believer in the d. c. system, which had given very satisfactory results, but that was no reason why, under other conditions, or possibly, under the same conditions, the single-phase system should not also give an excellent account of itself. He had worked out some data from actual motor performance curves for a given run with a distance of ¾ mile between stations, that being practically the average distance on the section between Battersea Park and Peckham Rye on the London, Brighton & South Coast Railway, which had been operated with single-phase since the beginning of January, 1909. In these calculations he had taken various average speeds from 20 m.p.h. up to 28 m.p.h. These speeds did not include stops, but were the average speeds for traveling over the given distance. The potentials were 500 volts d. c. and 6000 volts a. c. The weights were 147.3 tons for the d. c. train and 162.6 tons for the a. c. train. The equipments consisted, respectively, of eight GE-66 and eight Winter-Eichberg-51 motors. The tests with the three-car a. c. train loaded up to 160 tons and run over a distance of ¾ mile at varying speeds had fully borne out his calculations. The energy consumption per train-mile for the d. c. train was smaller than that of the a. c. train—the watt-hours being watt-hours on the train up to an average speed of just over 20 m.p.h. This was because of the fact that of two electric trains equipped, respectively, with a. c. and d. c. motors, equal in

size and number, the former was considerably heavier, and naturally the watt-hours were more for the heavier train. The curious fact was noticed that, after passing a certain average speed, notwithstanding the greater weight to be propelled, alternating current became more economical than continuous current. Making the comparison simply on the basis of watt-hours per ton-mile, there was practically nothing to choose between either system up to 24 m.p.h. or 25 m.p.h., but beyond that, alternating current was more economical. This alone, however, was not a fair basis of comparison, because, after all, the amount of energy that had to be paid for was not that actually utilized on the train, but the amount generated at the power station.

Mr. Dawson then gave the results of a number of test runs which he said were made under the best possible conditions and should be considered in that light only. The tests consisted of a series of six runs between Battersea Park and Peckham Rye and return. There were four intermediate stops of 20 seconds at each station, and the average distance between the stations was  $\frac{3}{4}$  mile. The shortest distance between any two stations was 1900 ft. On those six runs, the average energy per ton-mile measured on the train, including everything except switching, was 71.8 watt-hours per ton-mile. The average speed, including stops of 20 seconds at the four intermediate stations, was 21.2 m.p.h. The maximum acceleration was 2.06 ft. per second per second, and the average acceleration from rest to a speed of 37 m.p.h. was 1.5 ft. per second per second, the train weight being made up to the figure agreed upon in the original contract, namely, 148 tons. The average power-factor for the six runs was 80.8 per cent. The starting current on the level never exceeded 120 amp at 6600 volts, and the maximum current at any time never exceeded 184 amp. On another day, when a great deal of switching was necessary, the average power consumption worked out at 81 watt-hours per ton-mile and the average distance per train run on that day was just a little more than 100 miles. The average speed was about 25 m.p.h., excluding stops, and 21.8 m.p.h. including stops. The average distance between stations on these runs was 4620 ft.

Mr. Dawson said that it had been sometimes suggested that with collecting bows in use the wire would wear seriously, or if the wire did not wear, the collector strip would wear in consequence of its pressure against the conductor wire. In his experience, some of the trains had run nearly 5000 miles and the bows were still in excellent condition and probably would last many thousand miles more. The experience on the Hamburg-Altona single-phase railway was that the bows lasted about 16,000 miles. With regard to the large difference of weight which had been mentioned as existing between d. c. and a. c. equipment, he thought that the maximum difference between a train having a. c. and d. c. machinery was less than 10 per cent and that the minimum was nearer 5 per cent.

H. M. Hobart said he would much rather stop arguing and come to the understanding that single-phase equipment had substantially the same efficiency as d. c. equipment because he did not believe himself that the difference was great enough to be worth discussing. He would not have discussed it at all if the statement had not been made that the d. c. apparatus required more energy per ton-mile. He did not assert that the difference in favor of the Lancashire & Yorkshire Railway d. c. trains was 7 per cent. It might be 10 per cent or it might be 4 per cent, but it was enough to justify the statement that single-phase equipments were, as regards energy consumption on the train, distinctly less economical on the ton-mile basis than equivalent d. c. equipments.

Charles H. Merz said that the results presented in the papers showed the advantages of electric traction under certain conditions of service and illustrated its revenue-earning abilities. For instance, Mr. Shaw showed that whereas the train mileage per passenger increased from 0.046 to 0.059, the ton-mileage per passenger decreased from 6.49 to 4.91. Dr. Harrison also showed that while on the North Eastern Railway the train-mileage had increased by 100 per cent the ton-mileage actually had decreased. When going into the question of electrification from the standpoint of the commercial results, the question was

not what system should be adopted, but what speed and service were desired.

C. A. Carus-Wilson said in connection with the wear of rails that engineers needed to go back to the experience of steam-railway engineering and abandon the attempt to run their trains with such exceedingly heavy trucks; it would be better to adopt the steam-locomotive type with the driving wheels direct-coupled and rigidly connected with the locomotive, the whole being steered by a light pony truck.

J. R. Chapman, who was chief engineer of the London Underground Electric Railways at the date of this discussion, said that much of the trouble from rail wear attributed to the electric rolling stock might be due to the fact that electric cars were frequently called upon to run over a roadbed that was not adapted to them. As an instance, he mentioned the absence of corrugation and side cutting on the London tubes which were designed for electric operation in contrast to the trouble on the older underground lines which were using exactly the same trucks and motors.

A communication received from W. Geipel asked why high-tension direct current could not be used for electric traction. The writer recommended a method of working shunt-wound motors on the regenerative d. c. system, including a modification of the Ward Leonard motor-generator method.

A communication from A. Schmit contained figures on the cost of three high-tension overhead lines as given to him by the Siemens-Schuckert Company with reference to the Hamburg-Altona Railway in Germany, the Seebach-Wettingen Railway in Switzerland, and the Rotterdam-Hague-Scheveningen Railway in Holland. The Hamburg-Altona line is operated at 6000 volts, 25 cycles, and cost, inclusive of high-tension feeders, automatic tension devices, section insulators, cut-off switches, etc., about £1,100 per mile of single track. The Seebach-Wettingen line is operated at 15,000 volts and 15 cycles. Its overhead construction consists of wooden poles, instead of the elaborate lattice poles and bridges used on the Hamburg-Altona line. Its total cost, therefore, was only £840 per mile of single track. The Rotterdam-Hague-Scheveningen Railway uses lattice poles and light bridges. The cost of construction, increased because of unfavorable soil conditions, was about £1,200 per mile of single track. On the Hamburg-Altona line the average distance between the overhead bridge is about 48 m (157 ft.); on the Seebach-Wettingen line the average distance between poles is 50 m (164 ft.), and on the Rotterdam-Hague railway about 48 m (157 ft.). Experiments on the Seebach-Wettingen line have shown that spans up to 100 m (328 ft.) can be used. With this spacing the average cost of overhead line construction would not exceed £800 to £900 per mile of single track.

J. Sutherland Warner wrote that as long as rigid trucks were employed, in which the axles were held parallel to each other by the truck frame, it would obviously be impossible to reduce flange pressures. The expedient of raising the center of mass and thus affording a limited relief by the rotation of the locomotive around a longitudinal axis, was certainly not worth resorting to, because it involved chains or connecting rods to the drivers. Such an arrangement could not be conveniently adopted for electric motor cars.

## MEETING OF CENTRAL ELECTRIC TRAFFIC ASSOCIATION

The Central Electric Traffic Association met at Lima, O., on April 16 and discussed a variety of business. It was finally decided not to issue any milk and cream tariff for the present, but to postpone the matter indefinitely. The question of checking a tariff covering Merchants' Despatch freight was discussed and it was decided to leave this matter open to the call of the chairman. A table of distances was discussed, and it was decided to issue such a table, the same to be formulated along the same lines as the Joint Passenger Tariff. The mileage between all points covered by the Passenger Tariff will be shown in the same manner. This tariff will be issued after the chairman has the necessary data. The meeting adjourned to meet at the Anthony, Ft. Wayne, on May 14.

## CITY TRACK CONSTRUCTION\*

BY W. A. HEINDLE, SUPT. CONST., TRI-CITY RY., DAVENPORT, IA.

In the preparation of this paper the aim has been to touch upon the materials and methods employed in track construction, suitable for cities of small size and for railway companies with limited expenditures. The types and methods described refer particularly to the track construction recently carried out in the cities of Davenport, Rock Island and Moline.

## RAILS

The selection of rail type is more or less limited by the city authorities. From the viewpoint of design and serviceability the standard T sections are certainly the best, and should be used on all unpaved work. They will be selected from the standpoint of economy, as they cost about \$8 less per ton than high T or girder rails. Standard T-rails are not deep enough to permit the laying of a satisfactory piece of pavement. All T-rail track, when paved with brick, has a tendency to rut on the gage side of the rails, especially under heavy wagon traffic. The best results, however, are obtained with the high T or girder rail. We are limited in our Davenport work to a 7-in. T-rail, while we are compelled to use a 7-in. girder rail on the Illinois side of the river. All things considered, the high T will be found most suitable and serviceable, provided a satisfactory form of pavement be installed. When vehicular traffic is heavy, the girder rail has special advantages. It is the writer's opinion that a rail, 7 in. in depth, is ample for all ordinary requirements. A high T of 70 lb. to 80 lb., or a girder rail of 80 lb. to 90 lb. weight per yard, is strong enough as a beam to care for any ordinary city service, provided good quality of material is secured. Granted that the joints are the weakest part of the track, it seems logical to spend money in improving joints rather than in purchasing excessive weight of rail. A study of rail wear shows some astonishing results. An examination of scrap rails on a prominent eastern road indicates a total wear of 15 per cent. in an original weight of 107 lb. per yard. As new rail costs approximately \$41 per ton, and the scrap value is about \$12 per ton, at present prices, the cost of this 15 per cent. wear is certainly excessive. An examination of girder rail sections indicates that 15 per cent. wear is obtained only after the wheel flanges have cut into the base of the groove, so that further depth of rail or increased weight will not add materially to its wearing qualities, the limiting feature being the depth of flange and depth of groove. For city work, rails should be purchased in 60-ft. lengths, with a certain percentage of shorts that are multiples of the tie-rod spacing, thus avoiding the necessity of selection in track laying.

## JOINTS

The joints, as made by the rail mill, will be found rather deficient in strength, and one is obliged to resort to some special form of joint. Both the Nichols and Clark joints possess excellent merits, but are rather too expensive for small systems, as they involve special appliances for their application. The thermit and electric weld joints, both excellent, and not requiring bonding, have the same disadvantage, but are both to be preferred to the cast weld joint, in which the large bulk of molten cast iron must necessarily affect the wearing qualities of the rail at the joint. The selection of a suitable joint therefore narrows down to the Continuous, Weber or Atlas type. These joints, being easily applied without any special tools, have the further advantage of holding up the rails by their sole plate form. These joints are purchasable at about \$3.50 per joint, and appear to be the best joints on the market to-day. They are specially designed for giving clearance space for concealed bonds. I believe for city work, in paving, joints should be 6 bolt, 26 in. long, with bolts 1 in. in diameter. The bolts need not necessarily be fitted with nut locks where the work is laid in pavement.

## TIE RODS OR BRACED TIE PLATES

With high T or girder sections, provision, other than the ties themselves, must be made for holding the rails to gage. With some roads, braced tie plates are standard, but are dependent upon the holding power of the spikes, and are therefore liable to failure. The use of tie rods spaced from 6 ft. to 7 ft. 6 in. assures the best results.

## SPIKES

The standard railroad spike, 5½ in. x 9/16 in., is almost universally used. I would like to call attention to the merits of the screw-spike, especially in soft wood ties, where its holding power is far superior to that of the ordinary spike.

## BONDS

It is the consensus of opinion that a satisfactory bond has not as yet been invented. Present-day practice has narrowed this question down largely to the bond with the compressed terminal, fitted to either the base or the web of the rail, to the twin terminal for application to the rail head and to the soldered or brazed bond for application to the base, web or head of rail. Each type has its merits and demerits. Personally, I believe the brazed bond gives the best results under all conditions, and insures absolute contact between copper and rail. I have not as yet lost faith in the soldered bond; we are applying these in the Tri-City construction with excellent results, all being concealed under the joint. Our bonds have very large contact areas and give us a margin of safety, should the solder not flow over the whole area. Our good results, however, are dependent upon careful installation, which in a nutshell is the secret of all successful bonding.

Whatever kind of bond is applied, its design should be such as to give a contact area, between copper and steel, of at least 13 times the cross section of the bond. Crossbonding, in city work, should occur at intervals of about 400 ft. The bonding of special track depends upon the character of the layout. No dependence should be placed upon the various pieces for the return circuit. Independent long bonds or jumper cables must span the entire job.

## TIES

Steel ties of I-beam section have certain merits, especially in track work with concrete foundation. These can be purchased punched to gage, are easily installed, hold the rails firmly and furnish an excellent means of anchoring the rail to the foundation. The ordinary wood tie should be of standard size, 6 in. x 8 in. x 8 ft. long, and if untreated, of the best wood obtainable, preferably white oak. Owing to the scarcity of white oak, several softer woods are available, especially if they are treated. It will be found good practice under all circumstances to purchase creosoted ties. The treatment need not be 10 or 12 lb. per cubic foot, as in standard railway practice, but as low a treatment as 7 lb. will be found satisfactory for city track work. We have been using red oak with 7 lb. treatment. This tie costs approximately 80 cents, Davenport delivery.

The spacing of steel ties may vary from 4 ft. to 7 ft. 6 in. on centers; that of wooden ties, from 2 ft. to 4 ft., depending upon the type of construction. The writer's preference is to lay all rail with staggered joints and to have joints suspended rather than supported.

## TYPE OF CONSTRUCTION

The character of the construction is entirely dependent upon local conditions, and is frequently specified by the city engineer. The most substantial form of construction, with the use of either steel or wooden ties, is secured with the solid concrete foundation. In this type, the excavation is made full width and to a depth of 4 in. or 6 in. below the base of ties. After the ties and rails are put in position and blocked up to grade, concrete is thrown in the trench and brought to proper height for forming the paving base. Where crushed stone is used for ballast the same method is pursued, the broken stone being filled to such a depth as will allow for the depth of the paving with its base. The concrete stringer construction, which is in vogue abroad and is coming into more frequent use in this country, is very suitable for light service. In this class of construction, the trench is excavated to the depth of the

\*Paper presented at Annual Meeting of Iowa Street & Interurban Railway Association, Sioux City, April 21-23.

paving base, after which extra excavation is made for the concrete stringer and cross cuts for ties. The concrete stringer is ordinarily made about 18 in. in width and 9 in. to 10 in. thick. The ties are embedded in concrete, and it is the writer's practice to put in the entire bulk of concrete, including the paving base, as one mass. In this class of construction it is absolutely necessary that the rail be anchored to the concrete and not allowed to work under passing wheels.

In all cases special attention must be paid to the nature of the subsoil. All bad spots must be carefully rolled or tamped, to guard against undue settlement. In our work at Davenport the relative cost of materials makes our concrete stringer construction slightly cheaper than the stone ballast. This, however, we do not recommend for very heavy service, preferring to install the solid concrete or stone ballast construction where heavy interurban cars are to be handled. Another advantage of the stone ballast construction is the fact that car service can be turned upon it immediately, whereas any concrete foundation requires about seven days for setting before it can be opened to service.

For solid concrete work, concrete made of 1 part of Portland cement, 3 parts sand, and from 6 to 9 parts of stone is suitable. The exact proportion of the stone depends on its coarseness, or, more correctly, on its voids. For the concrete stringer, concrete made of 1 part of Portland cement, 3 parts of sand and 5 to 6 parts of stone should be used. In this mixture the mortar will more than fill the voids of the stone. This, however, is desirable, as the concrete should be mushy and pack solidly under the base of the rail. Rather than specify any definite size of stone, I prefer to use the run of crusher, with dust taken out. For the paving base, proportions of 1, 3 and 9 are recommended. The use of mechanical mixers undoubtedly secures more uniform concrete than mixing by hand.

#### PAVING

The selection of paving materials rests principally with the city authorities. While asphalt presents the neatest appearance, it is hardly suitable for track work, as it disintegrates under vibration and water. Where asphalt must be laid, however, it is advisable to lay longitudinally, three or four courses, or a toothing course of brick, adjoining the rail. Creosoted wood block is coming into extensive use, and is a very satisfactory paving material, but somewhat expensive. With care the wooden block can be laid so that any swelling due to moisture will not affect the track gage.

All things considered, vitrified paving brick seems to afford the best material for the purpose. The use of T-rail may require special brick for forming the flange-way. Where vehicles use the railway right-of-way, these special bricks will cut out in the course of two or three years, and the pavement will become unsightly. Better workmanship can be secured by using beveled stone blocks for forming the flange-way or by using standard brick, starting the first course entirely beneath the rail head and giving the pavement the proper crown. This is satisfactory, provided the depth of wheel flange is not greater than the depth of rail head.

Before laying the paving, the space between head and base of rails, not occupied by the brick or block, should be filled with a slightly moist mixture of 1 part of cement to 9 parts of sand. If this is not made too moist, it can readily be applied with a shovel.

Whatever type of pavement is adopted, it is essential that a suitable concrete base 5 in. or 6 in. thick be provided. The wood block or brick should be laid upon a sand cushion and the joints filled with paving pitch. In the Davenport track construction, the brick joints were originally poured with cement grout. No allowances were made for expansion, and in some instances the brick has cracked. Repairs are extremely difficult under these conditions, as the brick will break rather than part at the joint. Pitch jointing has the advantage of being waterproof, provides for expansion, is less noisy than cement grout, and the brick can be torn up and relaid without much damage. With cement grout, several days must elapse

to provide for setting, whereas with pitch joints traffic can be turned on within a few hours.

#### DRAINAGE

Track drainage is essential and depends entirely upon local conditions. Poor subsoil can frequently be made suitable by drainage, and it is advisable to install a drain at each low point in the track grade to care for surface water.

#### SPECIAL TRACK WORK

As indicated above for ordinary track work, only in a greater degree, the foundation for special track work must be practically perfect. I believe it to be money well spent to have a concrete base under all special track work. This base will serve for frequent renewals of the rail and special pieces. The special work itself should be the very best obtainable. The output of the three principal makers is of very good quality, and improvements are being constantly made. It should always be of solid manganese, "hard centered" or "guaranteed" construction. It may be either iron bound, in which the rolled rail is held together by a body of cast iron, or the pieces may be all cast steel. In either case the parts subjected to the most wear should be inset and renewable, if necessary. The three latest types of tongue switches, the "Wharton heelless," the "Lorain tadpole," and the "Pennsylvania steel pinless," are all an advance in design and worthy of installation. By careful designing of special track layouts, it may be possible to have the same radius for all switches and mates, and perhaps numerous frogs could be of the same angle. With this in view, the number of spare pieces carried in stock can be minimized. The question of compromise joints between special track work and the abutting rails should be given more careful consideration. One frequently finds very poor connecting joints. These should either be properly designed and installed or a piece of the abutting rail should be supplied the maker for welding to the section forming the special track work. In conclusion, city track should be well built, on solid foundation, with paving substantial, durable and pleasing to the eye, and laid with all possible economies to reduce costs, provided the economy is not carried to such an extent as to mitigate in the least the goodwill and sufferance of the public.

### COMMUTER TRAFFIC COMPETITION BETWEEN STEAM AND ELECTRICITY

Evidence multiplies to show the tendency of increased electric railway facilities to decrease the service on competing steam roads in distinctly suburban territory. Practically every city and State supply examples of this kind, but it is not often that specific figures showing parallel columns of population and train service are available. Hence statistics of this kind recently presented to the Massachusetts Legislature in connection with the main line of the Boston & Maine system show that between Beverly and East Somerville, respectively 19 and 2 miles from Boston, decided reductions in train service accorded way stations have followed trolley competition in 5 recent years. At Danvers the train service decreased 13.8 per cent in face of a population increase of 20.6 per cent; at Peabody the train service fell off in the same proportion although the population gained 37.9 per cent; Swampscott had its service cut 3.9 per cent against a population gain of 70.3 per cent; Revere lost 38.1 per cent of its steam trains and gained 115.5 per cent in dwellers; Chelsea had its service reduced 25.4 per cent against a population growth of 30.3 per cent; Everett lost 19 per cent of its trains and gained 105.6 per cent in population; and at two stations the train service was entirely cut off. In practically every case successful trolley competition has been enhanced by the operation of through cars of the Boston & Northern Street Railway Company into the Sullivan Square elevated terminal or into the Scollay Square loop of the Boston subway, and there is no question that the expanding suburban service of the Boston Elevated Railway Company has influenced the situation. On the west of Boston a curious example of the effect of street car competition is afforded by the Boston & Albany station at Cot-

tage Farm, 3 miles from the South Station, in the Longwood district of Brookline. Not a train stops at this station from Boston until about 11.30 a. m., and the last train stopping leaves the city at 6.35 p. m. This station is barely outside the Back Bay district. At Allston, 4 miles out, the frequent trolley service has been followed by a gap of nearly  $\frac{3}{4}$  hour between trains on the steam road in the evening rush period.

### MEETING OF THE COMMITTEE ON SHOP ACCOUNTING

On April 14, there was held at the headquarters of the American Street & Interurban Railway Association in New York a meeting of the joint committee on shop accounting containing three members from each of the Engineering and Accountants associations. Those present were John Lindall, superintendent of rolling stock and shops, Boston Elevated Railway Company, N. E. Stubbs, auditor of the United Railways & Electric Company of Baltimore, Charles Hewitt, superintendent of motive power, Philadelphia Rapid Transit Company, and P. S. Young, comptroller of the Public Service Railway Company, Newark, N. J. Owing to the resignation of W. G. Gove, superintendent of equipment, Brooklyn Rapid Transit Company, as chairman, the meeting was to have been held under the direction of the new chairman, A. D. McWhorter, master mechanic of the Memphis Street Railway Company. Mr. McWhorter, however, found it impossible to be in New York for this meeting and in consequence, the direction of affairs was turned over to Mr. Young. In addition to the members of the committee as named, there were also present H. H. Adams, superintendent of rolling stock and shops of the Metropolitan Street Railway Company, and M. R. Boylan, general auditor of the Public Service Railway Company.

Referring to the previous meetings of the committee, Mr. Hewitt said that the plan had been for Messrs. Gove, Lindall and Hewitt to submit individual detailed reports on the subjects of track, shop and power respectively. The idea in the committee's mind was to work up some kind of a cost system that would give the engineers information which is not furnished by the standard system of accounting without, however, interfering with that classification. Mr. Lindall agreed with this idea and submitted a tentative division of the various items which came under shop work, showing how they could form proper subdivisions of the standard classification. He suggested the 1,000-ton mile basis as the most practicable for comparison, but said that a knowledge of the age of equipment is also essential. There was some discussion among the members of the committee on the advisability of separating the results secured with revenue and non-revenue cars which did not carry passengers.

Mr. Young said that his idea of the committee's work was that it should develop a system of keeping cost accounts of a character not necessarily to be shown in reports to any commissions. He thought that the work of the committee should be a development of that done by the joint committee of the Engineering and Accountants Associations on blanks for shop records and accounts as presented at the St. Louis convention in 1904.

Mr. Adams explained that his method of getting shop costs of certain details interfered in no way with the account numbers of the auditing organization. When he desired to know the cost of a certain motor detail, for instance, he made a job number under the proper account number and eventually the job number item was charged to the proper heading by the auditor upon advice from the mechanical department. Mr. Hewitt thought it would be practically impossible to bring about any changes in the existing primary accounts, but it seemed to him that certain of the items were now illogically arranged. Thus fuel, which is the most important item under power, is the fourth or fifth account, while the wage item is the first on the list. Lubricants also were given a separate subdivision account instead of being placed under supplies,

although the lubrication only amounted to a fraction of 1 per cent. Mr. Young believed that if an attempt were made to arrange the items in the order of their importance, it would upset a great deal of the work that had been done in the past. It developed during the discussion that in the Public Service shops the men make up their own time accounts.

The committee then took up the matter of subdivisions of various primary account numbers as presented in the final pamphlet of the Accountants' Association. Mr. Hewitt suggested the further subdivision of account No. 30 on power plant equipment as follows: (1) boiler repairs; (2) engine repairs; (3) electric repairs, including the generators and generator parts, cables, switches and other items as mentioned in the classification; (4) miscellaneous machinery repairs. He said that boiler cleaning is now sometimes charged to operation and sometimes charged to maintenance. He charged it to maintenance as he thought that removing scale from a boiler was as much a matter of maintenance as replacing the tubes. Boiler compound was charged by him into maintenance as a special cost, but ordinarily he charged boiler compound to miscellaneous supplies and operation. Another suggestion made by Mr. Hewitt was the subdivision of fuels into hard and soft coal, crude oil, natural gas, etc. He did not think it necessary to keep separate accounts for individual batteries or types of boilers. His company operated fire tube and water tube boilers of five different manufacturers and there was not enough difference in the unit cost to warrant such a subdivision. He had found it desirable, however, to separate boiler repairs into cleaning and setting, as this made it possible to trace unusual expenses under certain items, but probably such a division would not be necessary for companies operating only one power house. He did not think that flue costs and stack costs should be included with the boiler costs. They were not very large items and were misleading as to the proper cost of boiler maintenance. Feed water heaters and economizers would be placed by him under miscellaneous machinery as the charges against them were not continuous enough to warrant separation. This was true of other auxiliaries.

Mr. Young then read a portion of the 1904 joint report with reference to a system of shop records and accounts. In this connection, Mr. Hewitt said that he had worked out a form of flexible time card covering the division of repair work, as many of his men worked for fractions of a day in different places. The impulse for getting up a card of this kind was due to a discussion on time cards at the previous meeting of the committee. He promised to bring a copy of the card to the next meeting.

The committee then discussed in detail the schedule presented by Mr. Lindall. One of the changes made in the schedule was to use the word "superintendence" in connection with equipment rather than titles which are not the same in different companies for the identical work. Another change was the addition of steam locomotive costs to electric locomotive costs owing to the fact that quite a number of electric railways use steam locomotives for shifting purposes, handling freight, etc.

After some further discussion of Mr. Lindall's report, it was decided that copies of it should be sent to the committee members together with copies of the power and track reports of Messrs. Hewitt and Gove. The individual members, therefore, will have an opportunity to study these proposed subdivisions beforehand and be ready to discuss them in full at the next meeting, which will be held at the Association headquarters on April 29.

The Compagnie Generale de Railways et d'Electricité of Brussels, in its annual report for 1909, announces that the Cairo Electric Railways and the Heliopolis Oases Company have almost completed their 5-mile railway between Cairo and Heliopolis. The power station, which is located on the Nile River at Choubrah, has a capacity of 10,000 hp. The plant has been completed, and the electrical equipment is being tested. The cars are being built in the shops at Heliopolis.

## PRIZE ESSAYS ON ACCIDENT PREVENTION ON THE ILLINOIS TRACTION SYSTEM

The Illinois Traction Co. recently offered a series of three prizes of \$10, \$5 and \$2.50, respectively, for essays on the best methods of preventing accidents. The contest was open to all trainmen on the interurban lines of the company. Digests of those contributions receiving the prizes are presented herewith. They were handed to the general superintendent of interurban lines, C. F. Handshy, signed by assumed names, and the awards were made Apr. 16. The judges were H. C. Dillon, J. H. Manning and George W. Black, all assistant attorneys in the legal department of the Illinois Traction System.

### FIRST PRIZE ESSAY

Although thousands of dollars are expended for appliances to reduce accidents, they still occur. Someone blunders and there is loss of life, suffering, and great expense to the company, together with a loss of its reputation for safety. As we are interested in electric railways we shall deal with them alone.

The two men who directly operate a train, the conductor and motorman, must both be cool-headed, careful and understand all their duties, and they must work in harmony, as no two forces pulling in opposite directions will be successful. Each man should understand all the different equipment, because a man who is thoroughly familiar with the mechanism of his car and his duties, will be more apt to avoid an accident than the man who takes just enough interest in his work to be able to receive his pay. When a man in the employ of an electric system is called for duty, he should cast all other thoughts from his mind and attend strictly to business. He may have unlimited ability, but if his mind is elsewhere he will not successfully avoid accidents.

The motorman, in the majority of cases, is responsible for the accidents. He should make a careful study of the air brakes, be on the lookout for open switches, and when approaching a meeting point should always try his air a short distance back from the switch to see that the brakes are working properly. He should also carefully examine his car before going out on the road. He should not be contented with the instructions he receives from his superiors, but should strive to learn everything it is possible for him to know with regard to the operation of his train. Having that knowledge and interest he will be more prepared to avoid accidents, and in case one should happen he will know what to do, and how to do it, so that the best interests of the company may be served.

When the motorman starts out on his trip he should calculate the weight of his train, the condition of the track and rails, and of the machinery on his car so that he may know at what rate of speed he can safely run his train and avoid any mishap. To examine his train thoroughly before starting out, he should be on duty at least 30 minutes before the time of departure.

The motorman should never forget to whistle at all whistling boards, and when approaching a road crossing he should whistle in such a way that he will make a continuous sound from the whistling board right up to the crossing.

When approaching a derail he should try the air brake far enough back from the derail, calculating the weight of train, condition of rails and the grade, so in case of failure of the air brake he would have a chance of stopping with the hand brake. He should watch his time card to know just what time he is due at certain sidings and meeting points, and in case he should become 10 minutes late he should call the dispatcher so that the latter may have a chance of keeping the other trains on schedule time. When going in on a siding for trains to pass, he should see that the switch is properly opened and closed, and should not move his train until he is certain the switch is properly lined up.

Before starting on his run the conductor should be certain that the train is provided with the proper flags and fuses, have his lanterns filled and in proper working order before

going out on the road, and if the weather is cold, should see that the car is warm and comfortable and has enough fuel for the trip. He should make sure that his passengers are on the right train.

When the car passes over tongue switches he should be on the ground watching the trucks so that if the switch point flies over he can signal the motorman to stop in time to avoid splitting the switch and doing damage to the track and equipment. When stopping to discharge passengers he should alight from his train first and remain near the steps of the car to assist passengers off the car, and when all passengers are off assist those who desire to get on, and then follow the last one to prevent him falling when the car starts up.

The conductor should not forget to be polite and considerate in his intercourse with the public at all times and to look after the welfare and comfort of the passengers. He should occasionally walk up and down the aisle to see that all are comfortable and that no one puts some heavy parcel in the overhead rack where it is liable to fall and hit someone. If there are little children on the train he must see that they do not run up and down the aisle nor get hurt in any way. He should follow the rules absolutely in regard to the taking of train orders, be very careful in the receipt and reading of them and then put them in some place where they will not be forgotten. He should not stand on the lever-derail when it has been turned down, as he might lose his balance before the hind wheels are over. It is better to hold the lever down. On taking a siding after opening the switch the conductor should hang the lock in the switch, and when car is in the clear should give the proper signal for the approaching train.

Never act in haste while on duty. Be self-reliant and responsible; use your best judgment in all things.

### SECOND PRIZE ESSAY.

When we roll out of the terminal at the beginning of our run we have thousands of dollars of our employer's property in our hands, as well as the lives of the traveling public. We should bear these facts in our minds and should crowd out all thoughts antagonistic to our work. An overlook, or a lapse of memory, oftentimes for only a moment, and the harm is done; after that, no amount of mental anguish can repair the damage.

The first requirement of every railroad man should be a clean life. No man, who has spent his time, previous to starting out on his run, in drunkenness and dissipation can give satisfactory service on the road, nor can he be depended upon to handle his train safely. The employee should also study the rules of the company, not to be able to repeat them "poll parrot" fashion, but so as to act according to them in case of necessity. He should school his mind to act quickly. There may be places suited to a sluggish mind, but they are not in the train service.

Self-reliance is another requirement. Caution is of sterling virtue, but should not be practiced to the point of cowardice.

After an accident does occur never discuss its probable cause or result, nor place the blame, for by so doing the reputation of an innocent person may be tarnished. We should do all we can to alleviate suffering, should any person be injured, and never lose sight of the fact that while in uniform we represent the company which gives us employment, and whose standard of efficiency is often judged by our conduct.

### THIRD PRIZE ESSAY.

Employees of a railroad are, at all times, both in the discharge of their duties as employees and as citizens, under the constant view of the public. Failure to be efficient as employees or valuable as citizens in the community brings reproach upon them and the company with which they are connected. Nearly all accidents can be attributed to someone's carelessness. The man who has a habit of doing his work right at all times, no matter how long it takes, is the safe man, but the man who doesn't care how the work is done so long as he gets through with it makes trouble for all.

Conductors, don't allow your trains to be backed unless you

are at the rear end, because someone should always be there to give signals to the motorman and warn people of the danger. Don't allow your motorman to back out of a siding until he gets a signal, either hand, lamp, or bell signal. Give proper signals. Do not whistle or halloo; anyone may do that and move your train when you don't want it moved. Warn passengers to stay on the car at meeting or passing points or unusual stops as they may step in front of the passing cars. Don't hurry when taking train orders. Don't hurry when flagging a railroad crossing. Look both ways on all tracks, before giving the motorman a signal to proceed. Don't try to put your part of the responsibility on others, no matter how much experience they have had or how careful they are, as they will not be held responsible in case an accident should happen. Don't carry old orders that have been executed. They are dangerous. When your motorman whistles out a flag don't go up to the front end to find out what the trouble is; get back with danger signals, as something may hit you while you are finding what is wrong. Stay out until called in by the motorman and leave a fusee out to protect yourself going in. When protecting the rear end of your train you can't go too far back. When a switch is thrown the points should always be examined to know that they fit up properly. It takes a little more time, but it may save time and money afterwards.

If the employees are loyal and true to the company's interests the company will be loyal to them in time of trial. Make all company business private business. Be on the lookout for things that might happen and cause an accident and do something, if possible, to prevent it, and no bad results will follow.

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### CONVENTION OF THE MISSOURI ELECTRIC, GAS, STREET RAILWAY & WATER WORKS ASSOCIATION

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The fourth annual convention of the Missouri Electric, Gas, Street Railway and Water-Works Association was held at the Madison Hotel, Jefferson City, Mo., April 14, 15 and 16. The total registration was more than 60, central-station and electrical delegates being in the majority among the operating men. The first session was called to order Thursday afternoon, April 14, the delegates being welcomed to Jefferson City by Mayor Heinrichs. The first paper on the program was "The Luminous-Arc Rectifier System" by Louis Friedman, of the Chicago office, General Electric Company. J. E. Harsh then read a paper on "Securing Profitable Day Load." Thursday evening was devoted to the annual smoker.

The Friday session opened with Charles S. Lewis' paper on "Condensers for Small Central Stations." Mr. Lewis advocated the greater use of condensing plants by the smaller central stations. This paper was illustrated with sketches of the various types of condensers described. P. A. Bertrand mentioned a surface-type condenser in which the cooling water is sprayed on the condenser coils, from which it is evaporated by fan draft, the latent heat of evaporation thus rendering a relatively small amount of water sufficient. C. C. Barnard explained that with a crude condenser system which he has installed a saving of 35 per cent per month in the water bill (at 20 cents per 1000 gal.) is effected, while a 25 per cent decrease in the coal consumption has been noted, although the latter may be partially due to a new engine and improved operating methods. However, the condenser has rendered 25 per cent more engine capacity available. The pumps for this condensing system are maintained at considerable expense, and the city hydrant water, sometimes 80 deg. Fahr. in summer, must be taken through a cooling tower before use. In answer to the question of P. W. Markham as to whether a condenser could be advantageously installed in a plant where coal costs \$1.50 per ton, P. A. Bertrand declared that since in any case equivalent condenser capacity is cheaper than engine capacity, the former should be considered when augmenting plant. Prof. H. B. Shaw told of a series of practical problems given his students in Missouri State University by which they were asked to obtain the total

annual costs of engines of different sizes and types, including all fixed charges, interest, etc., with various prices of coal. The results of all these studies invariably show condensing equipment to be cheaper than all other types, although this consideration does not include cost of attention. Professor Shaw also declared that as the cost of turbine units decreases very rapidly at about the 500-kw size, this type of machine should receive more attention in the choice of prime movers for small stations.

An appropriate talk was made by Governor Hadley, of Missouri, who presented to the public-utility operators his views of the present and proposed Missouri public-service commission laws. He explained how the present Missouri law permits each municipality to appoint a local public-service commission which has the power to investigate the workings of companies in its territory, but can only recommend its findings to the local councils, having no power to enforce its rulings. Thus encumbered the work of the commission is not effective, the enforcement of its findings returns to political circles and the companies investigated are often subjected to considerable annoyance without result. Governor Hadley favors a State commission with powers comparatively similar to those of Wisconsin and New York, its members to be composed of technically qualified experts whose opinions will be weighted with sufficient authority to make them acceptable to both companies and public. The idea of such a State-wide commission seemed to take favorably with the members of the convention, and several requested the Governor to advise them of ways to assist in securing the passage of a bill creating such a commission by the next Legislature. Governor Hadley declared that he would appreciate any individual or co-operate aid in obtaining this commission for Missouri. Following the Governor's talk, Secretary C. L. Clary explained how his company had recently undergone an investigation by the local commission, which, probably through its ignorance of the electrical business, had settled upon rates so ruinous that operation would have been impossible.

Following a paper on "Vertical Gas Retorts," by S. Watts, H. W. Clark submitted a description of his electrically driven water-works plant at Mattoon, Ill.

"Questions of Public-Service Plant Operation and Management" was the title of a paper on the electricity supply business by George McCullum, an attorney for the central-station interests of Springfield, Mo. The convention banquet was held in the hotel parlors Friday evening.

Saturday morning's session was opened with the reading of Prof. H. B. Shaw's paper, "Data on Electric Plants," which was followed by a paper on "The American Diesel Oil Engine in Public Service" by Edwin S. Harrison. This type of internal-combustion oil engine possesses marked economy of operation and will operate at from one-half to its full rated load with a fuel consumption of from 6.5 gal. to 8 gal. of oil per hour. This fuel costs from 2 cents to 3 cents per gallon, delivered, producing a kw-hour at the switchboard for from 0.375 cent to 0.3 cent, including all operating costs. The simplicity of fuel supply, which is controlled automatically by the engine governor, and the avoidance of coal and ash handling were pointed out as important advantages of the Diesel engine. This engine is claimed to have a net efficiency of about 32 per cent—twice that of the producer-gas outfit and almost three times that of the best steam plants. The cost of Diesel equipment, however, is about \$70 or \$80 per horse-power, including all equipment up to the generator. P. A. Bertrand brought out the point that owing to the inability of internal-combustion engines to carry overloads, the engine capacities of such outfits must be figured large enough to carry the generator overload for emergency service. C. L. Clary thought that with the low power-factors often encountered, engine sizes were usually chosen too high, so that the generators frequently became overloaded with extra-phase current, while their prime movers were yet only partially loaded. Mr. Bertrand showed that the installation of oil engines in place of his present steam plant would have cost five times as much, although Mr. Harrison assured him that the saving in buildings and in other

accessories would greatly reduce this ratio. He also called attention to the sustained efficiency and extremely low operating cost of the Diesel engine over a wide range of loads within its rating.

The election of officers and executive committee for 1910 resulted in the following: R. J. Irvine, Marshall, Mo., president; F. E. Murray, Louisiana, Mo., P. A. Bertrand, Jefferson City, Mo., and J. E. Harsh, Joplin, Mo., vice-presidents; and N. J. Cunningham, Springfield, Mo., secretary and treasurer. The executive committee comprises P. J. M. Loewe, Moberly, Mo.; S. E. Bronson, Ozark, Mo.; Herman Spoehrer, St. Louis, Mo., and Percy W. Markham, Brookfield, Mo. The next meeting of the association, on the invitation of Herman Spoehrer, secretary and treasurer of the Union Electric Light & Power Company, St. Louis, will be held at St. Louis, in April, 1911.

STATISTICS OF NEW YORK CITY RAILWAYS

Statistics of a number of electric railway companies in New York City for the year ended June 30, 1909, have been made

WHY STREET RAILWAY FARES SHOULD NOT BE LOWERED\*

BY L. D. MATHES, GENERAL MANAGER UNION ELECTRIC CO., DUBUQUE.

Back in the "stone age" when urban transportation consisted of a light animal-drawn vehicle operated on strap rail, which was attached to fence post ties at 4 ft. and 5 ft. centers, the 5-cent piece was generally adopted as reasonable exchange for the service rendered. The horse car lines at the adoption of this rate of fare provided its patrons with a ride of 2 or 3, and in no known instance an excess of 4 miles. With the wonderful development of the population of American cities and suburbs, and incidentally the cultivation of the art of electric railway construction, we have noted many instances where with the uniform 5-cent fare the companies are providing 10, 15 and 20 miles of transportation, which means an income ranging as low as one-quarter cent per mile.

Edwin S. Webster, the eminent Boston authority, in a recent expression is quoted as follows: "The problem of securing an adequate revenue from passenger fares appears to

STATISTICS OF EIGHT ELECTRIC RAILWAY COMPANIES IN NEW YORK CITY FOR YEAR ENDED JUNE 30, 1909

YEAR ENDED JUNE 30, 1909	INTERBOROUGH RAPID TRANSIT COMPANY			Union Railway Company	Hudson & Manhattan R. R. Co.	Coney Island & Brooklyn R. R. Co.	Dry Dock, E. Broadway & Battery R. R.	Third Avenue R. R.	Forty-Second St., Manhattanville & St. Nicholas Ave. Ry. Co.	Central Park, North & East River R. R. Co.
	Subway Division	Elevated Division	Total							
Miles of road operated...	25.63	37.68	63.31	54.38	3.31	24.136	15.39	16.97	11.41	12.80
Miles of track operated...	81.94	118.05	199.99	108.72	6.80	48.75	24.16	35.14	23.05	27.043
Average number of passenger cars operated...	613	1,274	1,887	270	45	157	47	181	99	56
No. of passenger car trips during year...	1,744,475	3,543,424	5,287,899	992,110	279,198	474,154	304,131	475,081	428,255	292,304
No. of passenger car hours during year...	2,568,105	4,148,274	6,716,379	1,106,147	110,888	753,738	317,368	980,799	546,943	(No record)
No. of passenger car miles during year...	46,220,888	62,519,959	108,740,847	9,319,844	1,700,902	6,383,698	1,896,216	6,996,588	3,661,116	1,840,042
No. of passengers carried at 5 cents...	237,451,171	275,737,974	513,189,145	37,712,596	14,192,352	27,880,446	10,839,730	45,115,175	24,121,915	9,763,346
No. of passengers carried at other rates...	978,975	512,222	1,491,197	0	0	2,510,372	0	0	0	0
Total amount of fares...	\$11,911,717.55	\$13,807,387.58	\$25,719,105.13	\$1,885,629.80	\$709,617.60	*\$1,466,167.17	\$541,986.50	\$2,255,758.75	\$1,206,095.75	\$488,167.30
Average per revenue car mile—cents...	25.77	22.05	23.63	20.23	41.72	23	28.58	32.25	32.94	26.53
Number of transfers collected...			(No record)	14,895,135	0	6,255,171	13,074,043	5,772,237	5,226,797	634,436
Passengers carried free...			(No record)	(No record)	(No record)	465,815	(No record)	(No record)	(No record)	(No record)
Total revenue car-miles...	46,220,888	62,612,507	108,833,395	9,327,753	1,700,902	6,383,698	1,896,216	6,998,375	3,661,116	1,849,707
Non-revenue car miles...	543,001	395,909	938,910	28,028	50,711	33,060	3,987	7,977	3,989	
INCOME ACCOUNT (a)										
Total revenue from transportation...	\$11,917,313.00	\$13,858,079.44	\$25,775,392.44	\$1,892,443.08	\$709,617.60	\$1,466,167.17	\$541,986.50	\$2,257,815.51	\$1,206,095.75	\$488,167.30
Advertising, privileges, etc...	204,791.64	250,751.36	455,543.00	28,650.00	33,944.96	11,539.04	7,200.00	25,250.00	24,000.00	13,142.89
Sale of power...	68,242.30	192,250.95	260,493.25	265.64				1,127,654.12		
Rent of yards, land, etc...		31,393.99	31,393.99			1,467.10	78,827.43	165,865.95	5,025.00	10,979.95
Miscellaneous...	653.58	917.86	1,571.44		138.76		1,665.74		5,462.00	464.66
Total revenue from st. ry. operations...	\$12,191,000.52	\$14,333,393.60	\$26,524,394.12	\$1,921,358.72	\$743,701.32	\$1,479,173.31	\$629,679.67	\$3,576,585.58	\$1,240,582.75	\$512,754.80
Maintenance of way and structures...	\$603,335.08	\$839,306.44	\$1,442,641.52	\$120,087.65	\$100,577.00	\$50,813.52	\$24,132.86	\$184,347.41	\$75,364.55	\$11,234.78
Maintenance of equipmt...	776,204.75	832,614.03	1,608,818.78	155,818.17	42,669.45	79,096.69	15,729.57	466,529.87	478.43	28,933.09
Operation of power plant...	1,092,233.61	1,083,717.23	2,175,950.84	320,703.63	182,680.98	205,734.44	x87,881.24	880,194.70	x171,915.47	178,496.42
Operation of cars...	1,614,947.81	2,704,175.53	4,319,123.34	614,914.53	146,028.30	427,552.37	223,181.04	564,831.80	425,617.20	172,311.77
General expenses...	460,898.79	740,009.93	1,200,908.12	212,652.38	58,391.75	244,088.60	93,804.50	280,545.76	112,769.28	31,047.31
Total expenses of st. ry. operations...	\$4,547,620.04	\$6,199,823.16	\$10,747,443.20	\$1,424,176.36	\$530,347.48	\$1,007,285.62	\$444,729.21	\$2,386,449.54	\$786,144.93	\$422,023.37

\*Including chartered car earnings.

xIncluding horse power—revenue car service.

FIncluding stable supplies and expenses (horse car service).

public by the Public Service Commission of New York, First District. They appear in the table on this page.

INTERNATIONAL ASSOCIATION NOTES

P. T. Serstevens, secretary of the International Street & Interurban Railway Association, has announced an addition to the program of the convention of the association which will be held in Brussels on Sept. 6 to 11. This is a report on the best methods of cleaning grooved rails and will be presented by Mr. Schorling, chief engineer of the Hanover tramways. C. H. Julius, manager of the Haarlem Electric Tramways Company, has found it impossible to prepare the report which was referred to him on auxiliary car equipment parts, and this subject has been assigned to Mr. Stahl, manager of the Düsseldorf municipal tramways.

The head office of the association and of the secretary has been moved in Brussels from Rue des Colonies 6 to Avenue de la Toison d'Or 15.

be the most serious issue now confronting the electric railway industry." This problem is particularly pronounced as with the flood-tide increase of recent years involved in the cost of providing a transportation system and the operation and maintenance of same, finds us with a unit of individual fare income which is sadly shrunken in its purchasing power; though in the hands of the public this medium of exchange purchases from two to ten times the quantity of transportation as when it was originally adopted as a just and equitable price.

It is unnecessary to dwell on the increase in the costs incident to the conduct of our business. Over a period of ten years these increases range in groups, or classes, from 25 per cent to 100 per cent. The public often advances the argument that with the adoption of larger and heavier cars which are capable of more pronounced acceleration and a greater average speed, we increase our carrying and consequent earning capacity. Against this pretty theory we have the ever

\*Paper presented at annual meeting of Iowa Street & Interurban Railway Association, Sioux City, April 21-23.



constant factor of obsolescence—that terrible four-headed steel tusked monster, which like DeWolf Hopper's elephant, constantly wants more hay, but in this case he wants more old cars and trucks, and motors, and rails, and ties, and poles, and boilers, and compound engines, and other faded hot-house delicacies, for which the deluded stockholder has in the comparatively recent past paid long prices.

There is not, in my opinion, a universal or even a general demand for the reduction of urban fares—that is, a direct reduction such as would hold in making the fare 3 cents or 4 cents rather than our present 5-cent fare. The demand is there, however, though present in a different form. It comes through municipalities demanding an extension of the already over-burdened and abused transfer system, of demands that street railway companies pave more and more of the streets, that companies will sprinkle the streets, that the companies will be taxed on their stock as well as personal property, that frequent headway be maintained on lines which penetrate unprofitable territory, that an all-night service be provided even though it means an actual loss to the company, that in some instances a percentage of the gross receipts be given to the city for the maintenance of its park system, or other purposes.

At the last National convention at Denver James H. McGraw advocated publicity, that the companies should take the public in on the ground floor on the problems incident to operation and the costs involved in providing the service. This appears to be the only salvation of the situation, the policy which if properly handled will win the fair-minded consideration of the public and curtail to some extent, at least, the constantly increasing flow of demands on the operating companies. The public gives little thought to the enormous increase of taxable value as brought about through the extension of street railway lines into barren territory. The people have not been generally informed that transporting to their homes the residents of these newly created suburban districts means increasing the long haul and a decrease of the short haul, the former in many cases being conducted at a loss and the elimination of the latter meaning the throttling of the only profitable portion of the business.

If through a cultivation of the public mind it can be generally shown that taxation is excessive, that the conditions of franchise involve the payment by the company for much which the taxpayer would be taxed for if the company did not exist, that a low income per mile operated means inferior service, much will be done to the end that there will be a lessened reduction of our fares or income, thereby directly contributing to the combating of the reduction of fares.

To summarize—street railway fares should not be lowered for the following reasons: First, the 5-cent piece in the hands of the purchaser assumes a greater purchasing power through the longer rides and superior accommodation afforded by the company. Second, the 5-cent piece in the hands of the company has a constantly lessened purchasing power through the greatly increased costs of labor, material, and equipment required to provide the service demanded by an exacting public. Third, the never-satisfied demands of municipalities involving assumption by the utility companies of increased burden in the way of taxation, street improvement, expansion of free transfer system, etc. Fourth, the attitude of the public in advocating short term franchises, thereby prohibiting the companies from affording to the purchasers of its securities the creation from profits of a sinking fund of ample proportion to protect the security holders upon the expiration of the short term franchise.

In my opinion there will be no country-wide crusade for the reduction of the 5-cent fare, but there will be a continuation of exactions and demands, in the consummation of which the company will suffer an increase in the cost of providing the service thereby creating a deduction from the possible profit per passenger transaction.

From my point of view the most effective method of protecting the operating companies from conducting their business with little or no profit will be to follow the lines recommended

by Mr. McGraw. In the centers of population within the confines of our own State this is a matter which can be more readily and effectively handled than in the larger cities where the companies are not enabled to come so closely in touch with their patrons.

### HEARING ON FENDERS AND WHEELGUARDS

A hearing was held before Milo R. Maltbie, of the Public Service Commission of the First District of New York, on March 31, 1910, on the question of the use of fenders and wheelguards on the cars of the Yonkers Railroad in the Borough of the Bronx, New York. H. H. Whitman represented the commission as counsel and Leverett F. Crumb represented Leslie Sutherland, receiver of the Yonkers Railroad.

Mr. Sutherland said that since his appointment as receiver of the company he had observed the operation of the projecting fender, and that his former impression that projecting fenders frequently caused accidents was confirmed and that the advantages of a projecting fender were very problematical. He cited a number of places on the Yonkers Railroad in substantiation of his objections. The H. B. wheelguard particularly fulfilled the good offices of the projecting fender. Mr. Sutherland did not want to be understood as opposing the use of the fender. He thought that if the company could not have wheelguards it ought to have fenders.

James A. Roosevelt, general superintendent of the Third Avenue Railroad, said that people were very apt to trip over projecting fenders; that they frequently tipped wagons over; that they very often injured people who were prone on the track and that there was more room for a motorman to stop a car if it was not equipped with a fender. Fenders took up room in the car house even when folded, were particularly liable to be damaged and frequently interfered with mechanics in the shops. A wheelguard filled all the offices of a fender. During the 18 months that the cars of the Third Avenue Railroad carried wheelguards between 30 and 40 people had been picked up.

John S. McWhirter, superintendent of equipment of the Third Avenue Railroad, said that he had had experience with, perhaps, a dozen different types of fenders, and recited the objections to fenders instanced by both Mr. Sutherland and Mr. Roosevelt. Since the wheelguards had been in use on the Third Avenue Railroad Mr. McWhirter had not been in the transportation department, but he received all the reports of the operation of the apparatus in service and felt that a wheelguard would meet all the requirements of a projecting fender. Mr. McWhirter said that once when he was running a car at about 2 m.p.h. he had struck a man. Despite the fact that the car was under control the fender tripped the man, and when the car was stopped the fender was lying on top of the man, who fortunately was not injured. No case of persons being picked up by fenders had come under his personal observation. It cost approximately \$4,000 a year to keep wheelguards in repair on 325 cars on the Third Avenue Railroad.

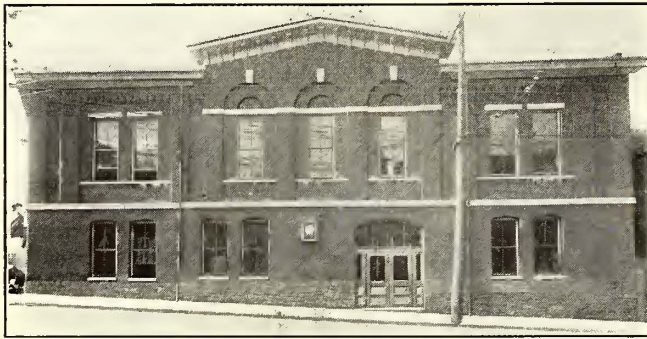
George J. Murphy, superintendent of the Yonkers Railroad, agreed with the conclusions of Mr. Roosevelt and Mr. McWhirter.

Mr. Crumb said that since Jan. 18, 1908, he had been counsel for the receiver of the Yonkers Railroad in direct charge of the claim department and that all accidents had been reported to him. At the request of the persons interested, he had given more attention to accidents than was ordinarily done by an attorney in charge of a railroad, and had compiled a list of accidents during 1908 and 1909 on the Yonkers Railroad which had been caused by projecting fenders. The list in 1909 showed that 48 and that of 1908 showed 29. All these accidents would have been avoided if there had been no fenders. In two years Mr. Crumb had knowledge of only one case where a person had been picked up by a fender.

The hearing was then adjourned for a week to give the company additional time in which to submit any evidence which might occur to it as being relevant, but on April 7, 1910, the hearing was closed without additional evidence being offered.

## BRIGHTON CLUBHOUSE AND EMPLOYEES PROTECTIVE ASSOCIATION OF THE CINCINNATI TRACTION COMPANY

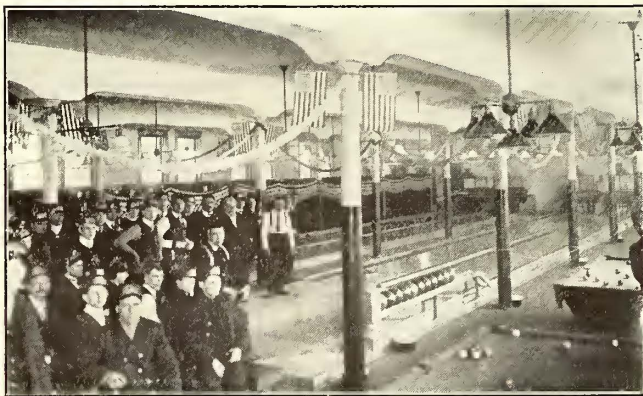
The Cincinnati Traction Company has recently opened to its employees a large, fully equipped clubhouse. Views are reproduced of the exterior of this building and of the bowling alley and the auditorium. The building is a brick structure located at a division headquarters. It is occupied by the 400 men of the Brighton and Avenue divisions. The first floor of the structure is subdivided into an amusement room, toilet and bathrooms and division headquarters offices. On this floor are four bowling alleys, two pool tables, four tables used for making out reports, 300 steel clothes lockers, manufactured by Merritt &



Clubhouse for Cincinnati Traction Company's Employees

Company, three marble shower baths and four rows of raised seats from which bowling games may be watched. The bowling alleys are cared for by a charge of 2½ cents per person for each game. Six pin boys tend the bowling alleys and are paid, one at \$8 and five at \$6 per week.

The upper floor of the clubhouse is subdivided into an assembly hall reading-room and an office for the secretary of the association maintained by the employees. The assembly-room shown will seat an audience of 900. One hundred solid oak chairs are usually available for small regular meetings, but 600 folding chairs for use at large gatherings are kept under the large raised platform. Short exits to ground are provided by



Bowling Alleys in the Clubhouse

four doors leading to fire escapes and a broad stairway leading to the first floor. The assembly hall has an oak floor finished for dancing. The entire building is wired in conduit and is brilliantly illuminated by tungsten lamps.

### WORK OF MUTUAL PROTECTIVE ASSOCIATION

The Mutual Protective Association of the street railway employees at Cincinnati, has just issued the reports of its president and secretary for 1909, the twenty-second year of the organization's existence. The report of the secretary, which is included in the pamphlet, shows cash on hand and securities to the amount of \$45,871.65. In the past six years the association has paid out \$63,885 in sick benefits and \$48,725 in death benefits and has accumulated a surplus. The dues of the as-

sociation are \$3 a year payable in January, May and September. On the death of a member the heirs are paid \$800. If there is not that much in the death fund, which is a separate fund from that realized from the association dues, each member is assessed \$1. The membership now includes about 1900 men.

A survey of the results according to this plan shows that the actual cost per week for insurance against sickness or death, has been 11 cents. The organization maintains a paid secretary with offices in the Brighton clubhouse.

A review of the benefits paid during the past year may be of interest. The 257 members who drew sick benefits received



Auditorium of the Cincinnati Clubhouse

in the one year 80 per cent of all that they had paid into the association during their entire membership. The men received on an average \$33.13 in sick benefits and had paid into the association since initiation an average of \$40.90 each. A table accompanying the report shows the death benefits paid the families of six members during 1909. These men altogether paid into the fund \$238.50 and they or their families received from it in sick benefits and death claims \$5,321.

If a man leaves the service he can withdraw one-half of the amount he has paid in, providing he has not received sick benefits. Membership in the association is limited to platform, shop and roadway employees of the rank and file only.

The association has an agreement with W. Kesley Schoepf as president of the Cincinnati Traction Company, which in brief, states that whenever the association accumulates an additional \$20,000 in its treasury, the company will give the association \$5,000.

### DEED AND CONTRACT RECORD

A loose-leaf form for a record of deeds and contracts has been adopted by L. T. Hixson, auditor of the Terre Haute, Indianapolis & Eastern Traction Company. Until this form was adopted, the company had not had a permanent record for copies of documents of this character. The original deeds are filed in vaults, but for all purposes of reference the book adopted by Mr. Hixson is now used.

The form for this record is 14¾ in. by 11¾ in. It contains a complete copy of the instrument, a number corresponding with one given by the engineer of the company and shown on his map, a summary of the main facts, the date on which the original was recorded and the initials of the employee who made the copy and the one who checked the copy with the original. The number on the record corresponds also with that placed on the original deed.

All the information on the record is typewritten. In making the deed and contract record, two carbon copies are prepared, one of which is on thin paper and is used for the file in the engineer's department. Two copies are kept in the auditor's department. The original copy is filed geographically according to the location of the property on the line and one carbon copy is filed alphabetically.

## PHILADELPHIA STRIKE DECLARED OFF

At a meeting of the former employees of the Philadelphia (Pa.) Rapid Transit Company on April 16, 1910, it was decided to determine by secret ballot on April 17, 1910, whether to return to work under substantially the same terms offered by the company through Mayor Reyburn on March 21, 1910. As a result of this vote the executive committee representing the men adopted a resolution on the evening of April 17, declaring the strike at an end and ordering the men to return to work. The resolution of the executive committee follows:

*Resolved*, That sincerely believing that the best interests of the Philadelphia carmen are served by acceptance of the proposition given us by International Chairman C. O. Pratt, who represented us while on strike, and after carefully weighing the circumstances involved in our situation, and the lack of decisive authority (the slim majority) in the referendum of our membership taken to-day and last night, and after consulting the National Board at Detroit, we, the local Executive Board of Division 477 of the Amalgamated Association of Street Electric Railway Employees of America, hereby direct that our members on strike return to work."

The terms of settlement offered by the company through Mayor Reyburn on March 21 were later embodied in a set of rules to govern the employees in the future. These rules, which are the basis under which the men will be reinstated, were advertised in the newspapers in Philadelphia on April 5 and 6, and were reproduced in the *ELECTRIC RAILWAY JOURNAL* of April 9, 1910, page 671.

The following letter addressed by Clarence Wolf, vice-president of the company, to Mayor Reyburn on April 15, 1910, was the final word from the company about the terms of settlement:

"We will accept back into the service such motormen and conductors who desire to return to our employ, and believe that all of such regular men can be given regular runs within a short time, say, within three months; but in the meantime those reporting for duty to whom regular runs cannot be assigned will be paid a minimum of \$2 a day for such work as is assigned to them (or for no work if they report for service and there is none assigned them) until they are assigned to runs that pay at least that much. This does not apply to men who were on the extra list. They will come back as extras, and be paid for such work only that they do.

"We will review the evidence in the cases of the 174 men discharged Feb. 18, 1910, with a representative of the men. We believe we can make a just and satisfactory decision in every case. Any of these employees reinstated will be paid for time lost between date of the acceptance of this proposition and date of reinstatement.

"We give the assurance that all men will be treated fairly, without discrimination, favor or prejudice."

In a communication addressed to the United Business Men's Association of Philadelphia under date of April 8, 1910, the Railroad Commission of Pennsylvania refused to investigate street railway conditions in that city at this time. The substance of the letter follows:

"The commission realizes that the powers it is intended to exercise have special reference to normal conditions and the ordinary and orderly conduct of business, and that they were not intended to be exercised for the purpose of attempting to coerce parties when engaged in labor disputes or in the conduct of strikes.

"At such times a company is not always able to carry out its own will or to enforce its own desires, nor is there any power in this commission to assist it in so doing. The same may be said of the other party to any labor dispute, whose wishes and purposes they might desire to have the commission further.

"If the commission were to undertake an investigation of the electric railway situation in Philadelphia it would be to act upon conditions which are not normal, and for which possibly neither of the parties to the strike is entirely responsible. Nothing could be effected to improve those conditions so long as the strike continues, so that any effort in that direction would necessarily be abortive at present.

"As the company needs many additional motormen, to remove all those whom you or others might think unfit for the position would but further cripple the service. You must remember that while the commission might recommend the employment of other motormen for those now in the service, it cannot dictate who the new motormen should be nor where they shall be procured, nor the wages to be paid them.

"It might be thought that if the commission made such an order that it was intended directly to be a mandate to the company to re-employ the motormen who formerly were in its employ and who are now on strike, and that that would lead to the employment of these men on their own terms. Such would not be the case, however, and if it were, it would be coercion of the company, and so interpreted, and regarded as an act of the commission favorable to the strikers.

"In fact, any action by the commission as you suggest would be construed as an effort on the part of the commission to favor one party or the other to the present strike, and the instance respecting the motormen shows the direction sentiment might take in case of such action by the commission.

"To secure any reliable data of the true status of the traction situation in Philadelphia for the purpose of making recommendations for the permanent improvement of the service it is essential that the investigation be prosecuted during a period of normal conditions and not at a time when affairs are disturbed and disarranged. The commission is of the opinion that any such action by it at this time and under the present conditions would be unwise and could accomplish no good results."

## DEBATES ON ELECTRIC RAILWAY SUBJECTS AT CORNELL

A series of debates on electric railway subjects has been introduced this term as part of the electric railway course at Cornell University. The members of the senior class have been divided into a number of debating teams, and each week one team is scheduled to present the affirmative or negative sides of an assigned topic for discussion. As far as possible each member is given the choice of the topics selected and the side which he desires to uphold.

These debates were introduced by Professor Norris for a number of reasons. They relieve the monotony of the technical work of the course. The men are stimulated to investigate live topics, and thus relate their technical knowledge to practical operating conditions. The debates teach the students to condense material into a small compass, as the time allowed is limited. The practice gained in extemporaneous speaking, in which engineers are often weak, prepares the men to take active part in association work. The faculty believes, also, that debates of this kind also teach the young engineer self-reliance, because the men have to champion and defend the ideas they present; they develop so-called engineering conviction.

The topics during April and May related to whether the steam locomotive furnishes the best motive power for long hauls; whether the present tendency to electrify trunk-line terminals is warranted from the standpoint of economy; whether the alternating-current repulsion motor is superior to the alternating-current series motor for general traction purposes; whether the experience of the New Haven Railroad justified its adoption of alternating-current traction; whether the experience at Cleveland, Ohio, warranted a higher rather than a lower rate of fare, and whether commission control of electric railways, as at present practiced in New York State, produces unnecessary hardships upon the railway managers.

Each side is given a total of 15 minutes for general presentation of argument and five minutes for closing. Five minutes is then allowed for general discussion of topic and five minutes for the announcement of the decision by the judge. The latter in general is a teacher in a non-electrical department. Each side is also expected to file with Professor Norris a brief of the argument within one week after the debate. Credit for this work forms a part of the term's work.

**SOME NEW HIGH-TENSION SPECIALTIES**

The Electrical Engineers' Equipment Company, Chicago, Ill., has recently developed several specialties for the protection of the ends of cables carrying high voltages and for other purposes. Fig. 1 gives details of a cable-end bell for 28,000-volt service, delta-connected. Fig. 2 shows a 13,000-volt cable bell and Fig. 3 a series of split-copper tee connectors. Fig. 4 repre-

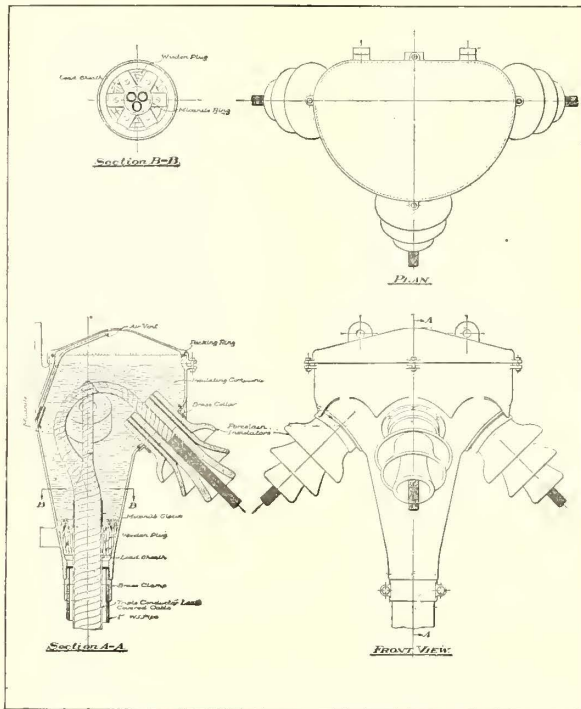


Fig. 1—Details of Cable-End Bell for 28,000-Volt Service

sents iron-pipe clamp insulator pins and Fig. 5 an improved busbar support.

The cable-end bells are made of very soft cast iron. They are also made of malleable iron, hard brass, aluminum, copper and cast steel. Forty-eight different types are available. The bells are all equipped with a grounding clamp ring, which eliminates the soldering or wiping of joints from the cable sheath to the cable bell. This patent grounding clamp is bored out to fit the outside diameter of the lead sheath, and is made of brass for the outside or weather cable bells. It is also tinned to make a better contact with the lead sheath.

With each bell is furnished a special filled compound, the flow-point of which is not less than 244 deg. Fahr. The com-

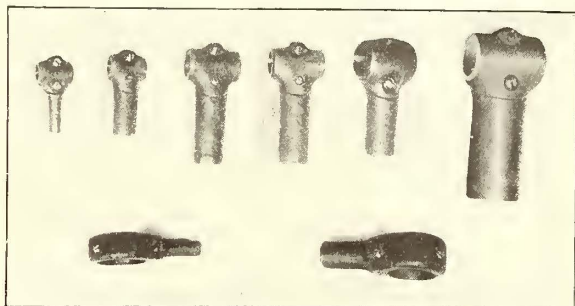


Fig. 3—Split Copper Tee Connectors

ound is manufactured in two grades, one testing to 64,000 volts and the other to 86,000 volts. Porcelain bushings are used for the leads from the cable bells, and are guaranteed to test not less than 2½ times the working voltage on the bells, delta voltage being assumed at all times. It is well known that the static discharge at the end of the cable strikes through the insulation to get to the ground, and the grounding clamp ring, clamping, as it does, the cable within a few inches of its end, pre-

vents this static discharge and grounds it, thereby saving the insulation from static puncture.

It is contended that all cables carrying alternating-current voltages of 400 or more should be protected by cable bells. The company manufactures a special cable-end bell for mounting between oil switches on pipe framework. This is a very narrow bell. The cable bells made by the company are manufactured for voltages up to and including 28,000 volts, delta-connected. The bells provided for outside work are made for mounting directly on the pole, without weather protection of any kind.

The malleable-iron and cast-steel insulator pins for supporting high-tension insulators are intended for use either upon pipe framework or for mounting on a flat surface, such as busbar compartments. These pins are made either with U-bolts or with a solid base; sizes from a height of 32 in. down to the "baby pin," which is only 5 in. high.

New designs in busbar insulation supports are also available, the insulating medium being wet-process porcelain. All metal parts connected to the busbar support are of malleable iron or brass, depending upon the amperes carried on the support. These busbar supports are made for all voltages up to and

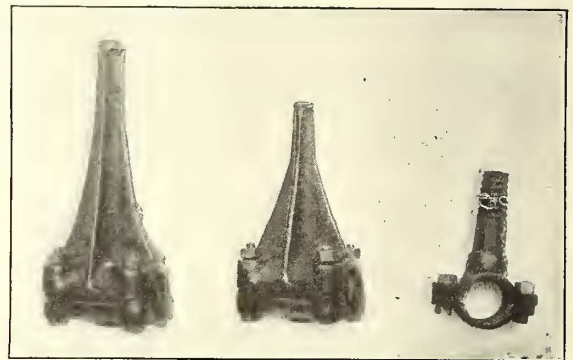


Fig. 4—Iron Pipe Clamp Insulator Pins

including 110,000 volts, and are made either for pipe framework or bus compartment work. Another specialty is a new design of wet-process line insulators made for potentials up to and including 100,000 volts. Extra heavy, all-glazed, long head floor tubes are also among the new appliances of this company. They are manufactured for differences of potential up to and including 44,000 volts in the multiple type and up to and including 110,000 volts in the disk and multiple design.

Among other specialties is a complete line of solid cast-cop-

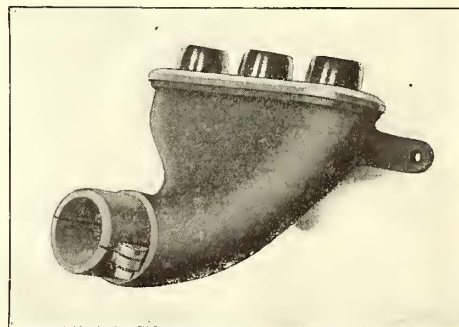


Fig. 2—13,000-Volt Cable Bell



Fig. 5—Busbar Support

per split-type tee connectors for clamping on the run to conductors of 2,000,000 circ. mil and on the tap for 2,000,000 circ. mil. These devices are made for cables and wires as small as No. 14 on the run and No. 14 on the tap. Another novelty is an insulated pin with a locust wood top, which is made for mounting on flat surface or on pipe framework. The sizes carried in stock are for 1¼-in. and 2-in. pipe and up to 8 in. in height.

# News of Electric Railways

## Judge Tayler, of Cleveland, Third Arbitrator in Detroit— Date Set for Hearings

Claudius B. Grant, the representative of the Detroit United Railway on the board of arbitration which is to consider the appraisals of the property of the company, and Judge James O. Murfin, of the Wayne County Circuit Court, the representative of the Committee of Fifty on the board, decided to extend an invitation to Robert W. Tayler, Judge of the United States Circuit Court, at Cleveland, to act as the third member of the board of arbitrators, and on April 14, 1910, after visiting Judge Tayler in Cleveland, Mr. Grant and Judge Murfin announced that Judge Tayler had agreed to accept the appointment. It was arranged at the conference in Cleveland to begin the hearings on April 25, 1910. The announcement made by Mr. Grant and Judge Murfin after their conference with Judge Tayler follows:

"Judge Robert W. Tayler has agreed to act as one of the arbitrators in connection with the Detroit United Railway appraisal. The court desires the public to understand the following facts in connection with their work:

"1. All the members of the court are acting without compensation and expect to act judicially and without regard to the source of their selection.

"2. All hearings and arguments to be public in the council chamber, with a competent stenographer in constant attendance. Meetings to be held from 9.30 a. m. to 12.30 m., and from 2 p. m. to 5 p. m. each day until concluded.

"3. Hearings to commence Monday morning, April 25. The city through Mr. Hally, the Committee of Fifty through Mr. Webster, and the Detroit United Railway through its counsel, shall be requested to participate in the examination and cross-examination of any witnesses, and to be further permitted to address the court on any disputed points as they are being presented.

"4. The Barcroft appraisal shall be used as the basis from which to direct our work, and the Detroit United Railway will be invited to present facts and figures as follows:

"(a) Any matters, if any, omitted from the Barcroft appraisal.

"(b) Any errors, if any, in the Barcroft appraisal.

"(c) Any other pertinent matters not hereinbefore specifically covered."

## Cleveland Traction Situation

The most important recent development at Cleveland was the resignation of Horace E. Andrews as president of the Cleveland Railway on April 12. Mr. Andrews felt that the recent readjustment afforded him the opportunity which he desired, to devote himself to his affairs in New York. Mr. Andrews has stated that he will aid in financing the improvements and extensions to be made in the future, as stated in the *ELECTRIC RAILWAY JOURNAL* of April 16, 1910. Mr. Andrews will continue as a director of the company. With the retirement of Mr. Andrews and the election of Mr. Stanley as his successor, one of the vice-presidencies is left vacant and will not be filled. C. F. Emercy will continue to occupy the other. Mr. Stanley will be both president and general manager of the company.

The company has announced that \$441,600 of the new stock offered some time ago was subscribed by the stockholders within the prescribed time. It has been decided by the company to accept the grant to lay tracks on Lorain Avenue from the car house to the city limits, although arrangements are pending with the Cleveland, Southwestern & Columbus Railway to use its tracks over that section of the street.

Messrs. Andrews and Stanley have discussed the subject of the new cars with the representatives of several car manufacturing companies and Mr. Stanley has told Street Railway Commissioner Dahl that no new cars will be ordered at present, as the company could not pay for them

until the stock was sold. He asked the Commissioner to approve an extension in the Collinwood district, to cost about \$18,000, and also brought up the proposal to purchase the Puritas Springs line of the Cleveland, Southwestern & Columbus Railway. The company has been operating a number of cars not equipped with air brakes because it is short of cars, and City Solicitor Baker has advised Mr. Dahl that the law requiring air brakes does not apply to these cars.

Mr. Baker has advised Mr. Dahl that technically the company can charge a 10-cent fare to passengers who ride beyond Adams Avenue in Collinwood, but has pointed out that passengers could alight at the old city limits and board a car within the old Collinwood territory, and thus escape the 10-cent exaction. He said that it would be economy on the part of the company to have an ordinance providing for a fare of 8 cents, since there would be no trouble in transferring in that way.

## Transit Affairs in New York

The Public Service Commission adopted a resolution on April 15, 1910, for a public hearing on the draft form of contract for the construction, equipment and operation of the Broadway-Lexington Avenue, the Canal Street, the Broadway-Lafayette Avenue, and the Fourth Avenue lines, to be held on May 9, 1910, and for a public hearing on the draft forms of contracts for the construction of such lines by sections at municipal expense, to be held on May 16, 1910. After the hearings have been held the contracts will be placed in form for approval by the Corporation Counsel. After such approval has been obtained, advertisements will be begun for letting the contracts. Should no satisfactory bid be received for equipment, construction and operation, the commission can then, with the approval of the Board of Estimate and Apportionment, let contracts for as many sections of the system as can be done with the money available for that purpose. The Board of Estimate and Apportionment has announced that it was ready to set aside for subway purposes \$13,700,000 after July 1, 1910, and also the \$47,000,000 which it is hoped will be obtained as a result of the passing of the constitutional amendment at the last election, authorizing the exemption of revenue producing bonds from computation in ascertaining the debt limit.

Adrian H. Joline, one of the receivers of the Metropolitan Street Railway, and Arthur E. Masten, counsel for the receivers, asked Mayor Gaynor on April 13, 1910, to assist them to have the franchise taxes adjusted in accordance with the decision of the court, so that they could be paid. The receivers acknowledged that the company owes at least \$2,183,000 franchise taxes.

The Public Service Commission gave a hearing on April 18, 1910, to a committee from the Downtown Interborough Association, who pleaded for an extension of the proposed Broadway-Lexington Avenue subway route from Cooper Square, South, through the Bowery, New Bowery and Pearl Street to South Ferry. Commissioner Eustis said that if the Broadway-Lexington Avenue subway was made to await the consideration of the change in route proposed by the association, it would delay the commencement of construction probably for a year.

The tunnel of the Pennsylvania Railroad in New York will be equipped and ready for service sometime between May 15 and June 15, and a portion of the station will be available for use, but it will be impossible to inaugurate the proposed service at that time because of insufficient equipment. The Long Island Railroad is having 40 new steel cars built, to be electrically equipped for tunnel service. The contracts provided for the delivery of these cars between Feb. 1, 1910, and May 1, 1910. On account of delays which were beyond the control of the company, the first consignment of cars on this order will be received about May 15, and deliveries will continue from that date until about Oct. 1, when the whole order will be completed.

Chairman Willcox of the Public Service Commission and President Shonts of the Interborough Rapid Transit Company called on Mayor Gaynor on April 19, 1910. It is understood the subway situation was discussed, but no official announcement regarding the purport of the conference was made public.

The Public Service Commission has acknowledged the letter addressed to it on April 11, 1910, by the Brooklyn Rapid Transit Company, in which application was made by the company for the extension of the operation of its elevated lines from the Manhattan terminal of the Williamsburg Bridge through the so-called Centre Street subway. The commission concluded its letter as follows:

"The matter being presented in a general way, the commission desires a more definite and detailed written statement as to the various features involved, such as the value, nature and extent of the operations, the compensation to be paid by the company, etc. Upon the receipt of the statement, the commission will be glad, in accordance with your suggestion, to arrange an immediate conference at a time mutually agreeable."

#### F. W. Stevens on Electric Railway Problems

F. W. Stevens, chairman of the Public Service Commission of the Second District of New York, addressed the Board of Commerce of Detroit at its membership acquaintance meeting, held recently in the Hotel Cadillac, Detroit. Previous to the meeting the work of the Committee of Fifty and the question of the franchise extension which is now up for settlement in Detroit were explained to Mr. Stevens. In the course of his remarks Mr. Stevens is reported to have said:

"I know very little about the situation in Detroit. It may be that the conditions here are the same as they are in Cleveland, but I do not believe so. In New York State we have from 40 to 50 cities that have street car systems, and in no two of them are the conditions the same. One city may receive helpful suggestions from another with respect to street car and other problems, but no city can successfully copy another's plan. An arrangement that has been found entirely satisfactory in one community might prove a dismal failure in another. Every city must work out its own problems according to local conditions.

"In my experience I have found that it is impossible to determine the cost of service in a given case. In our State a question arose over the rate charged by the steam roads for carrying milk. We tried to determine the cost of service, but there were so many factors that entered into it that the task was impossible. A man boards a street car and rides two blocks, we will say, while another gets on at the next corner and rides 2 miles. There is no way to fix the cost of carrying either of these men. The best that can be done is to average up the cost.

"In New York State the fare for carrying a passenger from one point to another within the limits of a city is fixed by the statute at 5 cents, but our commission is given the power of changing it at any time the conditions warrant. The great problem with traction companies in New York is the abuse of the transfer system. Under the law, in order to carry a passenger from one point to his destination it is often necessary to give him a transfer on a transfer. In spite of all the precautions that have been taken by the companies to protect themselves, the privilege is greatly abused by passengers. It is possible for a man to ride half a day for a nickel.

"A public service corporation, in order to serve the public properly, must continually increase its capital to provide for increased business. Any corporation that does not do that is bound to be a failure. But capital must be given an opportunity to secure a fair return, and by that I do not mean an excessive return."

#### Stone & Webster Club of Washington

At a meeting of representatives of Stone & Webster in the Pacific Northwest at the Butler Hotel, Seattle, Wash., on March 3, 1910, it was decided to form a club among the employees of Stone & Webster in Washington. Temporary officers and committees on constitution and by-laws

and nominations and organizations were appointed, and at a meeting held in Tacoma on April 4, 1910, at which 65 representatives of various companies controlled by Stone & Webster were present, the Stone & Webster Club of Washington was permanently organized along the lines of the New England Street Railway Club. Its object, as set forth in Article II. of the constitution, follows: "To promote intercourse and social relations between the officers of the various Stone & Webster Companies operating in Washington, and to provide for an exchange of views on different phases of the business of the various companies, and to promote the best conduct of the business."

All of the Stone & Webster companies in Washington are represented in the club. These companies include the Whatcom County Railway, Light & Power Company, Bellingham; Everett Railway, Light & Power Company, Everett; Seattle-Everett Traction Company, Everett; Seattle Electric Company, Seattle; Tacoma Railway & Power Company, Tacoma; Puget Sound Electric Railway, Tacoma; the Stone & Webster Engineering Corporation, Seattle. The following officers have been elected for the year: A. L. Kempster, superintendent of transportation of the Seattle Electric Company, president; F. A. Boutelle, superintendent of transportation of the Tacoma Railway & Power Company and Puget Sound Electric Railway, vice-president; J. C. Hector, assistant treasurer of the Whatcom County Railway, Light & Power Company, vice-president; J. B. Howe, general counsel of the Seattle Electric Company, vice-president; A. M. Chitty, contract agent of the Everett Railway, Light & Power Company, vice-president; W. E. Wilmot, assistant treasurer of the Tacoma Railway & Power Company and Puget Sound Electric Railway, secretary; A. W. Q. Birtwell, assistant treasurer of the Seattle Electric Company, assistant treasurer. The president, vice-presidents and the following gentlemen comprise the board of trustees: E. H. O'Dell, claim agent of the Tacoma Railway & Power Company; Thomas Newman, counsel of the Whatcom County Railway, Light & Power Company; W. R. Leonard, assistant treasurer of the Everett Railway Light & Power Company.

**Chicago 55 Per Cent Fund.**—The Controller of Chicago has announced that the compensation which the city received from the Chicago City Railway for 1909 was \$473,942, and from the Chicago Railways for the same period \$811,320, making the total from both companies \$1,285,262. There is a grand total of about \$4,300,000 in the city's traction fund, which is derived from the division of the net receipts of the electric railways in the ratio of 55 per cent to the city and 45 per cent to the railways.

**Toledo Franchise Suggestion.**—The communication from A. E. Lang, president of the Toledo Railways & Light Company, Toledo, Ohio, suggesting that the extension of the franchise of the company should be considered, has been referred to the committee of the Council on railways and telegraphs. J. B. Merrell, chairman of the committee, says that Mayor Brand Whitlock will be consulted regarding the proposal and that the administration expects to formulate a plan of settlement which the committee will work out.

**American Museum of Safety.**—An exhibit hall for demonstrations, under power and otherwise, of devices to prevent industrial accidents, has been opened by the Museum in the Engineering Societies' Building. This will be a permanent, free exhibition for those who will profit by it particularly, and for the public generally. The hall will contain models, charts and photographs of devices which need no power demonstration. The president of the club is Philip T. Dodge. The vice-presidents are Charles Kirchhoff, T. Commerford Martin and F. R. Hutton. William H. Tolman is the director.

**Reinforced Concrete Trestles for Railways.**—C. H. Cartlidge, bridge engineer of the Chicago, Burlington & Quincy Railroad, presented a paper on "Reinforced Concrete Trestles for Railways," before the Western Society of Engineers, on April 13, 1910. Mr. Cartlidge advocated the use of concrete trestles built similar to pile bents, using concrete piles capped with reinforced concrete stringers and surmounted by concrete floor slabs. Such structures had been built in lengths from 80 ft. to 250 ft. at a total

cost of from \$20 to \$26 per lineal foot, using machine-molded and square-molded concrete piles.

**Reunion of Pacific Coast Party.**—A reunion of those who participated in the Pacific Coast trip of the Massachusetts Railway Association last autumn was held on March 14, 1910, at the Exchange Club, Boston, Mass. About 60 of the 80 persons who took the trip to the coast were present. After a banquet, Charles S. Clark, secretary of the Massachusetts Street Railway Association and organizer of the party, was presented a handsome hall clock as a mark of appreciation of the ability which he had displayed in conducting the excursion and as a token of friendship. Several informal speeches were made and a selection of some 200 views taken by members of the party were thrown upon a screen by means of a stereopticon.

**Southwestern Electrical and Gas Association.**—Preparations are fast being made for the convention of the Southwestern Electrical and Gas Association, which is to be held in Beaumont, Tex., on May 12, 13 and 14, 1910, and it is expected that the program of the meeting will soon be announced in detail. The program of entertainments has been partially arranged. On May 12 there will be an automobile ride for visiting ladies from 10 a. m. to 12 m., and at 4 p. m. there will be an automobile ride for all visitors to the oil field and other points of interest. In the evening there will be a theater party. On May 13, from 2 p. m. to 6 p. m., there will be a boat trip on the Neches River. From 9 p. m. to 12 p. m. the ladies will be entertained at the Women's Reading Club, while the men during the same hours will be entertained and will entertain with the Sons of Jove. At 3:30 p. m. on May 14 the visitors will tour the city on street cars. The business meetings will be held during the forenoons on all three days. The storeroom and the lobby in the Kyle Theater will be used as an exhibit hall. The secretary of the association is E. T. Moore, 300 Commerce Street, Dallas, Tex.

**Chicago Subways.**—On April 18, 1910, the Supreme Court of Illinois heard the final arguments on the city's authority to construct a subway and its right to use the \$4,300,000 traction fund for this purpose. Briefs in this case which have been filed by Walter Fisher, representing the city, have been summed up as follows: "The city's right to build subways has been granted by the Legislature in general and specific terms. The complete authority over its streets conferred upon the city by law empowers it to control the subsurface as well as surface facilities. Chicago's powers are not curtailed by the fact that it purposes to co-operate with the street railways. The funds paid to the city out of traction profits are subject to the action of the City Council. Even if they were not, a taxpayer could not restrain the city from expending them for corporate purposes other than those named in the ordinance." The right of Chicago to build and finance a subway has been established in the lower courts, and engineers are preparing a report on which the City Council may base its action after the case in the Supreme Court has been closed. It was announced in Chicago on April 19 that the tentative offer of George W. Jackson, Inc., to build a \$75,000,000 system of subways in Chicago, in which surface and elevated cars could be operated would be reduced to permanent form and submitted to the City Council before June 1, 1910.

#### LEGISLATION AFFECTING ELECTRIC RAILWAYS

**Massachusetts.**—Hearings were continued during the week ended April 16, 1910, by the committee on metropolitan affairs upon the bills to compel the railroads in the Boston district to electrify their lines. Francis Peabody, Jr., urged that electrification within a 10-mile radius of Boston should be required by July 1, 1913. Samuel J. Elder, for the New York Central lines, and William H. Coolidge, for the Boston & Maine Railroad, opposed the bills on the ground that expenditures for electrification would be premature if made at the present time. The committee on street railways has voted leave to withdraw the bill to require electric railways to equip their cars with lifting jacks. An effort has been made to revive the bill to grant municipal authorities the right to give limited franchises to street railways to carry express and freight. Perpetual franchises are now granted subject to the ap-

proval of the Railroad Commission. The House has accepted the adverse report of the committee on street railways upon the Mellen bill, which prohibits persons from riding upon the running boards of cars. The bill relative to the purchase by street railways of the property of foreign companies has been ordered to a third reading in the Senate. Many petitions in favor of the passage of legislation to permit the New York, New Haven & Hartford Railroad to acquire electric railways in western Massachusetts have been presented to the General Court. In connection with the proposed co-ordination of electric and steam railroad service under these bills the committee will visit Shelburne Falls to examine the interchange of traffic between the Shelburne Falls & Colraine Street Railway and the Boston & Maine Railroad. The bill which provides that no street railway shall require passengers whom it permits to ride upon the platform to do so at their own risk has been passed to be engrossed by the House.

**New York.**—Senator Schulz of New York City has introduced a bill which provides that no railroad owning, maintaining, operating or controlling a steam or electric railway through the Boroughs of Manhattan and the Bronx, with two or more stations along its route in these boroughs, shall charge more than 5 cents for carrying passengers between points on its lines. A bill has been introduced to place the public service corporations in Westchester County under the supervision of the Public Service Commission for the First District instead of the Commission for the Second District. The bill to permit the operation of moving platforms and give operators the right to purchase power from outside interests, with the approval of the Public Service Commission and authorizing the leasing of acquired property until required for subway purposes has passed the Assembly. A bill has been introduced in the Assembly ostensibly in the interest of the Manhattan Bridge Three-Cent Line, to modify the present railroad law by permitting one company to use the tracks and electrical equipment of another company for an indeterminate length subject to the approval of the Public Service Commission, with which power is to be vested to determine the amount of compensation that shall be deemed reasonable. The amendment is to apply only to cities of the first class.

Two bills are before the Legislature to render effective the amendment exempting from the New York City debt limit bonds for self-sustaining improvements. One of these measures, the Wagner-Lee bill, was drafted by the Citizens' Union. The other bill, the Travis-Shortt measure, represents the views of the New York City administration with reference to the method by which such bonds are to be taken out of the debt limit. On April 15 Mr. Shortt introduced a bill which amends his previous measure by providing for the exclusion from the debt limit only debts incurred by the city for rapid transit or dock improvements prior to Jan. 1, 1910. The Lee bill excludes debts for improvements after that date. Like the earlier bill, the new measure provides for an application to the Appellate Division by the Board of Estimate and Apportionment for an order determining the amount of debt to be excluded. Another debt limit bill introduced by Assemblyman Lee has been placed on the order of final passage in the Assembly. It provides for a judicial determination by the Appellate Division without a previous determination by the Board of Estimate and Apportionment of the amount of indebtedness to be excluded. A measure which would permit the Interborough Rapid Transit Company of New York to operate the unused Steinway tunnel under the East River was introduced on April 18 by Assemblyman Parker. On April 19 the Assembly passed the bill introduced by Mr. Parker which amends the Public Service Commission law by broadening the powers of the commissioners with particular reference to transfers, and gives them authority to order a single fare over joint routes of street railways operating a continuous line.

**Ohio.**—Probably the last public hearing to be accorded to the Woods public utilities bill took place before the Senate committee on the evening of April 12, when representatives of the steam railroads proposed that a commission should be appointed to consider the need of such a commission as is proposed and the laws governing the operation of public utilities.

# Financial and Corporate

## New York Stock and Money Market

April 19, 1910.

For the last week the stock market has been left almost entirely in the hands of traders. It is true there were fairly large price changes during the week, but they seem not to have been related in any way to the week's developments. For instance, on Thursday afternoon prices advanced sharply following the announcement of the engagement of more than \$5,000,000 gold for export. Again on April 19 the market advanced in spite of heavy shipments of gold. Interborough-Metropolitan issues have been influenced by the statement of the Interborough Rapid Transit Company for nine months.

Since the present movement in the money market began on April 1, \$17,000,000 has been engaged for shipment. Despite this the market continues easy. Rates to-day were: Call, 2¾ to 3 per cent; 90 days, 4½ to 4¾ per cent.

### Other Markets

Philadelphia Rapid Transit and Union Traction are weak. On Thursday Rapid Transit reached the low point of 19, and to-day declined again 1¼ points to 19½. Union Traction also declined on Thursday to 47½.

There was a considerable display of strength in the Boston market on Saturday, but to-day prices eased off again. Boston Elevated shows a gain for the week of a point in the asked price and Massachusetts Electrics only a fractional change in both issues.

The same general apathy characterizes the Chicago market which has cast a spell over trading for several weeks. Few sales are recorded, and these at prices which show only a slight variation from prices which have been prevalent for some time.

Quotations of various traction securities as compared with last week follow:

	April 12.	April 19.
American Railways Company.....	245¾	245¾
Aurora, Elgin & Chicago Railroad (common).....	57¾	57¾
Aurora, Elgin & Chicago Railroad (preferred).....	94¾	94¾
Boston Elevated Railway.....	a126	a127
Boston & Suburban Electric Companies.....	a16	a16
Boston & Suburban Electric Companies (preferred).....	a75	75
Boston & Worcester Electric Companies (common).....	a10½	a10½
Boston & Worcester Electric Companies (preferred).....	a46	a47
Brooklyn Rapid Transit Company.....	78¾	a80¾
Brooklyn Rapid Transit Company, 1st pref. conv. 4s.....	*84¾	86
Capital Traction Company, Washington.....	*133	a132½
Chicago City Railway.....	*195	a190
Chicago & Oak Park Elevated Railroad (common).....	*3½	*3½
Chicago & Oak Park Elevated Railroad (preferred).....	*7½	*7½
Chicago Railways, pteptg., ctf. 1.....	a100	a100
Chicago Railways, pteptg., ctf. 2.....	a32	a30
Chicago Railways, pteptg., ctf. 3.....	a18	a13
Chicago Railways, pteptg., ctf. 4s.....	a8	*8
Cleveland Railways.....	*91½	*91½
Consolidated Traction of New Jersey.....	a76	a76
Consolidated Traction of New Jersey, 5 per cent bonds.....	a104½	a104½
Detroit United Railway.....	*64	61
General Electric Company.....	152	151½
Georgia Railway & Electric Company (common).....	a110	a109½
Georgia Railway & Electric Company (preferred).....	a87	a86
Interborough-Metropolitan Company (common).....	22¾	23½
Interborough-Metropolitan Company (preferred).....	57¾	60¾
Interborough-Metropolitan Company (4½s).....	*81	*81
Kansas City Railway & Light Company (common).....	a31	a31
Kansas City Railway & Light Company (preferred).....	*77½	*77½
Manhattan Railway.....	134	137
Massachusetts Electric Companies (common).....	17¾	a19
Massachusetts Electric Companies (preferred).....	a88	a88
Metropolitan West Side, Chicago (common).....	a17	a16
Metropolitan West Side, Chicago (preferred).....	a54	a53
Metropolitan Street Railway.....	*15	*15
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	77½	*77½
Northwestern Elevated Railroad (common).....	a17½	a15
Northwestern Elevated Railroad (preferred).....	a50	60
Philadelphia Company, Pittsburg (common).....	a50¾	a50½
Philadelphia Company, Pittsburg (preferred).....	a44½	a44½
Philadelphia Rapid Transit Company.....	a21	a19¾
Philadelphia Traction Company.....	a87	a87
Public Service Corporation, 5 per cent col. notes.....	a96½	a96½
Public Service Corporation, ctf. s.....	a104½	a104½
Seattle Electric Company (common).....	a113½	a115
Seattle Electric Company (preferred).....	103¾	103½
South Side Elevated Railroad (Chicago).....	a53	a53½
Third Avenue Railroad, New York.....	8	6¾
Toledo Railways & Light Company.....	10¾	*10¾
Twin City Rapid Transit, Minneapolis (common).....	*115¾	114½
Union Traction Company, Philadelphia.....	a49¾	a48¾
United Rys. & Electric Company, Baltimore.....	a13¾	a13¾
United Rys. Inv. Co. (common).....	37	*37
United Rys. Inv. Co. (preferred).....	*67	*67
Washington Ry. & Electric Company (common).....	a38½	a38½
Washington Ry. & Electric Company (preferred).....	*91¾	*91¾
West End Street Railway, Boston (common).....	88¾	a90
West End Street Railway, Boston (preferred).....	*83	a102
Westinghouse Elec. & Mfg. Company.....	66¾	66
Westinghouse Elec. & Mfg. Company (1st pref.).....	*125	*125

a Asked.

\* Last Sale.

American Light & Traction Company, New York, N. Y.—The American Light & Traction Company has increased the dividend on its common stock one-half of 1 per cent quarterly by the declaration of a quarterly dividend of 2½ per cent, payable on May 1, 1910.

Catskill (N. Y.) Traction Company.—The Public Service Commission of the Second District of New York has authorized the Catskill Traction Company, which has taken over the Catskill Electric Railway, to make a mortgage for \$400,000 and to issue presently \$60,000 of its bonds at not less than 85, and \$48,000 of its capital stock. The proceeds are to be used to purchase and acquire from W. C. Wood property rights and franchises of the Catskill Electric Company. The company is also authorized to issue \$12,000 additional common capital stock to be used in payment for new pavements, changes in the company's machinery at the power plant of the Catskill Electric Company, organization expenses and working capital.

Delaware & Hudson Company, New York, N. Y.—The Delaware & Hudson Company, in its annual report for the year ended Dec. 31, 1909, makes the following reference to the earnings of the electric railways in which it is interested: "The earnings of the electric railways show a substantial improvement, the several roads showing increases in the net earnings as follows: United Traction Company, \$141,772.55; Hudson Valley Railway, \$32,573.03; Troy & New England Railway, \$12,477.97; Schenectady Railway (including electric express company), \$110,659.91, and Plattsburg Traction Company, \$1,394.47. Dividends of 4 per cent for the year 1909 were declared on the capital stock of the United Traction Company, Schenectady Railway, the Troy & New England Railway and the Plattsburgh Traction Company."

Holmesburg, Tacony & Frankford Electric Railway, Tacony, Pa.—The United States Circuit Court has fixed on June 1, 1910, as the date for the sale of the property of the Holmesburg, Tacony & Frankford Electric Railway at foreclosure. The upset price of the property is \$330,000. The sale had previously been fixed for May 25, 1910, but the decree ordering the sale on May 25 was vacated for lack of proper notice. Two committees have been formed in the interest of the bondholders. Of the \$400,000 of first mortgage bonds outstanding \$243,000 has been deposited with one committee and \$97,000 with the other.

Hudson & Manhattan Railroad, New York, N. Y.—At the annual meeting of the stockholders of the Hudson & Manhattan Railroad on April 13, 1910, C. W. King and William H. Corbin were elected directors to succeed E. C. Converse and G. Tracy Rogers.

Metropolitan Street Railway, New York, N. Y.—The property of the Metropolitan Street Railway is advertised to be sold under foreclosure of the general collateral trust mortgage, of which the Guaranty Trust Company is trustee, at the County Court House in New York, on May 12, 1910, at 2 p. m. All bidders must first deposit \$100,000 in cash or a certified check with William L. Turner, special master. No bid for less than \$10,000,000 will be accepted. Any purchaser or purchasers will be allowed one year from the date of the confirmation of the sale within which to elect to adopt and continue in force or to refuse to adopt any lease, traffic or trackage or operating agreement or other executory contract which may be included in the property sold or may constitute an incident or appurtenance thereof, such election to be made in the manner and with the effect provided in the decree dated on April 6, 1910.

New York (N. Y.) City Railway.—The United States Circuit Court of Appeals has handed down a decision upholding the appeal of William W. Ladd, as receiver of the New York City Railway, from the decision of the lower court dismissing the claim of that corporation for interest on notes given by the Forty-second Street, Manhattanville & St. Nicholas Avenue Railway, and directing that the decrees of the lower court of June 15 and Dec. 29, 1909, be reversed, "with instructions to the court below to enter a decree referring the same to the special master for further proceedings in accordance with this opinion."

Scranton (Pa.) Railway.—The Scranton Railway has called all its outstanding 5 per cent collateral trust bonds for exchange for bonds of the Carbondale Railway of like amount and rate of interest.



# Traffic and Transportation

## Hearing on Westboro and Worcester Fares.

The Massachusetts Railroad Commission gave a hearing recently on the petition of the Selectmen of Westboro for a fare of 15 cents between Westboro and Worcester on the Marlboro & Westboro Street Railway. Selectman Jackson, who represented the petitioners, stated that Westboro also desired the restoration of power-plant service in the municipality, on account of the employment which is furnished citizens.

F. H. Dewey, president of the company, stated that the capital stock of the company was \$160,000 and that \$160,000 of bonds have been issued. The floating debt was \$84,000, and until 1909 the company had deficits which amounted to \$31,000. The deficit was now \$24,000. The road had never paid a dividend. Last year the company had a surplus of \$7,000. The obligation of a 15-cent fare could not be fulfilled without the consent of the Worcester Consolidated Street Railway, which operates between Worcester and Grafton. The situation was not the same as when a company operated and owned its service from terminal to terminal. The present fare is 20 cents, with free transfer privileges in Worcester. At one time a 15-cent fare was tried, half going to the Worcester Consolidated Street Railway and half to the Marlboro & Westboro Street Railway, but the plan was not a success. The company could not place any more securities if the fare was reduced. If the fare was made 15 cents there would probably be a loss of \$5,500 in yearly revenue, leaving a net income of only \$1,500. It was more to the town's interest that the road should be wisely managed than that the fares should be so low as to prohibit proper service. The following table of fares charged on other lines of similar character running out of Worcester was submitted by Mr. Dewey:

Trip	Fare	Miles
Worcester to Spencer.....	20 cts.	12
" " Leicester .....	10	6
" " Millbury .....	10	6
" " Fisherville .....	20	12
" " Shrewsbury .....	10	6
" " Oxford .....	20	12
" " Clinton .....	20	14

Comparing these with the Worcester-Westboro fare of 20 cents for 12 miles, the rates on the latter were not too high. The community had a decided advantage in the transfer facilities at Worcester. The Worcester Consolidated Street Railway Company was not obliged to lower its fare between Grafton and Worcester, so that if the reduction should be made it would be necessary to charge only 5 cents for the six-mile ride between Westboro and Grafton, which would be so low as to be prohibitive. Regarding the power house and car house request, Mr. Dewey said that it was no longer economically desirable to operate the Westboro station, as the load on the station had decreased greatly by the loss of the Westboro & Hopkinton Street Railway as a customer. The Marlboro & Westboro Street Railway must secure its power at the lowest possible cost in order to meet its charges. The hearing was closed.

## Pension Fund for Employees of the Northern Ohio Traction & Light Company.

The Northern Ohio Traction & Light Company, Akron, Ohio, has arranged to pension employees who are 65 years old and have been in service 20 years with a regular payment of at least 40 per cent of their wages for the 10-hour day. The proposal to adopt a plan of this kind was referred to briefly in the recent report of Henry A. Everett, president of the company, to the stockholders. The details were worked out by a committee consisting of Will Christy, first vice-president of the company, and Charles Currie, second vice-president and general manager. The recommendations of this committee to the board of directors follow:

"The committee appointed by your board for the purpose of framing a proposition for the creation of a pension fund for our employees beg to submit the following:

"(1) Any employee attaining the age of 65 years will be subject to retirement, providing such employee has given continuous service for 20 years.

"(2) Any employee who has given continuous service for the company for 20 years, and who is required by the pension board to be retired, will be entitled to a pension.

"(3) The amount to be paid for pensions to be 40 per cent of the employee's wages so retired, on a basis of 10 hours per day, at the rate which the employee is drawing at the time of such retirement.

"(4) Any employee who should become totally and permanently disabled while in the service of the company while on duty, and said disability is not caused by his own negligence, is to be retired on pension, provided such finding is made by the pension board.

"(5) Any employee injured while in the service of this company shall receive during the period of total disability the pension provided for in Section 3 for such period of time as the pension board may fix, provided said disability has not been proximately caused by his own negligence.

"(6) Any employee receiving any compensation under the provisions of this board shall accept such compensation in full for all claims for damages by reason of any alleged or claimed negligence on the part of this company.

"(7) If any employee, after being pensioned by the company, is able to perform duties in any capacity outside of the company's employ, this fact will not bar him from securing his pension from this company.

"(8) The pension board to consist of the president, vice-president, general manager, general superintendent and three men from the employees selected by the above officials.

"(9) One-quarter of 1 per cent of the gross earnings to be charged off monthly, and the amount deposited in a 'special pension fund.' The company to set aside in the hands of a trustee at once \$100,000 of 4 per cent bonds, this amount to be held by said trustee in a 'special pension fund' until there is accumulated in cash the amount of \$25,000. When the 'special pension fund' shows a balance in cash of \$25,000, the company will be allowed to withdraw the deposit of 4 per cent bonds, and may from time to time reduce the percentage of gross earnings credited monthly to said fund, in excess of an amount sufficient to maintain a balance in said fund of \$25,000.

"(10) The surplus of said pension fund, if any, to be reinvested for the benefit of the pension fund at the discretion of the pension board.

"(11) Said pension board shall have power to adopt reasonable rules and regulations for the transaction of business pertaining to the making and filing of claims for benefits under said pension fund as in their judgment may be deemed expedient, and said board shall also have power to pass upon the claims of persons claiming the right to share in said pension fund, and all other matters pertaining to the disbursement of moneys of said fund."

The fund became effective on April 1, 1910.

## Increase in Wages in Milwaukee

On April 14, 1910, John I. Beggs, president and general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., addressed the following communication to the employees, in which he announced an increase in wages effective on May 1, 1910:

"Your pay was voluntarily advanced on Sept. 1, 1909, and in recognition of the conscientious efforts made by nearly all of our men to serve the public with care and courtesy (thereby serving this company better) and as an encouragement and incentive to put forth greater efforts to render efficient and acceptable service to the public, your pay, commencing on May 1, 1910, will be voluntarily advanced to the following rates: 22 cents per hour the first year of continuous service; 23 cents per hour the second year; 24 cents per hour the third year; 25 cents per hour the fourth year; 26 cents per hour after four years.

"As stated in the announcement of the increase which took effect on Sept. 1, 1909, the pay of our motormen and conductors prior to June, 1900, ran for 15 cents to 19 cents per hour, therefore, the present advance makes an increase of practically from 40 per cent to 45 per cent in a period of 10 years. Notwithstanding this, the average rate received by the company for carrying a passenger has gradually but steadily fallen from about 4 cents in 1900 to about 3.15 cents per passenger at the present time. As thoughtful, practical men you can realize the extreme care necessary to conduct the business of the company without loss. For this care we must depend upon you, as you

come directly and constantly in contact with the public. If you are careless or discourteous it reflects upon the company. I, therefore, appeal to every motorman and conductor in our service to avoid at all times and under all circumstances giving reasonable cause of complaint or offense to any of our patrons. I furthermore bespeak your continued and increased care and fidelity in advancing and protecting the company's interest, and assure you of my earnest desire to maintain the cordial relations which have always existed between us."

The wages in force since September, 1909, follow: 20 cents per hour the first year; 21 cents per hour the second year; 22 cents per hour the third year; 23 cents per hour the fourth year; 24 cents per hour the fifth year, and 25 cents per hour after five years of continuous service.

#### Appeal from Decision of Washington Commission in Seattle-Tacoma Fare Case

The Puget Sound Electric Railway, Tacoma, Wash., has appealed to the Thurston County Superior Court to set aside the recent order of the Railroad Commission of Washington, for certain readjustments in fares between Seattle and points south of Englewood and between Tacoma and points on the branch line between Willow Junction and Puyallup. In October, 1909, the company adopted a schedule which increased the regular rates to practically 2 cents per mile. The through rate of \$1 for the round trip between Seattle and Tacoma was also increased to \$1.50. The commission refused to order a reduction in the round-trip fare between Seattle and Tacoma or in the one-way fare between the cities. The order of the commission was published in the *ELECTRIC RAILWAY JOURNAL* of March 19, 1910, page 508. In appealing to the court to set aside the order of the commission, the company alleges that it is required to carry passengers at less than cost, while the Chicago, Milwaukee & St. Paul Railway and the Northern Pacific Railway are permitted to collect 3 cents per mile between Seattle and Tacoma. The company further alleges:

"Said order contains so many manifest inconsistencies on its face and is so self contradictory that it is impossible for your petitioner or anyone else to prepare and make a tariff in conformity therewith, and for that reason your petitioner declined participation of making any tariff and protests against the order of said commission going into effect 20 days from March 21, 1910, or at any other time.

"The Railroad Commission of Washington has no jurisdiction over the line of railroad in said State owned and operated by your petitioner, for the purpose of fixing rates on said line of railroad, or for the purpose of determining the justice and fairness of rates in effect thereon. All of the proceedings of the said Railroad Commission of Washington hereinbefore referred to are void. In support of this allegation, your petitioner will show that it operates an interurban railway between Seattle, Tacoma, Puyallup and Reton. Said railroad is operated as a part of the street railroads of said cities."

#### Recommendation Covering Service in Los Angeles

The Board of Public Utilities of Los Angeles, Cal., has filed with the City Clerk of that city a report regarding the operation of railways in Los Angeles, in which it says in part:

"The Board of Public Utilities has spent considerable time in an investigation of problems of transportation and operation along the lines of the various street and interurban railways, and as a result we make the following recommendations:

"That as the result of a practical test in a specially equipped car of the Los Angeles Railway, those present came to the conclusion that there was no good reason why a different rate of speed or different district speed limits should be provided for street cars from that prescribed for other vehicles. We therefore recommend that the ordinances be amended so that the provisions as to speed of vehicles be made to apply to street cars. That is to say, that in the business and congested districts of the city the speed limit be 12 miles per hour, with six miles per hour over crossings and outside that district 20 miles per hour.

"We recognize, however, that much of the phenomenal growth of Los Angeles is due to our excellent system of

interurban electric railways and that it is to the interest of the city that no unnecessary regulations be adopted which will prevent interurban railways from making quick time between the city and outside points. We therefore recommend that the speed regulations do not apply on private rights of way, the crossings of which over public streets are protected in such manner as may be ordered.

"Ordinance No. 14,261 provides that street cars shall come to a full stop at all points where the lines intersect other tracks. There are certain well-known thoroughfares on which the traffic is very heavy and is constantly increasing, at which, we believe, it would also be to the interest of the public to require street cars to come to a full stop before crossing.

"We recommend the passage of an ordinance that men employed as flagmen and gatemen shall not exceed 50 years of age and must pass the same examination as is usual for employees in the operating department of the respective companies. We have discovered that some men are employed as many as 13 or 14 hours consecutively, and we therefore recommend that it be provided by ordinance that no man be employed at such work for more than nine hours in any day."

#### Transfer Announcements in Chicago

The Chicago (Ill.) City Railway uses the backs of its transfers to carry messages to the public. Some of the recent announcements have to do with the prevention of accidents. They read as follows:

"One-third of all street car accidents occur when people are getting on or off cars. Some of these are the fault of the company. Many are caused by carelessness of passengers. Most of them can be avoided by the mutual exercise of care and caution. This company is earnestly endeavoring to do its part. Will you do yours?"

"Flipping Cars.—One in every ten of our accidents is caused by people attempting to board moving cars. This shows how dangerous it is to "flip" a moving car, or to run after and attempt to get on a car after it has started. A misstep may result in a bad fall or fatal injury. Take no chances. Wait for the next car."

**Gates in Memphis.**—The Memphis (Tenn.) Street Railway is installing gates on its cars, and is conducting an educational campaign through the newspapers designed primarily to teach the public how to avoid accidents by exercising care in boarding cars and alighting from them.

**New Record Between Louisville and Indianapolis.**—The "Dixie Flyer" of the Louisville & Southern Indiana Traction Company, which is operated between Louisville and Indianapolis, recently established a new record of three hours and eight minutes between these cities. The usual time for the run is four hours.

**No Special School Fares in Oakland.**—The Oakland (Cal.) Traction Company has stated in a communication to the Council of Oakland that it cannot comply with the recent ordinance of the Council fixing a rate of fare of three cents for school children on account of being compelled by the Council to widen the devil strip of its line on Broadway, a work which it is estimated will cost more than \$100,000.

**Increase in Wages in St. Louis.**—The United Railways, St. Louis, Mo., has posted the following notice in its car houses announcing an increase in the wages of its employees: "Beginning May 1, 1910, the rate of wages of conductors and motormen of the United Railways will be as follows: Twenty and 21-cent men will be advanced to 22 cents an hour; 22-cent men to 23 cents; 23-cent men to 24 cents; 24-cent men to 25 cents; 25-cent men to 26 cents. And in the future employment will begin at 22 cents per hour, advancing 1 cent each year until the 26-cent rate is reached."

**Sleeping-Car Service of Illinois Traction System.**—The publicity department of the Illinois Traction System, Peoria, Ill., has issued an attractive folder on the sleeping-car service of that road, illustrated with four half-tones of the new type 20-berth sleeping cars which has been put into service between Peoria and St. Louis. These cars were described in detail in the *ELECTRIC RAILWAY JOURNAL* of March 19, 1910, page 476. The folder is 3 in. x 6 in., and

is printed in two colors on white stock. Advertising capital is made of the fact that the Illinois Traction System "is the only electric railroad in the world which runs sleeping cars." The running time of the Springfield-St. Louis and the Peoria-St. Louis sleeping cars and the rates are given.

**Steam Service Decreased.—Electric Service Increased.—**On April 17, 1910, the New York Central & Hudson River Railroad withdrew six of its accommodation trains on the western division, between Syracuse and Rochester, on account of the decrease in traffic. Simultaneously with this announcement C. D. Beebe, vice-president and general manager of the Rochester, Syracuse & Eastern Railroad, stated that that company would soon put additional local cars in service between Syracuse and Rochester. At present the Rochester, Syracuse & Eastern Railroad operates only single cars over its line, but it has been decided to operate trains of two cars on some of the runs in the near future. The work of equipping cars for operation in trains is now being carried out at the shops of the company.

**Operation of the Trenton No-Seat-No-Fare Ordinance.—**Although the Townsend "no-seat-no-fare" ordinance passed recently by the Council of Trenton, N. J., and signed by the Mayor became effective on April 18, 1910, the public showed no disposition to take advantage of its provisions. The method of handling traffic during the rush hours was not modified by the company, but the conductors reported that in cases where it had been impossible to furnish seats there had been no refusals to pay fare. The Trenton Street Railway, which operates most of the lines in Trenton; the Camden & Trenton Railway, which has about 3½ miles of city track, and the New Jersey & Pennsylvania Traction Company, which operates only 1.6 miles in the city limits, were all made subject to the provisions of the ordinance, which was published in the *ELECTRIC RAILWAY JOURNAL* of April 16, 1910, page 720. The public regards the ordinance as unnecessary badgering of the Trenton Street Railway.

**Electric Railway Baseball Calendar.—**The Detroit (Mich.) United Railway has issued a wall calendar 10¾ in. wide by 14 in. high covering the baseball season in the American League, in which Detroit is represented by a team known familiarly as "The Tigers." The games at Detroit are indicated in red, the name of the team opposing "The Tigers" being given. The games which "The Tigers" are to play in other cities are indicated in black, the city in which the team plays also being given. At the top of the calendar a space 9 in. wide by 6½ in. high has been ruled off, and here the trade-mark of the Detroit United Railway is printed in black, together with the heading, "Where 'The Tigers' Play," under which the admonition appears: "Of course, the proper way of going to Detroit to see the games at Bennett Park is by the fast and frequent electric interurban railway service of the Detroit United lines." This is the second year the company has issued the calendars, and it reports an unprecedented demand for them. The calendar is copyrighted by R. G. De Lisle, who represents the Detroit United Railway in Toledo.

**Ohio Interurban Railways Increase Wages.—**The Lake Shore Electric Railway, Cleveland, Ohio, and the Northern Ohio Traction & Light Company, Akron, Ohio, have voluntarily increased the wages of their trainmen. The old scale of the Lake Shore Electric Railway provided that employees should receive 21 cents an hour for the first year, 23 cents the second year and 25 cents the third year. Hereafter men who have served three years will receive 27 cents, and as rapidly as the others have served the proper time their wages will be advanced in the same way. The increase in the wages of the employees of the Northern Ohio Traction & Light Company is from 5 to 7½ per cent, and will go into effect on May 1. About 750 employees are affected. On the city divisions in Akron, Canton and Massillon, the new scale will be from 20 cents to 24 cents an hour, depending upon the length of service. On the Kent, Ravenna, Barberton, Wadsworth and Tuscarawas divisions the scale will be as follows: First year, 20½ cents; second year, 21 cents; third year, 22 cents; fourth year, 23 cents, fifth year, 24 cents; sixth year and thereafter, 25 cents. On the Akron, Bedford & Cleveland, Canton & Akron, and the Canton and New Philadelphia divisions the scale will be 21 cents to 26 cents per hour, depending upon the term of service.

## Personal Mention

**Mr. W. A. Diddle** has resigned as auditor of the Winona Interurban Railway, Warsaw, Ind.

**Mr. Fred A. Berg**, formerly with the Seattle (Wash.) Electric Company, has been appointed master mechanic of the Everett Railway, Light & Water Company, Everett, Wash.

**Mr. L. M. Levinson**, who has retired as secretary and general manager of the Shreveport (La.) Traction Company to become connected with the Salt Lake & Ogden Railway, Salt Lake City, Utah, was presented a traveling outfit by a committee of the employees of the Shreveport Traction Company as a token of esteem.

**Mr. Frank E. Payne**, of the Railroad Commission of Indiana, has been appointed a member of the subcommittee of the National Association of Railway Commissioners on construction and operating expenses of electric railways, to succeed Mr. Henry M. Dowling, who was formerly a member of the Railroad Commission of Indiana.

**Mr. W. B. McKinley**, president of the Illinois Traction Company, Peoria, Ill., has been elected president of the Topeka (Kan.) Railway, to succeed Mr. E. W. Wilson, whose interest in the company, with that of the Wilson estate, Mr. McKinley and his associates in the Illinois Traction Company purchased recently, as announced in the *ELECTRIC RAILWAY JOURNAL* of April 9, 1910, page 677.

**Mr. James M. Ambler** has been appointed a member of the Public Service Commission of Maryland by Governor Crowthers. Mr. Ambler was born on Aug. 21, 1854, in Winchester, Va. After attending private schools Mr. Ambler went to William and Mary College and then to the University of Virginia. He taught school several years in Virginia, and was admitted to the bar at Richmond in 1881. Shortly thereafter he entered the law office of Barton & Wilmer, Baltimore. He became a member of the firm later.

**Mr. J. T. Lavelle** has been appointed trainmaster of the Eastern division of the elevated lines of the Brooklyn (N. Y.) Rapid Transit Company. Mr. Lavelle began his railroad career with the Lehigh Valley Railroad, which he served as telegraph operator and yardmaster. He entered the employ of the Brooklyn Rapid Transit Company in 1903 as towerman and was soon after made dispatcher. He was subsequently advanced to assistant trainmaster of the Southern division and was promoted from this position to trainmaster of the Eastern division.

**Mr. W. W. Atwood** has recently been assigned to special duty in the general offices of the Brooklyn (N. Y.) Rapid Transit Company. Mr. Atwood's first railroad work was with the Erie Railroad. He subsequently became the agent of the Delaware, Lackawanna & Western Railroad at Waverly, but resigned from this company to become general superintendent of the Addison & Pennsylvania Railroad. He was also connected for a time with the Long Island Railroad. He entered the employ of the Brooklyn Rapid Transit Company as trainmaster seven years ago and has recently had charge of the Eastern division of the elevated lines.

**Mr. W. A. Sullivan** has been appointed general manager of the Shreveport (La.) Traction Company to succeed Mr. L. M. Levinson, whose resignation as secretary and general manager of the company to become connected with the Salt Lake & Ogden Railway, Salt Lake City, Utah, was announced in the *ELECTRIC RAILWAY JOURNAL* of April 16, 1910. Mr. Sullivan has been engaged in operating and constructing steam and electric railways for 20 years. He began his railroad career with the Boston & Maine Railroad in New England, and for a number of years was employed by Ford, Bacon & Davis, New York, N. Y. He has recently been connected with the Little Rock Railway & Electric Company, Little Rock, Ark.

**Mr. J. F. Turner**, who has recently been appointed superintendent of the Fresno (Cal.) Traction Company, to succeed Mr. C. B. Jackson, resigned, was connected with the Pacific Improvement Company of the Southern Pacific system before entering electric railway service. On Jan. 23, 1903, Mr. Turner was appointed agent and operator of the power system for the Pasadena & Mt. Lowe Railway, and subsequently was appointed superintendent of the company and manager of the hotel properties. When the Pacific

Electric Railway bought the property of the Pasadena & Mount Lowe Railway it was consolidated with the northern division of the Pacific Electric Railway and Mr. Turner was appointed assistant superintendent of the northern division, with headquarters at Pasadena, making his service with the company continuous for 17 years.

**Mr. W. W. Abell** has been appointed a member of the Public Service Commission of Maryland by Governor Crowthers. Mr. Abell was born near Pikesville, Md., in 1872. He was educated in private schools and at Georgetown University. After finishing his education he was a clerk in the National Marine Bank, Baltimore, for a time. Later he became associated with the Baltimore *Sun*, which was founded by his grandfather. He was elected vice-president of the A. S. Abell Company and performed for many years the duties of general manager of the *Sun*, under the direction of his father, who was president of the company. After the death of Edwin F. Abell, in 1904, Mr. W. W. Abell was elected president of the company and continued in that capacity until April, 1909, when he determined to make a trip around the world. He is now on his way home from Japan.

**Judge James Alfred Pearce** has been appointed a member of the Public Service Commission of Maryland by Governor Crowthers. Judge Pearce was born at Chestertown on April 2, 1840. At the age of 14 years he entered the Washington College at Chestertown, and was graduated from Princeton University in 1860. From January, 1861, until December, 1862, he was a member of the faculty of the Washington College. Shortly after severing his connection with Washington College he entered the office of Brown & Brune, Baltimore, and was admitted to the Baltimore bar on May 1, 1864. He immediately began to practise law in Chestertown. In 1867 Mr. Pearce was elected State's Attorney of Kent County, and served in that office until 1875. He was appointed Maryland Tax Commissioner in 1888. In 1897 Mr. Pearce became a candidate on the Democratic ticket against Mr. George M. Russum for judge of the Circuit Court. He was elected, and became the chief judge of the circuit and a member of the Court of Appeals. The circuit comprised the courts of Cecil, Kent, Queen Anne's, Caroline and Talbot Counties. His term would have expired in 1912.

**Mr. Albert Eastman** has resigned as general passenger and express agent of the Utica & Mohawk Valley Railway, the Oneida Railway and the Syracuse Rapid Transit Railway to become general manager of the Windsor, Essex & Lake Shore Rapid Transit Railway, Windsor, Ont., effective on May 1, 1910. Mr. Eastman was originally engaged in steam railroad work, in which he served from 1892 to 1901, first for a long period with the Grand Trunk Railroad as freight and ticket clerk and telegraph operator at Detroit, and later with the Michigan Central Railroad as assistant agent at Detroit. It was from the latter position that he resigned in November, 1901, to become traveling express passenger agent on the Detroit United Railways. In December, 1902, Mr. Eastman resigned from the Detroit United Railways to become general express agent of what now is the Utica & Mohawk Valley Railway, under Mr. C. Loomis Allen. Returning to Detroit in May, 1903, Mr. Eastman became a division superintendent on the Detroit United System, and in November, 1903, resigned from the company to accept the position of superintendent of employment of the Public Service Corporation under Mr. Albert H. Stanley, with whom he has been associated in the management of the Detroit property. Mr. Eastman subsequently was appointed general express agent of the Utica & Mohawk Valley Railway, the Oneida Railway and the Syracuse Rapid Transit Company, and in October, 1908, was appointed general passenger and express agent of these companies.

#### OBITUARY

**Charles O. Johnson**, vice-president and general manager of the Winona Interurban Railway, Winona Lake, Ind., is dead.

**Frederick Mortimer Robinson**, who has been connected with the Pressed Steel Car Company, Pittsburgh, Pa., as sales agent for the last six years, died on April 2. Mr. Robinson was 33 years old. Before he entered the employ of the Pressed Steel Car Company Mr. Robinson was connected with the Chesapeake & Ohio Railroad.

## Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (\*) indicates a project not previously reported.

#### RECENT INCORPORATIONS

**Griffin City & Suburban Railway, Griffin, Ga.**—Chartered in Georgia to build a 5-mile line in Griffin. Capital stock, \$25,000. Incorporators: H. H. Bass, J. P. Nichols, D. R. Blakeley, Joseph D. Boyd, Thomas J. Brooks and R. F. Strickland. [E. R. J., March 19, '10.]

**\*Clarksville & New Providence Railway, Clarksville, Ky.**—Incorporated in Kentucky to build an electric railway from Clarksville to New Providence. Capital stock, \$25,000. Incorporators: Austin Peay, N. L. Carney, L. Bloch, Elwyn Trahern and A. C. Murray.

**\*Blue Ridge Railway, Hagerstown, Md.**—Incorporated in Maryland to build a 3-mile electric railway from Pen-Mar Park to Blue Ridge Summit. Capital stock, \$15,000. Officers: George B. Beaver, president; John G. Benedict, secretary, and W. B. Stottlemeyer, treasurer.

#### FRANCHISES

**Birmingham, Ala.**—The Birmingham Railway, Light & Power Company has been granted a franchise to build a new track over certain streets in Birmingham. Application has also been made for a franchise to build an extension from Ensley to Corey. A. H. Ford, president and general manager.

**\*Gadsden, Ala.**—H. H. Rogers, representing the Noccoalula & Southwestern Railway, has applied for franchises to build an electric railway in Gadsden and to develop an amusement park at the Falls. This company was organized to build a railway from Gadsden to the Falls in Black Creek on Lookout Mountain.

**Fresno, Cal.**—The Fresno Traction Company has applied to the Board of Supervisors for a franchise to build an extension of its line.

**Golden, Colo.**—Rees C. Vidler has applied to the City Council for a franchise to build a railway in Golden. [E. R. J., June 20, '08.]

**Sycamore, Ill.**—The Woodstock & Sycamore Traction Company, Chicago, has asked the Council for a franchise to build an electric railway in Sycamore. This is part of a plan to connect Woodstock, Franklinville, Marengo, Genoa and Sycamore, a distance of 36 miles.

**Davenport, Ia.**—The City Council has granted a 25-year franchise to the Iowa & Illinois Railway, Clinton, for an electric railway in Davenport.

**Algiers, La.**—Peter Lawton, J. J. Mansom, and associates, have been granted a 50-year franchise to build an electric railway in Algiers. It is expected to extend this line eventually to Grand Isle.

**Grand Rapids, Mich.**—At the spring election in villages along the proposed route of the Detroit, Lansing & Grand Rapids Railway, Detroit, the question of granting franchises was submitted to the voters. The result shows that in every town along the route it was decided to grant franchises. The line will pass through Plymouth, Northville, South Lyon, Brighton, Howell, Fowlerville, Webberville, Eagle, Portland, Saranac, Mulliken, Sunfield and Lake Odessa, with terminals at Detroit and Grand Rapids. It will be about 156 miles in length. F. A. Bean, chief engineer. [E. R. J., March 19, '10.]

**Hibbing, Minn.**—W. N. Brown, T. N. Butchard, H. P. Reed and John Redfern have asked the Council for a franchise to operate a gasoline motor line in Hibbing and extend it to Alice. [E. R. J., April 16, '10.]

**\*McComb, Miss.**—W. M. White and J. J. White, Jr., owners of the Liberty White Railroad, have been granted a franchise to build an electric railway over the principal streets of McComb.

**Kansas City, Mo.**—The Council has granted franchises to the Kansas City Railway & Light Company, Kansas City, to build several extensions and double-track some of its lines in Kansas City.

**Havelock, Neb.**—The Council has granted a franchise to

the Omaha, Western & Lincoln Railroad, Lincoln, to build a railway over certain streets in Havelock. Application has also been made to other towns along the route. This is part of a plan to build a 219-mile electric railway from Omaha to Hastings, with a branch to Lincoln. Frank F. Schaaf, president and general manager. [E. R. J., Feb. 29, '10.]

**Brooklyn, N. Y.**—The Brooklyn Rapid Transit Company has asked the Board of Estimate for a franchise to operate a railway over the Manhattan Bridge and through Canal Street tunnel, Manhattan.

**Brooklyn, N. Y.**—The City & Suburban Railway has applied to the Board of Estimate for a franchise to operate a railway between Brooklyn and Amityville over the 72-in. pipe line. It also has asked for a franchise to operate a spur track from the Ridgewood reservoir to Jamaica Bay. [E. R. J., April 9, '10.]

**Seneca Falls, N. Y.**—The Geneva & Auburn Railway has been granted new franchises covering the operation of its present line through Seneca Falls. [E. R. J., Sept. 11, '09.]

**Akron, Ohio.**—The Northern Ohio Traction & Light Company, Akron, has asked the Council to have its 14-year franchise extended for a period of 25 years. It is stated that the company would then consider building new lines in Akron in return for an extension of its franchise.

**McConnellsville, Ohio.**—The Council has granted the Muskingum & Morgan Railway, Light & Power Company, Zanesville, a franchise to construct an electric railway over certain public highways within the corporate limits of McConnellsville. This is part of a plan to build a railway between Zanesville and Duncan Falls. [E. R. J., Jan. 15, '10.]

**Queenston, Ont.**—H. H. Collier has applied to the City Council for a franchise for an electric railway in Queenston, for the Niagara & St. Catharines Railway, which is projecting a railway between St. Catharines and Niagara-on-the-Lake. [E. R. J., March 5, '10.]

**Milton, Ore.**—The Council has granted a franchise to the Walla Walla Valley Traction Company, Walla Walla, Wash., to construct an electric railway in Milton.

**Salt Lake City, Utah.**—The County Commissioners have granted a 50-year franchise to Le Grand Young, representing the Emigration Cañon Railway, to build an inter-urban railway from Salt Lake City to Holliday. According to the terms of the franchise construction must begin within one year and the railway must be completed and in operation within two years.

**Morgantown, W. Va.**—The court has granted a franchise to H. R. Warfield, representing the Union Utilities Company, for the construction of an electric line in Morgantown and extending to the State line near Cheat Haven. [E. R. J., April 16, '10.]

**Oconomowoc, Wis.**—The Common Council has granted the Milwaukee Light, Heat & Traction Company, Milwaukee, a franchise to build an electric railway in Oconomowoc. It will be an extension of the line planned from Milwaukee.

#### TRACK AND ROADWAY

**Florence, Ala.**—Preliminary surveys of the proposed route for a 75-mile electric railway between Huntsville and Florence have been finished. It is stated that this railway project is backed by ample capital and that there is water power in abundance to be obtained from several streams in the vicinity of the route. Thurston H. Allen, Florence, is interested. [E. R. J., April 2, '10.]

**El Tigre Mining Company, Douglas, Ariz.**—Press reports state that this company proposes to build an electric railway from Douglas to El Tigre. It also contemplates the erection of a central power plant in Douglas.

**Sacramento & Sierra Railroad, Sacramento, Cal.**—This company, which is building a railway from Sacramento to Lake Tahoe via Orangevale Bluffs, has completed surveys, secured all rights of way and has completed grading for a distance of 16 miles. Work is being rushed in the vicinity of Orangevale. B. F. Hulings, Sacramento, local representative. [E. R. J., July 10, '09.]

**Jacksonville (Fla.) Electric Company.**—This company expects to start work soon on the construction of the

Phoenix Park line extension to Cummer's Mill. Hardy Croom, manager.

**Idaho Falls (Idaho) Electric Railway.**—It is reported that rights of way have been secured by this company and work will begin July 1 on the projected railway to connect Idaho Falls, Lincoln, Ammon, Iona and Heise. J. L. Milner, Idaho Falls, president. [E. R. J., Feb. 5, '10.]

**Peoria (Ill.) Railway Terminal Company.**—This company advises that it expects to build 4.4 miles of new track in Peoria. R. W. Bailey, Peoria, general superintendent.

**Bluffton, Geneva & Celina Traction Company, Bluffton, Ind.**—This company has laid 12 miles of track between Bluffton and Geneva. Grading is being done on the remainder of the route from Geneva to Celina, Ohio, via New Corydon and Dublin. [E. R. J., April 9, '10.]

**Milford, Ind.**—Omer E. Neff is said to be backing a project to build an electric line from Bremen to Mishawaka, through Woodland, Wyatt and Coalbush, now void of rail transportation. The project is not wholly new, as a line from Logansport to South Bend was surveyed over the same route in 1894. Mr. Neff says his plans are sufficiently advanced to commence work in a few weeks.

**Utica, Ind.**—Dix Brothers, Utica, are promoting a plan to build a 6-mile railway to extend from Utica to Jeffersonville. A line from Bethlehem to Owen and Charlestown is also proposed.

**Charles City & Western Railway, Charles City, Ia.**—This company advises that surveys have been completed and construction has been started on its 20-mile railway in Charles City and extending into the surrounding country. It will operate McKeen gasoline motor cars for passenger service and gas locomotives for hauling freight. The company's car house and shops are now under construction at Charles City. It is stated that contracts will be let soon for the construction of several sections of the line. Capital stock, authorized, \$300,000. Officers: C. W. Hart, Charles City, president and general manager; E. M. Sherman, Charles City, vice-president, and C. H. Parr, Charles City, secretary.

**Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.**—This company has awarded the contract for building the grade of its proposed extensions from Denver Junction to Waverly and from Waterloo to Belle Plaine to Harrington Brothers, St. Louis, Mo. [E. R. J., March 26, '10.]

**Louisville, Lincoln Farm & Mammoth Cave Traction Company, Glasgow, Ky.**—This company announces that preliminary arrangements have been made and work will be started within 90 days on its proposed 70-mile railway between Louisville and Mammoth Cave via Glasgow, Bear Wallow, Uno, Goodnight, Hardyville, Cannier, Magnolia, Buffalo and Hogenville. L. W. Preston is interested. [E. R. J., March 19, '10.]

**Louisville (Ky.) Railway.**—This company has recently had proposals made to it regarding extensions of several of its suburban lines. Efforts are being made to secure an extension of the Orell line a distance of 3½ miles to Kosmosdale, and in order to enable it to do so citizens in that section have secured rights of way which will be given to the company. It is stated that the company has been asked also to build an extension of its line to Mt. Washington and Bardstown.

**Boston & Northern Street Railway, Boston, Mass.**—This company opened a new line between Stoneham and Spot Pond, in the Middlesex Falls district of Boston, on April 15. Through service is now given between Stoneham and the Sullivan Square station of the Boston Elevated Railway, the running time being 33 minutes and the headway 20 minutes. The new line is about 2 miles long.

**Gallatin Valley Electric Railway, Bozeman, Mont.**—This company is reported to have awarded a contract to Callahan Brothers, Logan, for grading and bridge work on its 27-mile extension from Bozeman northwest to Three Forks. Work was started April 6 and it is expected to have the extension completed by Sept. 1.

**Virginia City Southern Electric Railway, Virginia City, Mont.**—This company has completed surveys and secured considerable right of way. It is expected to begin soon

the grading of this proposed 12-mile railway between Virginia City and Alder. The directors have recently authorized a bond issue of \$200,000 and elected the following officers: Karl Elling, president; Luther H. Leher, vice-president; A. J. Bennett, treasurer, and M. M. Duncan, secretary. [E. R. J., April 11, '10.]

**Kansas City Railway & Light Company, Kansas City, Mo.**—This company expects to build a 2-mile extension in Kansas City from Belleview Avenue and Forty-eighth Street to the Country Club. W. W. Wheatley, Kansas City, general manager.

**St. Louis-Kansas City Electric Railway, St. Louis, Mo.**—This company announces that 75 per cent of the route for its proposed 250-mile electric railway has recently been surveyed. It plans to construct a double-track line between St. Louis and Kansas City. W. B. Cauthorn, Columbia, chief engineer. [E. R. J., Nov. 27, '09.]

**Nebraska Traction & Power Company, Omaha, Neb.**—It is reported that this company will extend its line from Ralston to Papillion this spring. C. J. Chapman, traffic manager.

**Jersey Central Traction Company, Keyport, N. J.**—This company is now constructing 4 miles of new track between Perth Amboy and South Amboy.

**Rome & Oneida Electric Railway, Rome, N. Y.**—This company is securing right of way for its proposed 13-mile railway to connect Verona, Blackman's Corners, Greenway, Hatches Corners and Rome. Dewitt C. Hadcock, Oneida, is interested. [E. R. J., Nov. 7, '08.]

**Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y.**—This company has completed plans for the double tracking of its railway between Long Branch and Baldwinsville, a distance of 3 miles.

**Cincinnati, Portsmouth, Pomeroy & Pittsburgh Traction Company, Cincinnati, Ohio.**—This company is said to have completed surveys on its proposed railway from Cincinnati to Pittsburgh along the Ohio River valley, a distance of 466 miles. The company expects to let contracts for construction this summer. A. E. Cox, 1502 Third Avenue, Huntington, W. Va., president. [E. R. J., Nov. 27, '09.]

**\*Muskogee (Okla.) Transit Company.**—This company was recently organized by Muskogee and St. Louis capitalists to build an electric railway in Muskogee and extending to Tulsa and Sapulpa. E. W. Mangson and C. J. Barwick, St. Louis, are interested.

**Hummelstown & Campbellstown Street Railway, Hershey, Pa.**—This company advises that during the last few weeks contracts have been let for between 8000 and 10,000 ties. It is also building 2 miles of additional track. J. R. Kreider, superintendent.

**\*Hollidaysburg, Pa.**—Capitalists of Blair and Huntingdon counties are said to be interested in a plan to build a railway between Hollidaysburg and Huntingdon, a distance of about 40 miles.

**Southern Cambria Railway, Johnstown, Pa.**—This company advises that during the next few weeks it expects to place contracts for 13 miles of single track. F. R. Newman, Johnstown, general manager.

**Reading (Pa.) Transit Company.**—This company expects to relay the entire 5-mile line of the Lebanon-Annville line with 80-lb. rails. The present track is laid with 40-lb. rails. This work will be commenced in a short time and when completed all the lines in this section, except the short line to Avon, will be of standard construction.

**Bryan & College Interurban Railway, Bryan, Tex.**—This company reports that it has begun construction on its 6-mile line between Bryan and College. Repair shops will be located at Bryan. Capital stock, authorized, \$20,000. Officers: O. E. Gammell, Bryan, president and general manager; W. E. Saunders, Bryan, vice-president, and J. Maloney, Bryan, secretary. [E. R. J., April 9, '10.]

**Eastern Texas Traction Company, Greenville, Tex.**—This company advises that right of way has been secured for its proposed railway between Greenville, Wolfe City, Bonham, Denison, Caddo Mills, Rockwall, Dallas, Paris and Clarksville. It is the plan to operate either gasoline or gasoline electric cars. Repair shops will be erected at Greenville, Tex. Capital stock, \$12,000, which will be in-

creased when the line is under construction. Officers: S. B. Perkins, Greenville, Tex., president; J. H. Blockus, Wolfe City, vice-president; K. N. White, Greenville, Tex., treasurer, and J. B. Murphey, Greenville, general manager

#### SHOPS AND BUILDINGS

**Pacific Electric Railway, Los Angeles, Cal.**—This company will build a waiting room and depot adjoining its car house on North Raymond Avenue and Mary Street in Pasadena. It will probably be similar to the Los Angeles station.

**Peoria (Ill.) Railway Terminal Company.**—This company advises that it is now building a new car house, 70 ft. x 200 ft. in Peoria. Estimated cost is \$20,000. [E. R. J., Dec. 25, '09.]

**Louisville & Interurban Railway, Louisville Ky.**—This company, which operates the suburban lines of the Louisville Railway, will build a freight and express station on Linden Avenue, Louisville, and in order to secure the desired site the company has petitioned the Jefferson County Court to condemn property affected.

**Rochester, Syracuse & Eastern Railway, Syracuse, N. Y.**—This company expects to build four standard stations at Lyons, Newark, Fairport and Brighton this summer. The waiting room will have a seating capacity of 35 persons. The freight section will be 50 ft. x 20 ft. They are estimated to cost \$10,000 each. C. D. Beebe, Syracuse, general manager.

**Tidewater Power Company, Wilmington, N. C.**—This company advises that it is now building a new repair shop, 50 ft. x 110 ft., at Wilmington.

**El Paso (Tex.) Electric Company.**—This company will erect a new car house in El Paso. The structure is estimated to cost \$11,000. [E. R. J., Jan. 16, '09.]

#### POWER HOUSES AND SUBSTATIONS

**Indiana Union Traction Company, Anderson, Ind.**—This company advises that it expects to purchase soon a 2500-kw low-pressure turbine for its power house at Anderson. H. A. Nicholl, Anderson, general manager.

**Peoria (Ill.) Railway Terminal Company.**—This company advises that it expects to install duplicate units having a capacity of about 1500 kw.

**Athol & Orange Street Railway, Athol, Mass.**—This company has contracted for 7 miles of trolley wire to replace old wire. W. D. Smith, manager.

**Frederick (Md.) Railway.**—This company is considering the erection of a new power plant.

**Rockland, Thomaston & Camden Street Railway, Rockland, Me.**—This company is building an addition to its power house at Glen Cove, in which it will install a 500-kw generator to be connected to a 700-hp cross compound engine. This will more than double the present capacity of the plant.

**Kansas City (Mo.) Railway & Light Company.**—This company plans to purchase new substation equipment and to build a new power house at Forty-eighth Street and Troost Avenue, Kansas City. W. W. Wheatley, Kansas City, general manager.

**Hanover & McSherrystown Street Railway, Hanover, Pa.**—This company expects to place contracts during the next two weeks for new coal-handling machinery. Robert E. Manley, Hanover, general manager.

**Southern Cambria Railway Company, Johnstown, Pa.**—This company advises that during the next four weeks it expects to purchase one 1000-kw unit, consisting of generators, engine and boilers, for 1200-volt d.c. operation. F. R. Newman, Johnstown, general manager.

**Kittanning & Leechburg Railways, Kittanning, Pa.**—The power house of this company and the Kittanning Electric Light Company was destroyed by fire April 14. It was a brick building covering an entire block. The loss is estimated at \$200,000.

**Fairmont Park Transportation Company, Philadelphia, Pa.**—This company advises that it expects to purchase a new generator and boiler. W. C. Martin, secretary.

# Manufactures & Supplies

## ROLLING STOCK

**El Paso (Tex.) Electric Railway** will soon purchase five pay-as-you-enter cars.

**Lincoln (Neb.) Traction Company** is reported to be in the market for a number of new cars.

**Galesburg Railway & Light Company, Galesburg, Ill.,** is in the market for four pay-as-you-enter cars.

**Indianapolis, Columbus & Southern Traction Company, Columbus, Ind.,** may buy three passenger cars.

**South Side Elevated Railroad, Chicago, Ill.,** is contemplating the purchase of from 20 to 30 new cars.

**Michigan United Railways, Jackson, Mich.,** has purchased 10 single trucks from The J. G. Brill Company.

**Southern Cambria Railway, Johnstown, Pa.,** contemplates buying four 50-ft. interurban cars complete within four weeks.

**Jacksonville (Fla.) Electric Company** expects to place an order within the next two months for five pay-as-you-enter cars.

**Rock Island-Southern Railroad, Monmouth, Ill.,** is reported to be planning the construction of a number of electric locomotives.

**Cincinnati (Ohio) Traction Company** has drawn specifications for 50 single-truck, open cars and will order this rolling stock at once.

**Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis.,** expects to buy one second-hand, double-truck car within one month.

**British Columbia Electric Railway, Vancouver, B. C.,** has ordered one single-truck, centrifugal sprinkler car from The J. G. Brill Company.

**Winona Interurban Railway, Warsaw, Ind.,** desires to rent four or five interurban passenger cars for a direct-current line of from 500 to 600 volts.

**Atlantic & Suburban Railway, Pleasantville, N. J.,** has been rebuilding its entire rolling stock, repainting the cars with Chicago Varnish Company's paint.

**Enid (Okla.) City Railway** has placed an order with the Barney & Smith Car Company for three single-truck cars, to be 21 ft. 4 in. long over corner posts and 31 ft. 4 in. long over all.

**Twin City Light & Power Company, Centralia, Wash.,** a road under construction, has placed an order for two cars with 30-ft. bodies with the Niles Car & Manufacturing Company, Niles, Ohio.

**Municipal Traction Company, Cleveland, Ohio,** reported in the *ELECTRIC RAILWAY JOURNAL* of April 2, 1910, as contemplating the purchase of 50 cars at once, will not place contracts for any rolling stock at the present time.

**Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.,** is in the market for two cars, either open, closed or semi-convertible. The company wants 35-ft. to 40-ft. cars, either single or double-truck, preferably the former.

**Metropolitan Street Railway, Kansas City, Mo.,** which was stated to be planning the purchase of some cars in the *ELECTRIC RAILWAY JOURNAL* of March 26, 1910, will buy 50 cars. It is reported they are to be of the pay-as-you-enter type.

**Missoula (Mont.) Street Railway** has placed an order with the American Car Company for four cars, to be mounted on Brill No. 39-E trucks and equipped with Consolidated Car Heating Company's electric heaters. This rolling stock is in addition to that which was reported in the *ELECTRIC RAILWAY JOURNAL* of Jan. 15, 1910.

**Chicago & Joliet Electric Railway, Joliet, Ill.,** which was reported in the *ELECTRIC RAILWAY JOURNAL* of April 16, 1910, to have ordered two cars from The J. G. Brill Company, has contracted for two 36-ft. combination passenger and smoking cars, to be mounted on Brill No. 27-M.C.B. trucks, and also to have four single-truck cars built by the same car builders.

**Washington Railway & Electric Company, Washington, D. C.,** mentioned in the *ELECTRIC RAILWAY JOURNAL* of Feb. 12, 1909, as having ordered 50 pay-as-you-enter closed cars

from The J. G. Brill Company, has decided on the following details:

Length of body...28 ft. 3 in.	Hand brakes..... Peacock
Length over vestibule...41 ft. 1 in.	Heaters ..... Consolidated
Width over sills...7 ft. 7 in.	Headlights ..... Neal-Kirby
Width over posts at belt...8 ft.	Journal boxes ...Symington
Body .....	Motors .....GE-210B
Interior trim..... cherry	Paint ..... Felton & Sibley
Underframe..... composite	Sanders ..... Dumpit
Brakeshoes...A. S. I. R. A. Standard.	Seats ..... Winner
Bumpers...Brill angle iron	Springs .....Brill
Curtain fix...Curtain S. Co.	Steps ..... Stanwood
Curtain material...Pantasote	Trucks ..... P #1 No. 39-E
Destination signs... Hunter	Varnish ..... Hildreth
Fare boxes ..... Brill	Ceilings ..... Agasote
Gears and pinions.....G. E.	Floor paint....Patterson & Sargent.
Gongs ..... Dedenda	

**Northern Texas Traction Company, Fort Worth, Tex.,** reported in the *ELECTRIC RAILWAY JOURNAL* of March 26, 1910, to have ordered 15 double-truck closed cars through Stone & Webster, Boston, from the American Car Company, has drawn the following specifications:

Seating capacity..... 40	Hand brakes..... Brill, with Sterling - Meaker attachments.
Length of body..... 26 ft.	Heaters ..... Consolidated
Length over vestibule...39 ft.	Headlights .. Crouse-Hinds
Width over sills...8 ft. 6 in.	Journal boxes ..... Brill
Width over posts at belt, 8 ft. 6 in.	Motors .....GE-219
Body.....wood and metal	Push button signal....Brill
Interior trim ..... bronze	Registers ..... International
Underframe ..... wood	Roofs ..... turtle back
Air brakes ... Westinghouse	Sanders ..... Brill
Bolsters, body & truck..Brill	Seats .....Heywood Bros.
Brakeshoes ..... Brill	Seating material...wood slat
Center bearings...Symington	Step treads ..... Universal
Couplers ..... Brill	Trucks ..... Brill 39E
Curtain fix...Curtain S. Co.	Varnish ..... Murphy
Curtain material...Pantasote	Wheels .....St. Louis
Destination signs ....Hunter	Walls gong.
Gongs .....Brill mechanism	

**Southern Pacific Railroad, New York, N. Y.,** reported in the *ELECTRIC RAILWAY JOURNAL* of Feb. 5, 1910, as having ordered 125 all-steel cars from the American Car & Foundry Company, will have this rolling stock built according to the specifications given below. The order specifies 40 motor passenger coaches, 25 combination motor passenger and baggage coaches and 60 trailers, to have seating capacities of 116, 88 and 116, respectively:

Weight (car body)...76,500 lb.	Couplers .....McConway & Torley.
Bolster centers.....45 ft.	Gears and pinions....G. E.
Length of body.....58 ft.	Gongs..New Departure Mfg. Co.
Length over all...72 ft. 4 in.	Headlights ..... G. E.
Width over sills...10 ft. 4 in.	Journal boxes ... Symington
Sill to trolley base...9 ft. 4 in.	Motors .....4; GE-207
Height rail to sills...3 ft. 8 in.	Sash fix.....Curtain S. Co.
Body .....	Seats.....H. & K.
Interior trim..... steel	Springs....Ry. Steel Spring
Underframe ..... steel	Trucks ..... Baldwin M.C.B.
Air brakes... Westinghouse	Ventilators ..... Globe
Axles ..... Taylor, iron	Wheels ..... Standard
Bolsters..Double Body Bolster Co.	Platform gates ..... Pitt
Brakeshoes..Am. B. S. & F. Co.	Marker lamps...A. & W. Co.
Control system..... G. E.	

## TRADE NOTES

**Rail Joint Company, New York, N. Y.,** has moved its Pittsburgh office from the Park Building to the Oliver Building.

**W. E. Baker & Company, New York, N. Y.,** have moved their offices from 27 William Street to the Tilden Building, 105 West Fortieth Street.

**Scully Steel & Iron Company, Chicago, Ill.,** has moved its offices from Halstead, Fulton & Wayman Streets, to 2364 South Ashland Avenue.

**Ohio Brass Company, Mansfield, Ohio,** has received an order from the Chicago & Joliet Electric Railway for 20 Tomlinson automatic couplers.

**U. S. Metal & Manufacturing Company, New York, N. Y.**, has appointed Charles E. Castle manager of its railroad department, effective on May 1, 1910.

**Railway Steel Spring Company, New York, N. Y.**, will remove its Chicago sales office from 1380 Old Colony Building to 1111 People's Gas Building on May 2.

**Q & C Company, New York, N. Y.**, after April 26 will have its Chicago office located in the People's Gas Building, where all correspondence regarding track appliances should be addressed.

**F. H. Herring, New York, N. Y.**, has moved his office from 1912 Park Avenue to larger quarters in room 454, 50 Church Street, where he will continue to carry on his second-hand equipment business.

**Sellers Manufacturing Company, Chicago, Ill.**, will move its general sales offices from the Western Union Building to the new McCormick Building, located at the corner of Michigan Avenue and Van Buren Street.

**W. J. Jeandron, New York, N. Y.**, will move his offices to 172 Fulton Street on May 1, where he will occupy larger quarters to facilitate the handling of his increased business. Mr. Jeandron represents Le Carbone Company of Paris, France.

**Boston Belting Company, Boston, Mass.**, announces that the Jewell Belting Company of Chicago is no longer acting as its Western agent, but that it has opened a branch store at 177 Lake Street, Chicago, which will be in charge of M. S. Curwen, manager of sales.

**Federal Creosoting Company, Indianapolis, Ind.**, which is a consolidation of the Federal Creosoting Company of Toledo, Ohio, the National Creosoting Company of Paterson, N. J., and the Colonial Creosoting Company of Hillsboro, N. Y., has been incorporated with a capital of \$1,000,000.

**Scullin-Gallagher Iron & Steel Company, St. Louis, Mo.**, has obtained the services of George L. L. Davis as assistant to the vice-president, with headquarters at 1401 Syndicate Trust Building, St. Louis. Mr. Davis was formerly with the U. S. Metal & Manufacturing Company, New York.

**Ackley Brake Company, New York, N. Y.**, has received the following orders for the Ackley adjustable brake recently: Omnibus & Tramway Company, Lyons, France, 20 brakes; Electric Tramways, Geneva, Switzerland, brakes for the company's entire rolling stock; Nice & Littor Tramways, Nice, France, 16 brakes.

**Frank W. A. Campbell, Houston, Tex.**, has opened an office in Houston as a consulting and constructing electrical engineer. Mr. Campbell was connected with the construction department of the General Electric Company for five years, first at the Schenectady works and later at the Chicago office. During that time Mr. Campbell installed a large variety of apparatus, especially that which pertains to central stations, heavy electric traction and industrial plants.

**American Tie & Timber Company, New York, N. Y.**, has recently increased its timber holdings by acquiring a large tract of timber near Jacksonville, Fla. A yard has just been opened at Tampa, Fla., from which the company is shipping a large amount of timber. The company shipped over 200,000 cypress and pine cross ties from Jacksonville and Fernandina, Fla., and Brunswick, Ga., during March, which is the largest number ever shipped in one month by the company.

**Davis-Bournonville Company, New York, N. Y.**, will be represented by the Ohio Welding & Manufacturing Company in Cincinnati. A large demonstrating plant, including welding equipment and an oxygen plant, has been installed at Cincinnati, so that the latter company may handle all classes of repair work to which the oxy-acetylene process can be applied. The Davis-Bournonville Company contemplates opening a demonstrating and repair shop in Cleveland at 2121 East Second Street, S. E.

**Acme Supply Company, Chicago, Ill.**, whose factory is located at West Lake Street and Fifty-second Avenue, has increased its capital stock from \$12,000 to \$60,000. The company is enlarging its plant from three to four stories, and when this addition is completed a floor space of 50,000 sq. ft. will be available. The officers of the company are as follows: H. H. Schroyer, president; H. U. Morton, vice-

president and secretary. The company makes a specialty of car curtains and fixtures and general railway supplies.

**Allis-Chalmers Company, Milwaukee, Wis.**, reports a very satisfactory growth in its railway air brake equipment sales. The chief demand is for the standard double-end AA-6 equipments. Some of the recent orders for these are: The Connecticut Company, 175 equipments; Chicago City Railway, 12 equipments; Transit Supply Company, 70 equipments; Worcester Consolidated Railway, 15 equipments; Springfield Street Railway, 25 equipments; Portland Railroad, 6 equipments; Fresno Traction Company, 10 equipments; Northern Ohio Traction & Light Company, 10 equipments; Peoria Railway Terminal Company, 5 B-4 quick-action automatic equipments.

#### ADVERTISING LITERATURE

**Hess-Bright Manufacturing Company, Philadelphia, Pa.**, is mailing a post-card calling attention to HB and DWF ball bearings.

**Jordan Brothers, New York, N. Y.**, have issued a leaflet describing the Jordan single-belt adjustable geared grip-hoist, which is adaptable for transforming hand hoists and elevators into power elevators.

**Ridgway Dynamo & Engine Company, Ridgway, Pa.**, has issued Bulletin No. 24, in which its alternating-current generators are described and illustrated. The sizes range from 35 kva to 750 kva in the engine type and from 30 kva to 300 kva in the belted type.

**C. A. Wood Preserver Company, Austin, Tex.**, is distributing a folder containing an article by H. H. Gerhard, entitled "Wood Preservation by the Superficial Method," which was reprinted from *Telephony* of March 19, 1910. The company is also mailing a novel post card, entitled "Hot Shots." It is in the form of a folder, and when it is opened a revolver is unsheathed. This publication contains the story of the C. A. wood preserver, according to the United States Forest Service method of analysis.

**D. & W. Fuse Company, Providence, R. I.**, has issued a supplement to Price List No. 12A, in which are covered the latest types of secondary fuse boxes and service switches and transformer and junction cut-outs for both aerial and subway lines which are manufactured by the company. Large capacity fuses up to 1000 amperes which have never before been listed are included in the supplement to Price List 12A. The original Circular 112 was entitled "Service Switches and Fuse Boxes for National Code Fuses, 250 and 600 Volts." It was dated September, 1909. Circular No. 113 was dated September, 1909, and was entitled "Fuses and Cut-Outs for Inductive Circuits."

**Electric Storage Battery Company, Philadelphia, Pa.**, has issued Bulletins No. 121, dated March 15, 1910, and No. 122, dated April, 1910. Bulletin No. 121 has for its subject the installation of the Chloride Accumulator in the mills of the Indiana Steel Company, at Gary, Ind., while the installation of the Chloride Accumulator and the Eride battery in yachts and power boats is illustrated and described in Bulletin No. 122. The description of the installation in the mills of the Indiana Steel Company is very complete. A double-page view of the exterior of the works of the Indiana Steel Company and a double-page floor plan and outline diagram of the power house are presented. Accompanying the text are views of the interior of the power house, showing the gas engines, switchboards, the battery room, the converters, etc. A mill curve is presented of the estimated maximum load and an actual load curve is also shown. In addition there is an a.c. wiring diagram and voltage charts with the battery turned on and the battery turned off.

#### NEW PUBLICATIONS

**Field Practice of Railway Location.** By Willard Beahan. New York, 1910: The Engineering News Publishing Company. Cloth, 252 pages. Price, \$3.

This is a second edition of Mr. Beahan's book on the practical side of railroad location. The subject matter has been carefully revised and brought up to date by the substitution of more modern data on train operation. The chapter on train resistance is particularly complete.