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Messages of the Governors

The publication in recent issues of the ELECTRIC RAILWAY JOURNAL of excerpts from the annual messages of Governors of various States, discussing the subject of regulation and control of public utilities, bears out the expectations that careful observers have had as to the wide and irresistible extent of the movement. For the good of the whole public it is to be hoped that the movement in all the States where it exists will be directed into wise and proper channels. In only a few notable instances

have public authorities bothered much about the rights of the corporations within their jurisdiction. But the financial upheaval and the cessation of work on improvements resulting from inability to raise capital on reasonable terms have helped to bring about a realization of the fact that the States owe as careful protection to the security-holders, whose investments make possible the great benefits derived from important public utilities, as they owe to the public served. No laws intended to regulate public utilities corporations can be of lasting advantage to either the corporations or the public unless they are framed with as near a full measure of justice to the rights of all as is possible.

The Value of Fenders and Wheelguards

In the hearing last week before the Public Service Commission of New York, First District, on the report of the sub-committee on fender and wheelguard tests, F. W. Whitridge, receiver of the Third Avenue Railroad Company, said that of 2700 accident cases which had come to his notice, none had occurred under conditions similar to those prevailing in the committee's tests. By this the speaker meant that the dummies were inert, and in this respect the tests did not entirely simulate actual conditions, except those presented by persons drunk or asleep on the track. While this criticism in a sense is true, the tests undoubtedly corresponded to actual conditions as closely as was possible without living subjects, and Mr. Whitridge did not use this reason as a defense against the installation of fenders and wheelguards. It must not be supposed, however, that even the best fenders and wheelguards will prevent a large proportion of the street railway casualties which, unfortunately, occur daily. Boarding and alighting accidents, collisions with other cars and teams, controller burnouts, electric shocks, and at least a few cases of persons getting under the rear wheels, cannot be lessened by the use of life-saving devices on the front end of the car. The claim departments of street railway companies are prone to measure the value of human life in dollars and cents, which, from the nature of their work, is only natural, and from that point of view it seems unreasonable to spend \$20,000 a year to prevent an accident which will cost the company \$5,000. There is a side to the question, however, which cannot be reckoned by the damages assessed by a jury in court. The company should use every possible means to prevent accidents to passengers and users of the highways on which it operates. If it does this, the most captious critic cannot ask for more. But the public should not assume that the general adoption of fenders and wheelguards will prove a cure for all kinds of street railway accidents; it would be but a beginning.

The Measure of Acceleration

Interest in the measurement of the rates of acceleration of trains is practically a development of electric railway practice. The use of independently driven axles has made possible such an increase in this phase of train movement that the selection of its proper unit possesses an importance which did not obtain when steam was the main reliance as a motive power. But in this particular the practice in this country and abroad has followed entirely different lines, owing to the fact that the acceleration function may be considered either the second derivative of the distance function or the first derivative of the velocity function. The logical unit to use for acceleration thus depends upon which aspect of acceleration we adopt; that is, whether we shall measure acceleration in feet per second per second or in miles per hour per second. The latter is the usual practice in this country; the former, possibly because many of the electrical engineers abroad have also been prominent physicists, is the common method in Europe. A comparison of the relative merits of each plan was selected by C. O. Mailloux as the subject of the paper presented by him at the last International Electrical Congress, and a summary of his defence of the miles-per-hour-per-second method is published elsewhere in this issue. It is interesting to note that Mr. Mailloux, whose previous arguments in favor of this plan have been based largely upon its practical convenience, devotes a considerable portion of his paper to proving its superiority also from a mathematical point of view. Certainly, for a quantity which enters so intimately into all railway speed calculations as acceleration the most logical unit is very desirable, and this Mr. Mailloux clearly shows is miles-per-hour-per-second.

The Knoxville Water Decision

History is being made rapidly in the judicial interpretation of the rights of public service corporations which hasten to the Supreme Court to take shelter under the fourteenth amendment to the Constitution of the United States from threatened municipal and State confiscation. An eminent jurist, who several years ago was Ambassador of the United States to Great Britain, once said that the fourteenth amendment constituted one principal difference between the systems of jurisprudence in this country and Great Britain. In the latter Parliament is supreme and by decree can sequester private property for public uses. The last part of the first clause of the fourteenth amendment to the Constitution was avowedly adopted for the protection of the property rights of the minority in this country and of any portion of it, and an appeal to the provisions of this clause has constituted the principal defense in most of the recent appeals to the Supreme Court from adverse corporation legislation.

The conditions in the Knoxville case differ somewhat from those of the recent Consolidated Gas case, already mentioned in these columns, and several points stand out in bold relief in the former decision. The first is that the Supreme Court is prepared to throw its mantle of protection around corporations whose property under State and municipal enactments is being taken without due compensation, but will do so only when the case is one

which is absolutely clear. From the decision, it is also evident that the Court does not consider speculation as to possible future losses under proposed legislation to be as convincing as definite figures derived from experience. The old maxim that he who appeals for justice must come into the court with clean hands applies with double force in cases of this kind, but he who deserves relief will receive it. The court made no effort to specify what the company should earn upon the value of its property. A return of 6 per cent, including depreciation, or of 4 per cent, excluding depreciation, was mentioned, but the court said clearly: "We do not feel called upon to determine whether a demonstrated reduction of income to that point would or would not amount to confiscation." Undoubtedly it would hold, from the principles stated in the Consolidated Gas case, that the return to be permitted should depend upon the risk involved, and this would vary in nearly every case. The concluding statement of the court should be borne in mind by every legislative body and public service corporation:

The courts, in clear cases, ought not to hesitate to arrest the operation of a confiscatory law, but they ought to refrain from interfering in cases of any other kind. Regulations of public service corporations which perform their duties under conditions of necessary monopoly will occur with greater and greater frequency as time goes on. It is a delicate and dangerous function, and ought to be exercised with a keen sense of justice on the part of the regulating body, met by a frank disclosure on the part of the company to be regulated. The courts ought not to bear the whole burden of saving property from confiscation, though they will not be found wanting where the proof is clear. The Legislature and subordinate bodies, to whom the legislative power has been delegated, ought to do their part. Our social system rests largely upon the sanctity of private property, and that State or community which seeks to invade it will soon discover the error in the disaster which follows. The slight gain to the consumer which he would obtain from a reduction in the rates charged by public service corporations is as nothing compared with his share in the ruin which would be brought about by denying to private property its just reward, thus unsettling values and destroying confidence. On the other hand, the companies to be regulated will find it to their lasting interest to furnish freely the information upon which a just regulation can be based.

Slow vs. Fast Acceleration

In the 1907 report of the committee on electrical equipment to the American Street & Interurban Railway Engineering Association, 42.6 per cent of the commutator and brush-holder trouble was attributed to "fast feeding of controllers," while the matter of improper proportioning of resistances was either not separately considered or considered of so little importance that it was grouped with "other miscellaneous causes," totaling only 11.4 per cent. It must be remembered that these percentages are the summation of conclusions reached by the companies reporting to the committee. It is probable that improperly proportioned resistances are responsible for much of the motor trouble generally attributed to improper handling of the controller, as with improperly graded resistances it is impossible for the motorman to handle the manually operated controller so as to get the proper acceleration in an economical manner or without subjecting the motors to peaks sometimes greatly exceeding the commutating capacity.

Much has been said and written as to the evils of fast controller feeding, until many minds have obtained the idea that the slowest feeding of the controller consistent with the maintenance of the schedule is the most economical. This is not always the case, however. The rate of feeding the controller is simply another expression for the relative rate of acceleration of the car during the period of applying full line voltage to the motors. Owing to the fact that it is desirable to keep this rate of acceleration uniform from the start to the full parallel position of the controller, this portion of the run has been called the period of "straight line acceleration." Any run from start to stop may be divided into four parts: (1) Straight line acceleration, (2) full voltage operation of motors, (3) coasting, and (4) braking. The concurrent power losses in any run are of three classes: (a) Power used in overcoming train resistance and the resistance offered by track gradients and curves, or the power used in actually getting the car over the road; (b) power lost in controlling resistances, and (c) power dissipated, as heat in brake shoes, wheels, etc., in bringing the car to a stop.

Train resistance losses cannot be removed or much reduced. Rheostat losses and braking losses can be controlled to an extent, however, by the method in which the car is handled. A given distance may be covered in a given time in many different ways by various proportioning of the different portions of the run. First, a very slow rate of acceleration may be used, such that the straight line acceleration occupies a large part of the time as compared to the time of full voltage operation of motors; in such case the coasting period generally must be very short, and the braking will begin at a relatively high speed. At the other extreme, we may have a second method of performing the same run in the same time—that where the rate of acceleration is as high as the motor capacity will allow. Here the time during straight line acceleration is a much less proportionate part of the total time that current is applied, and current may be cut off in time to allow a considerable amount of coasting, which in turn will reduce the speed, so that less braking is required than in the former instance.

In each of these cases the useful power consumed in taking the car from start to stop, i. e., the power used in overcoming train resistance, is practically the same. The measure of the relative efficiency of the two runs is therefore the relative value of the other losses. As the rheostatic losses are proportional to the time spent in straight line acceleration, the second run is the more economical in this respect in exact proportion to the rate of controller feeding. The second run also loses much less energy in braking, as braking begins at a much lower speed, owing to the longer coasting period. The entire difference in the characteristics of the two runs is due to the difference in the rate of straight line acceleration. Without knowing anything regarding the amount of current or the time current is applied, then, we can safely say that the more rapid the rate of straight line acceleration the more economical the run. The rate of straight line acceleration is, of course, limited by the commutating capacity of the motors, and consequently the statement should properly be that the most economical run is where the rate of ac-

celeration is as great as possible within the commutating capacity of the motors.

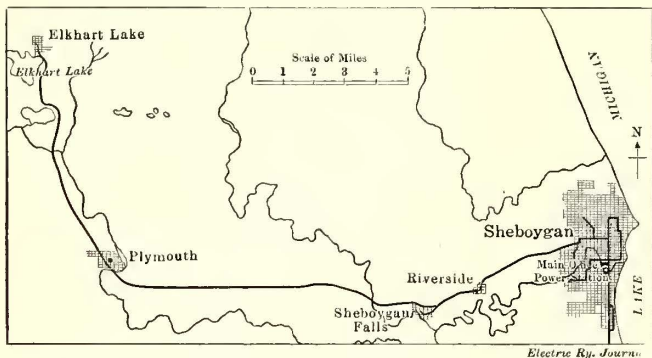
The ideal acceleration is that which is entirely uniform, or where the voltage across the motor terminals is increased in exact ratio with the increasing counter electromotive force of the motors, which increases with the increasing speed of the car. Theoretically, this could be obtained with a resistance having an infinite number of steps, and in such case the current taken by the motors would be uniform during straight line acceleration. Practically, however, the increase in applied voltage is obtained by a series-parallel change in combination with a resistance which is divided into a relatively small and definite number of steps, in order to reduce complications in controlling mechanisms and car wiring. The consequence is, therefore, that at best the straight line acceleration is not perfectly uniform, due to the almost instantaneous rise in current in passing from one resistance step to the next, followed in each case by a gradual falling off in current as the car attains speed. Even with the usual relatively few number of steps in the resistance, however, these steps may be so proportioned that the fluctuations in current may be only 10 per cent or less above and below the average value, thus making the change of rate of acceleration throughout the straight line period and due to this cause relatively small. Great care must be used, however, in proportioning the resistance steps so that these fluctuations may be uniform. It is desirable to obtain the highest rate of acceleration possible within the limit of the capacity of the motor. The average rate of acceleration is dependent upon the average current during acceleration, and this average may be no closer to the limiting capacity of the motor than the height of the highest of these fluctuations. The more uniform the fluctuations are, the closer can the maximum economy be approached without injury to the motors.

In any case where it is believed that motors are being damaged by fast feeding of controllers, the proportioning of resistances should first be carefully looked into. In many cases instantaneous peaks in current during acceleration are sufficient to cause damage, while the average value of the current during this period is such that it actually could be increased with a resultant greater rate of straight line acceleration and greater economy in power consumption by a proper proportioning of the resistance steps.

The correct value of the various resistance steps varies with a large number of affecting factors. No definite list of resistances for a given motor and controlling equipment can be tabulated as applicable to all cases. Engineering formulas are available, however, for such calculations, and the resistances should be carefully determined by the use of such formulas, and after installation checked by means of an ammeter (preferably recording) in the motor circuit. In the absence of knowledge of such formulas the proper resistance values may be obtained by the cut and try method, a recording ammeter being used in the determination, as the "feel" of the car will not give a close enough approximation for economy. In Boston a trial is being made of a buzzer, connected permanently in a relay circuit, to warn the motorman if he exceeds the current which can safely be commutated.

THE DEVELOPMENT OF A SMALL ROAD

One of the papers at the Atlantic City meeting of the Transportation & Traffic Association which was very actively discussed was that by Ernest Gonzenbach, general manager of the Sheboygan Light, Power & Railway Company, of Sheboygan, Wis., on "How Can the Small Road Best Promote Traffic to Increase Its Revenue?" The num-



Sheboygan Light, Power & Railway Company—Map of Lines.

ber of novel suggestions made by the author in this paper indicated that an account and a short history of the system managed by him would be of interest.

Sheboygan is a city of about 27,000 inhabitants, some 50 miles north of Milwaukee on Lake Michigan. It possesses the first harbor north of Milwaukee with which it is connected by a line of lake steamers. The leading manufactures are chairs and furniture.

HISTORY OF THE COMPANY

The first street railway in Sheboygan was built in 1885 as a horse line and was operated at a loss for many years.

the single track was ample for the traffic which the line received. The property as a whole was not profitable.

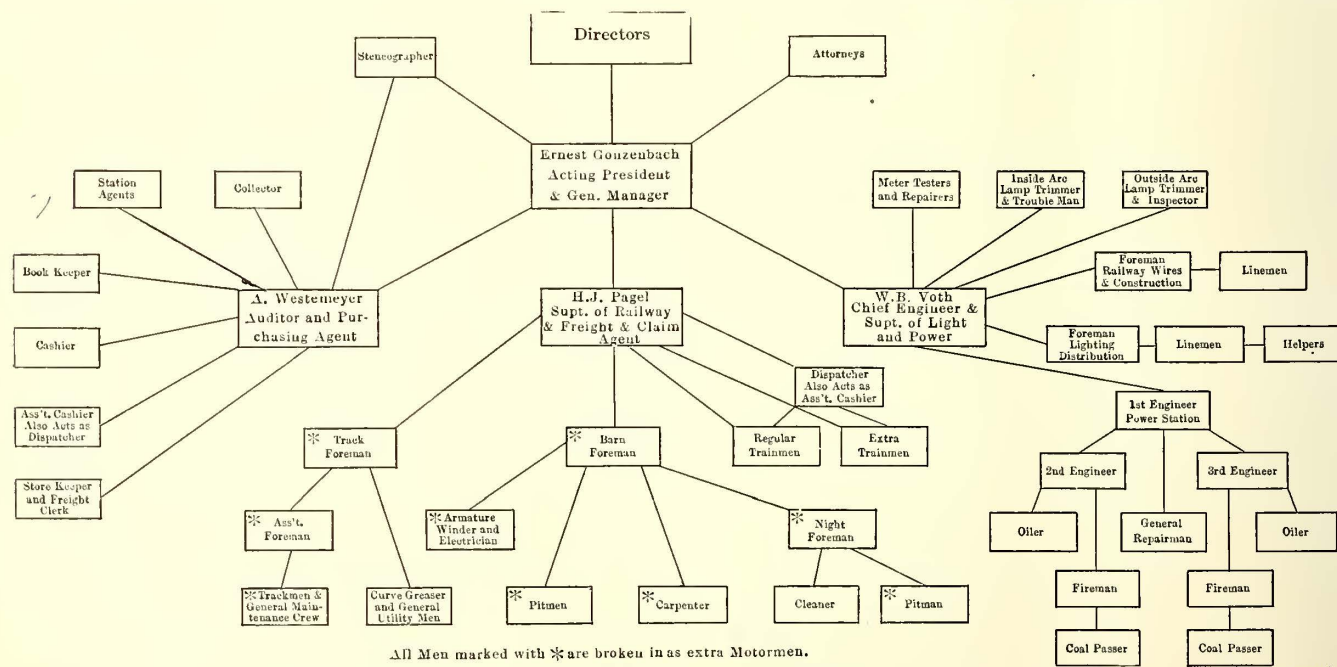
In 1903 the late Dr. F. A. C. Perrine and a number of his associates connected with the Stanley Electric & Manufacturing Company united in a syndicate which underwrote an issue of \$600,000 consolidated mortgage bonds, the proceeds of which were used for the purpose of reconstructing the property. A new power station was built and a number of other important improvements were introduced. In 1904 the syndicate secured control of the stock of the company, and Dr. Perrine was elected president of the company.

The present management, appointed by Dr. Perrine, has been in charge since December, 1904. During this time the receipts per mile of city track have increased from \$1,700 to \$3,000, and the receipts on the interurban division from \$2,700 per mile of track to \$4,000. These changes have been effected and the improvements described in this article have been installed without an increase in the capitalization of the line, but have been paid for out of the earnings, and the cost of operation on both city and interurban lines is less now than it was in 1903. These facts are sufficient of themselves to make an account of the property and the methods followed instructive.

Three large problems had to be faced when the new start was made in 1904, (1) to increase the receipts, (2) to decrease the expenses, and (3) to improve the relations with the public and authorities, which were then in a somewhat strained condition.

FARES

To accomplish the first, it was decided necessary to take strenuous steps toward increasing the number of rides per capita. Two methods were followed, one to reduce the fares and the other to pay special attention to maintaining



Sheboygan Light, Power & Railway Company—Diagram of Organization

It possessed about 11 miles of city track. In 1893 the line was consolidated with the Sheboygan Electric Light Company under the present corporate name, the Sheboygan Light, Power & Railway Company. In 1895 the lines were equipped with electricity and Walker motors and generators were installed. In 1899, a 6-mile extension was built to the village of Sheboygan Falls. The rails used weighed 45 lb. per yard; the combined trolley and feeder was a No. 0, and

the schedule. In a compact city of the size of Sheboygan the management believed that it could carry a good many people who would otherwise walk if the public knew that the cars were absolutely to be depended upon in their schedules, and if the cost of a ride was not great. In consequence, the company voluntarily reduced the fare from 5 cents by issuing tickets which were sold at six for 25 cents and were put on sale

at the office of the company and by conductors on cars. The management reasoned that inasmuch as it had to run a certain number of cars, and was running the minimum number that could properly be operated, it could well afford to make a reduced fare, at least until such time as the number of cars in regular service had to be increased. The theory of the selling of the tickets, as explained by the management, is to get as much unused transportation in the pockets of the public as possible. The longest ride which can be had for this 4 1/6-cent ticket is 3 1/2 miles. The average ride is between 1 mile and 1 1/2 miles. These tickets are not good on interurban cars.

The company furthermore voluntarily issued "workingmen's tickets" which are sold 15 tickets for 50 cents, and are good between 6 a. m. and 8 a. m. and between 5 p. m. and 7 p. m. This again was considered no extra burden on the company, as it formed an inducement for workingmen to ride, which they had not heretofore been in the habit of doing.

The average rate of fare per passenger on the city lines, as a result of these fare reductions, is about \$0.042. This high percentage is explained by the fact that during workingmen's hours all fares received are by no means working-

dent of transportation giving the reasons for the delay and a copy of this report is placed on the manager's table.

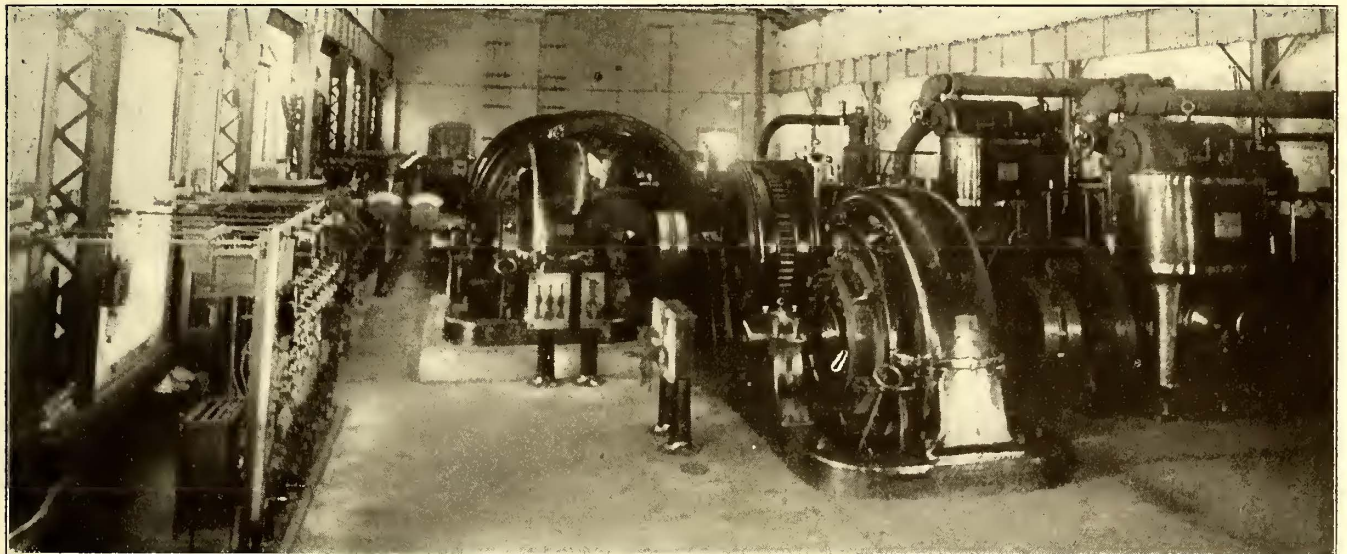
One of the results of having the cars always on time was that it was possible to reduce the number of cars in operation. Thus a city schedule which had required six city cars in winter and nine in the summer was operated with four cars in winter and six in summer. The public accepted the change without much objection, as before they had never been sure of the time of cars, whereas with the new schedule, although the cars were fewer, a passenger could get on a car at a certain corner to the minute.

The combination of lower fares and better schedule has raised the revenue 90 per cent in summer and 225 per cent in winter. The revenue per capita per year on the city cars is now about \$1.40.

The following is a statement of the car-miles run during six summer months of last year:

| | | | |
|------------|--------|-----------------|--------|
| May | 32,484 | August | 37,270 |
| June | 35,106 | September | 33,558 |
| July | 37,144 | October | 31,767 |

The policy pursued by the company in the matter of fares was soon appreciated, and the relations between the company and the public are now extremely cordial.



Sheboygan Light, Power & Railway Company—Interior of Power House at Sheboygan

men's tickets. In fact, the percentages of different classes of fares received during these hours are:

| | |
|----------------------------|-------------|
| Workingmen's tickets | 60 per cent |
| 4 1/6 cents | 20 per cent |
| Cash fares | 20 per cent |

Another advantage of these reduced fares is that as they were established voluntarily, the company has reserved the right to rescind them at any time, if it believes the rates are being abused or if the company is being unfairly treated by the city.

For about a year and a half the company also sold what was known as "shopping tickets." These tickets were good between 9 a. m. and 4 p. m. at the rate of 7 for 25 cents, but have been withdrawn, as explained in Mr. Gonzenbach's paper at Atlantic City.

SCHEDULES

At the same time that the new system of fares was instituted a rigid schedule was adopted. Very few cars are now late, and a record is kept of those who are over 2 minutes behind time. If a car is over 5 minutes late the conductor has to make a written report to the superinten-

IMPROVEMENT IN CAR SERVICE

In addition to improving the schedule, the company improved the car service. The use of bob-tail cars were abandoned and all cars now carry conductors. It has also been found that the extra number of fares collected by conductors about pays the wages of the conductor. For city service the company uses single-truck cars with 20-ft. bodies, mounted on Brill trucks and equipped with two 40-hp motors. The schedule speed of city cars is from 8 to 9 1/2 m.p.h.

The city cars are run on three different routes. One of these is a loop line, which makes a round trip every 20 minutes and requires one car. Another is the so-called West Side line, which runs every half hour. The third is the main line through the town. This line requires two cars for its operation, and runs cars every half hour. The city cars make a total of about 525 car-miles per day in winter and about 800 car-miles per day during the summer seasons.

EMPLOYEES

The company believes in the employment of local married

men. The working hours are from 10 to 11 per day and the road is kept in operation 19 hours during the day. The regular men are trained as both conductors and motormen, because during the summer a large number of extra men have to be taken on, and it has been found that these men acquire the duties of motormen more easily than those of conductors, so that most of the regular men act as conductors during the summer. During the winter a regular

income from its production of power. The lighting machinery is run 24 hours a day.

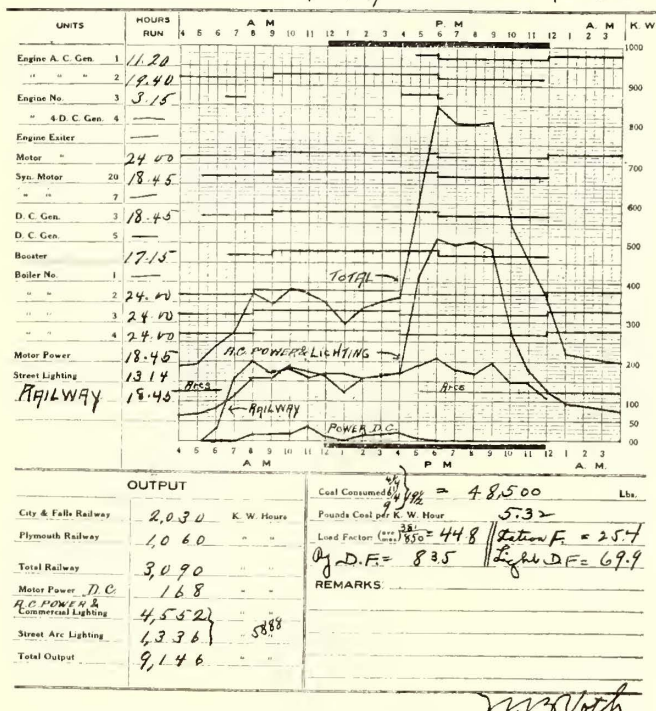
POWER STATION PREMIUMS

Some four years ago the operating cost for power averaged \$11 per 1000 kw-hours, not including labor, and the company agreed to give to the power station force a premium of 10 per cent of the savings made over \$11 per 1000 kw-hours. Owing to this competitive system, the power station force has been keyed up to a high state of efficiency, and the saving per month over the figure of \$11 amounts to a neat sum.

SHEBOYGAN LIGHT, POWER & RAILWAY CO.

DAILY POWER STATION REPORT

DAY BEGINNING AT 4:00 A. M. SATURDAY DAY OF NOVEMBER 21, 1908



Sheboygan Railway—Daily Power Station Log

man will serve some time in one position and will then be transferred to the other position. The track men and repair men are trained as motormen and serve in that capacity at times of extra traffic. The badges for all trainmen read "trainman" and not "conductor" or "motorman."

Every trainman is obliged to provide himself with a good watch, and these watches are regulated every month by an inspector employed by the company.

POWER STATION

As already stated, the power station is a comparatively modern one and is equipped with Walker and Stanley direct-connected generators and Allis-Chalmers engines. The fuel used is a combination of buckwheat and Hocking screenings. These two kinds of coal are kept in separate bunkers, the mixture being varied according to the load, as when the load is steady, more buckwheat is used. At the power station there is also a bin of soft lump coal which is screened by the men when they have nothing else to do. This coal is used on days when the lighting or railway load is especially heavy and extra output is required. Owing to the demand for filling material in Sheboygan, there is a market for ashes at 25 cents a load.

The power station log, illustrated, is interesting not only on account of the character of the load shown, but also for the compactness of the record. The chart given is for a typical day in the autumn. A copy of the log for each day is laid every morning on the desk of the manager.

SALE OF HEAT

The company supplies exhaust steam for heating a neighboring factory and thus increases considerably the

BATTERY SUBSTATION

The company has one storage battery substation three miles east of Plymouth. The storage battery at this station floats on the line, and in addition to equalizing the load, is used for operating an owl car at night on the interurban line. The company is now, however, putting in a 12,000-volt, 60-cycle motor generator set, to be installed in a new substation being erected at Plymouth.

INTERURBAN LINES

In 1904 the interurban line of the company was extended from the village of Sheboygan Falls to the city of Plymouth, giving a total length of interurban line of 16 miles. At the present time the interurban line is being extended 7 miles from Plymouth to Elkhart Lake, a famous summer resort, which has heretofore been without the electric railway connection, but has nevertheless from



Sheboygan Railway—Line-Repair Car

2000 to 4000 regular guests during the summer season. Double headers are run on the interurban line during the rush hours. Cars are dispatched under train orders with a dispatcher at Sheboygan and duplicate orders for motormen and conductors are issued through an Egry machine.

The interurban passenger cars average about 225 car-miles each per day throughout the entire year. The freight cars average about 100 car-miles per day.

The interurban cars are equipped with four 40-hp motors, are 47 ft. long, and weigh with equipment about 22 tons each. They make the run from Sheboygan to Plymouth in 52 minutes, including a 10-minute lay-over at Sheboygan Falls. This is at the rate of 16 miles in 42 minutes, or a schedule speed of about 23 m.p.h., including city time. Excluding city schedule the interurbans make about 27 m.p.h. The 40-hp motors have stood the service very well and run without excess heating.



Sheboygan Railway—Junction at Sheboygan Falls

INTERURBAN FARES

On interurban lines the rate of fare is based on the rate of 2 cents per mile, if the fare is paid on the car. Tickets are sold to all points at stations of the company, and the single ticket rates are based on $1\frac{3}{4}$ cents per mile. Round-trip tickets are sold at the rate of $1\frac{1}{2}$ cents per mile. Mileage books are issued in three classes:

| | |
|---|--------|
| 100-mile books sold at stations and by conductors on cars, each | \$1.50 |
| 500-mile books sold at stations only, each..... | 7.00 |
| 1000-mile books sold at stations only, each..... | 13.00 |

The passenger receipts on the interurban division are about 40 cents per car-mile in summer and about 28 cents per car-mile in winter.

The revenue per capita on city lines, as stated, amounts to about \$1.40. The revenue per capita on the interurban

the steam roads, but only the first four classes are used. The minimum freight rate is 20 cents.

The interurban freight rooms of the company at Sheboygan are at the storage room, so that the same man acts as freight agent and as storekeeper. The stores are kept in separate compartments and the accounting system used is that with a continuous invoice.

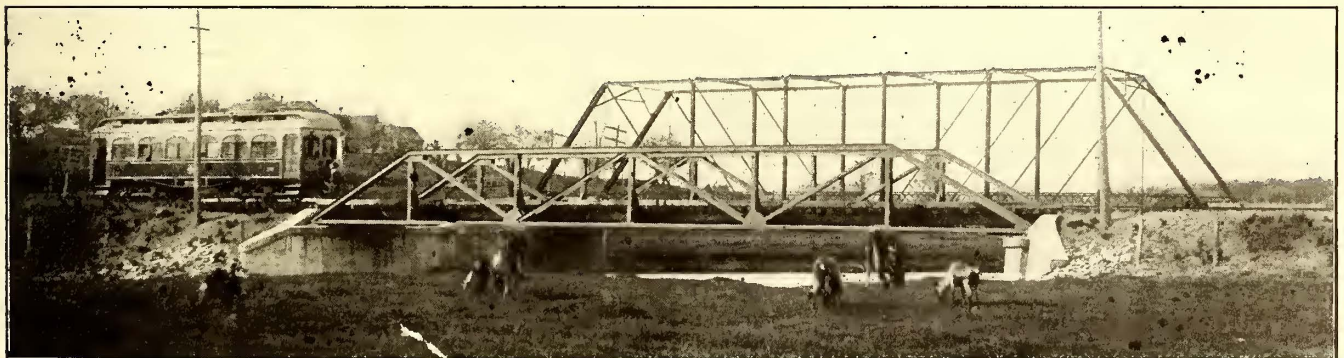
The express business is conducted by the United States Express Company, which has its own wagon service at each end of the line. The contract with this express company nets the railway company several hundred dollars per month.

The principal freight is cheese, for which a rate of $4\frac{1}{2}$ cents is charged per 100 lb. Another large item of freight is plumbers' goods, which are shipped from a factory along the line over the electric line and delivered at the docks of the Goodrich Transit Company, the boat line to Chicago. The company has a traffic arrangement with the Goodrich line and it way-bills goods from any part of its line to any part of the United States. The freight service brings in from \$200 to \$700 per month, depending upon the season, and the freight car earns from 25 cents to 50 cents per car-mile. The average revenue per ton-mile is about 6 cents. At the present time the company is doing missionary work among the farmers along the line, trying to get them to raise garden truck for the Milwaukee and Chicago markets. Freight delivered to the company's car in the afternoon is delivered the next morning in Chicago—by boat at freight rates which are lower than the steam road rates, an advantage to which the farmers along the line are just waking up.

The milk business is handled by the freight car and a charge is made of 10 cents for an 8-gal. can. The payment is made by use of the usual three-part ticket. A similar ticket system is being installed for the shipping of garden products, including the return of empty crates and garden baskets.

POWER SUPPLY

The fact that the line runs through a dairy country has encouraged the company to look out for power customers among the dairymen and cheese factories, as well as for miscellaneous use by farmers. At the present time the



Sheboygan Light, Power & Railway Company—Bridge on Route

lines, not including the population of the city of Sheboygan, amounts to nearly \$3.

FREIGHT AND EXPRESS

On its interurban line the company conducts a freight business and a milk business which it handles itself, and an express business which it leases. It also supplies electric power to users along the line. The freight traffic is handled by a single car, which makes two trips per day. The rates for freight are about the same as are charged on

company is supplying power to about 15 motors ranging in size from 3 hp to 5 hp, although there is one motor of 20 hp. The smaller motors are used principally for operating cream separators, cheese machinery and feed cutters. The power is sold for 3 cents per kw-hour. The customer pays for his own installation from the service wires and buys his own motor.

PARK

The company owns 26 acres of land known as Lake

View Park. Several years the company operated there a hotel, a theater, two saloons, a baseball park, a menagerie and other attractions. All of these have, now been abandoned, as the new management believes it better policy to get out of the amusement business. The company will furnish free site and lighting current for any one putting in new attractions, but does not carry its support further. On the other hand, the company opened a resort during the past season on the interurban line. It is not an amusement park, but a pine grove located along a hillside next to a river and a naturally attractive spot. This park is equipped with electric lights, benches, places for camp fires, etc., but possesses no attractions of the "artificial" kind. In fact, it is entirely a "family picnic resort," and has proved a very big success, as the traffic which it brings is all carried on regular cars. This place is 7 miles from Sheboygan and is reached for a 20-cent round-trip fare.

TIME TABLE

Considerable thought has been given to the time table used on the interurban line, and the form of schedule, though compact, gives a great deal of information. It is contained on eight pages, exclusive of the cover. At the top of each page the following maxim is printed: "The safety of passengers and trains is of first importance, and all operations of working, repair or construction must be



Sheboygan Railway—Typical Freight Station

subservient thereto." At the bottom of each page appears the following: "Every person in the service of this company is expected to be courteous and obliging toward the public and his associates."

All cars are designated by train numbers of two or three numerals, as "33" or "101." The final digits indicate the following: 1, first-class train a. m. going west; 3, first-class train p. m. going west; 2, first-class train a. m. going east; 4, first-class train p. m. going east; 5, second-class train a. m. going west; 7, second-class train p. m. going west; 6, second-class train a. m. going east; 8, second-class train p. m. going east. The first one or two numerals, as "10" or "3," indicate the hour of leaving the terminal. All employees are required to refer to trains by their numbers.

The time table includes a list of the more important rules as well as whistle signals, tariff, instructions about what to do in case of accidents, and a list of the company's surgeons.

EXPENSES OF OPERATION

The expense of operation for the city cars averages 10 cents per car-mile and of the interurban cars 17 cents per car-mile. The percentage of operating expenses to gross receipts is 61 per cent. The operating expenses, as ex-

plained, include all new construction for both railway and lighting, except that an account is kept of meters and service in the lighting department, as this charge is made to customers.

The details of the operating expenses are carefully kept on a car mileage basis; some of them follow:

All lubrication, except gear lubrication, 21 cents per 1000 car-miles; gear lubrication, 7 cents per 1000 car-miles; maintenance of rolling stock, average last 6 months, 1.78 cents per car-mile. The latter figure is rather high owing to the small motors used on the cars, but it was not considered advisable to install new motors for the reasons advanced in Mr. Gonzenbach's convention paper.

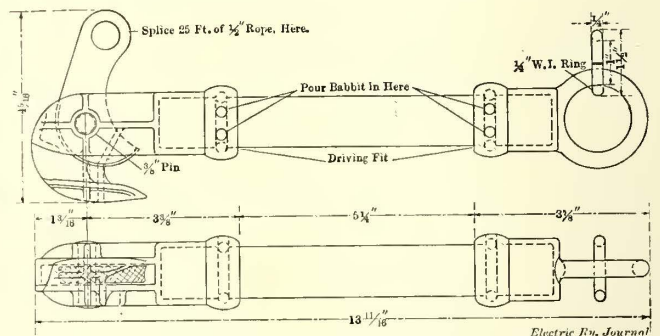
ORGANIZATION

A chart of the organization of the company is shown on page 272. The officers of the company are: Vice-president and general manager, Ernest Gonzenbach; secretary, J. A. Chesney; auditor and purchasing agent, August Westermeyer; superintendent, H. J. Pagel; chief engineer, W. B. Voth.

PICK-UP AT MINNEAPOLIS

Among the ingenious devices developed on the Twin City Rapid Transit Company is the trolley pick-up illustrated herewith. Two of these are carried on each car, and, as the name implies, they are designed to facilitate rapid repair of the overhead construction in case a trolley wire or a span wire should break. One of the pick-ups is fitted with 25 ft. of rope, which is attached to the end of the short lever. The rope on the other pick-up extends about 3 ft. beyond the end of the pick-up and has a noose.

To tie up a broken trolley wire the procedure is as follows: A pick-up is attached to each end of the broken



Trolley Pick-Up Carried on Cars in Minneapolis

wire. The free end of the long rope is then carried through the ring at the end of the pick-up to which it is attached. It is then passed through the noose on the short rope on the other pick-up, and is then pulled taut. This draws the trolley wire back to its normal position. The rope is then tied up until the wire can arrive and repair the break.

These pick-ups are manufactured in the shops of the company. The metal parts are of malleable iron. The wooden shank is of maple which is boiled in paraffine until it becomes saturated.

A 300-kw Westinghouse turbine unit has been in operation at the Burlington Municipal Electric Light Plant, Burlington, Vt., since 1906. According to the turbine builder, a recent report from this plant states officially that the total expense for repairs up to the present time has been \$1.83. Since its installation this turbine has run nearly every night.

THE INDUSTRIAL DEFINITION AND MEASUREMENT OF TRAIN-ACCELERATION

As stated in a previous issue of this paper, a contribution to the technical proceedings of Section V of the recent International Electrical Congress at Marseilles, in September, 1908, was made by C. O. Mailloux, of New York, who was chairman of the delegation representing the American Institute of Electrical Engineers. The text of his paper on "The Industrial Definition and Measurement of Train Acceleration," which was presented in French, has just become available. This paper was, in considerable part, an indorsement of the American method of calculating train acceleration in terms of miles per hour per second, or, if metric measurements are used, of kilometers per hour per second, rather than the European method of using the units of feet, or meters, per second per second. The former method, Mr. Mailloux said, was not only more logical and rational, but was also more practical and convenient. It has the advantage of avoiding an awkward "translation" from one unit of velocity to another in noting the effect produced on velocity by an acceleration or a retardation.

According to Mr. Mailloux's paper, the only phenomena that have to be examined in the study of acceleration are displacements, speeds and changes of speed. As the relationships involved are all kinematical, the only functions that need to be considered are: (1) The distance-time function (Fig. 1); (2) the velocity-time function (Fig. 2); the acceleration-time function (Fig. 3). These three kinematical functions are connected with each other in a characteristic manner. The velocity function is the differential function of the distance function, and it is also the integral function of the acceleration-function. The acceleration function is the first differential function of the velocity function and the second differential function of the distance function. The distance function is the first integral function of the velocity function and the second integral function of the acceleration function. While it is possible to express or formulate these analytical relations with any system whatever of units of measurement of time, distance, velocity and acceleration, it does not follow that there is no choice in the units to be employed. The units adopted should have a certain relation to each other, to obviate factors or constants, i.e., to avoid transformations of coordinates. If we select the unit arbitrarily for one of the three functions without considering the two others, their relations to each other will not be simple; and in passing from any one of them to either of the other two it will be necessary to use a factor, i.e., to "change the scale of ordinates" of one of the functions. Some units must therefore be, in any given case, more "natural" than others.

In Fig. 1, representing the curve of the distance-time function, we have $x=t=$ seconds, and $y=s=$ some unit of distance (length), say centimeters, meters or feet. In Fig. 2, representing the first derivative of the distance-time curve, we have $y' = \frac{ds}{dt} = v =$ velocity. The "natural" unit of this velocity will be different according to the unit employed for the function from which it was derived. For instance, if the distance function is expressed in the units already named, the natural unit for the velocity function would be centimeters per second, meters per second or feet per second. These happen to be precisely the velocity units employed in physics. The curve in Fig. 3.

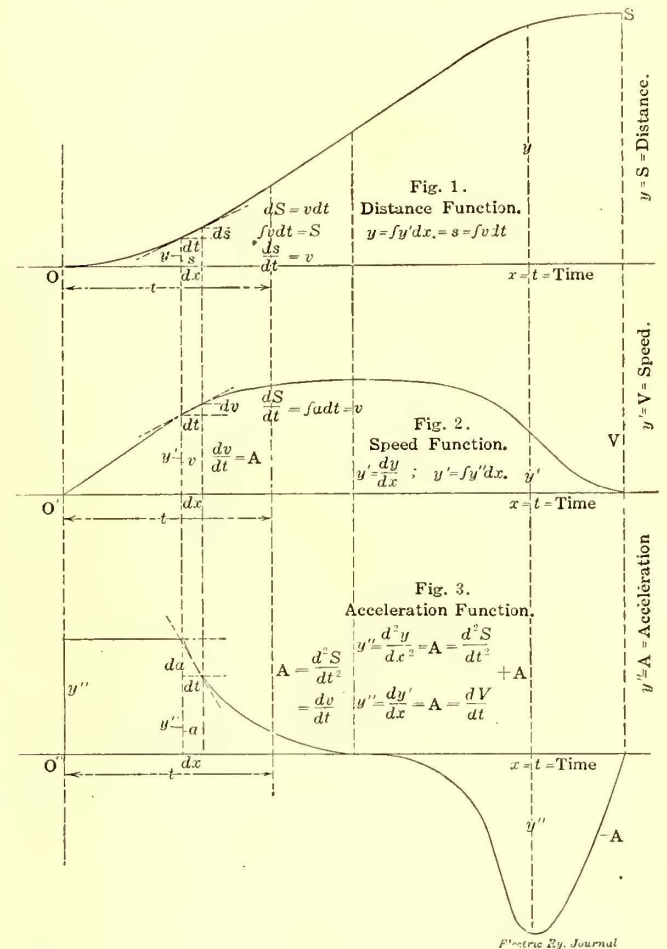
which represents the second derivative of the distance function, and which also represents the first derivative of the velocity function, is the acceleration function. In the first case we have

$$y'' = \frac{d}{dt} \left(\frac{ds}{dt} \right) = \frac{d^2s}{dt^2} = A = \text{acceleration} \quad (A)$$

In the second case we have

$$y'' = \frac{d}{dt} (dv) = \frac{dv}{dt} = A = \text{acceleration} \quad (B)$$

It is thus seen that there are two possible definitions of acceleration, although many persons are under the impression that there is only one. It may be defined either (A) in terms of a ratio which represents and expresses the second derivative of the distance, or (B) in terms of a ratio which represents and expresses the first deriva-



Figs. 1, 2 and 3—Distance, Speed and Acceleration Functions

tive of the velocity. The first is what has always been taken for the "classical" definition. It is an indirect definition. The second is the practical as well as the direct and logical definition.

The unit of acceleration which will be "natural" for each definition will depend on the units employed for the function from which this acceleration has been derived. The two modes of derivation symbolized by equations (A) and (B) will lead to the same results and the same units, if the units of distance (s) and of time (t) are the same in both cases. This is the case for the units of acceleration employed in physics, viz., the centimeter or the meter, or the foot, per second per second, which are derivable from either equation, (A) or (B). We are obliged to acknowledge, however, that the expression meters per second per second, for instance, corresponds much more

directly and naturally to formula (B) than to formula (A), since it specifies a change of velocity per second, the said velocity being itself expressed in meters per second. Indeed, it is a change of velocity rather than of distance which comes to the mind with the idea of acceleration. It is even necessary for the mind to stop and consider—to make a “translation”—in order to realize clearly that the distance really comes into it. As everybody knows, it is the influence exercised and the effect produced on the velocity, and not on the distance, by acceleration, that is of interest. Hence, it is the second formula, (B), or the first derivative of the velocity function, which furnishes the “natural” definition of acceleration. The meter per second per second will therefore be the natural and logical unit of acceleration only in the case where the velocities which vary are themselves expressed in meters per second; and the foot per second per second will be the natural and logical unit only when the velocities are measured in feet per second. For cases where the velocities are measured otherwise, it will be necessary to “translate” these acceleration units in order to understand them.

If the technology of railroading had at the beginning adopted the same units of time, distance and velocity as those used in physics and mechanics, the units of acceleration used in Europe would be entirely natural and logical. Such was not the case, however. These units came too late; and, besides, they were not suitable. The industry of transportation had been obliged to establish and adopt practical units of time, distance and speed, even long before the existence of the units of the C. G. S. system and those used in physics and mechanics, and especially long before questions and problems involving acceleration attracted attention.

In Europe, to measure train acceleration, the practical men borrowed from the theoretical men a measure which was “ready made,” thinking then (and believing it still) that this measure, being the most direct and convenient one in physics, must surely be equally so for the measurement of vehicular acceleration. Neither the practical nor the theoretical men noticed that this measure, made on purpose and very practical for measuring variations of velocity expressed in meters per second or feet per second, is not at all suitable for measuring variations of velocity measured in kilometers per hour, or miles per hour. In America it was deemed desirable at the outset that the measurement of the variations of a velocity should be made in such manner as to introduce only one single unit of velocity.

The unit of distance for railroad transportation is the kilometer in metric countries and the mile in America and England. The unit of train-time for all countries is the hour and its subdivision into minutes. The unit of speed of transportation (train velocity) is the kilometer per hour for metric countries and the mile per hour for America and England. These units of velocity are natural and logical, because they result directly from the fundamental kinematical relation, already noted, between the distance function (Fig. 1) and the velocity function (Fig. 2), as a little study readily shows.

It is a mistake to suppose that the practical velocity units, the kilometer per hour, or the mile per hour, can serve only to measure mean values. They can serve equally well to measure and express instantaneous values. Let us suppose (Fig. 4) that the curve $O'OaAB$ be the distance function representing the displacement of a train between two points separated from each other by the dis-

tance $S = B'C'$, the time elapsed being equal to $O'C'$. The instantaneous speed (v) at the point A will be equal to the derivative

$$\frac{ds}{dt} = v$$

Now, although the time element, dt , is infinitely small, it is not necessary to measure it or to express it in seconds or in fractions of seconds. It can, quite as well, be measured in fractions of an hour, or any other unit of time whatever. This will become evident if we enlarge the differential triangle $Adtds$ to OCB , in such a way that we shall have $\Delta T = 1$ hour. Since the two triangles are “similar,” we shall always have

$$\frac{ds}{dt} = \frac{\Delta S}{\Delta T} = v$$

If, now, we put $s =$ meters, $t =$ seconds, $S =$ kilometers, and $T =$ hours, we will have two expressions for the same instantaneous velocity, v , one in terms of meters per second, the other in terms of kilometers per hour. Since the railroad engineer is interested in the “change of distance” per hour, the second form of expression is that which specifies the “natural” unit of measurement of velocity for his purpose. In the case of acceleration we might also consider changes per hour. This would not be so convenient, however. Acceleration represents varia-

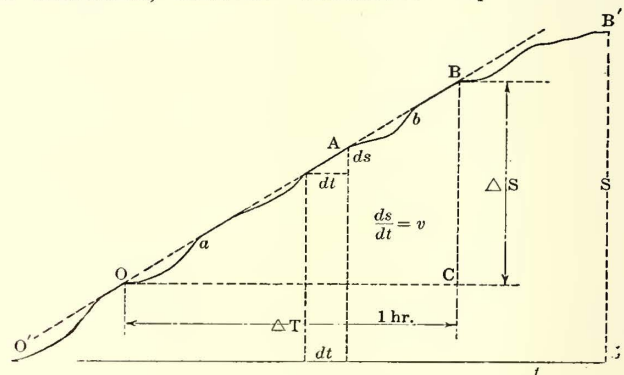


Fig. 4

tions of velocity which occur in such short times that, in order to study them in detail, a very small unit of time is desirable. We want to note and report instantaneous variations, and to do this the phenomena must be examined at intervals which are very close to each other. Hence we find it convenient to subdivide the unit of train-time, the hour, into seconds, and to take the second as a subsidiary or accessory unit. This is the same as putting two scales of abscissæ in Fig. 2, one of hours and the other of seconds ($= 1/3600$ of an hour). We could add still other time scales, subdividing the hour into tenths, hundredths, thousandths, millionths, etc. We could always obtain the derivative of the velocity function represented in Fig. 2, no matter by what scale of values we measured the independent variable, t . In every case, and whatever may be the unit value of t , we will have, according to the formula (B), already found

$$y'' = \frac{d}{dt} (dv) = \frac{dv}{dt} = A; \tag{C}$$

and the same derivative curve (Fig. 3) can represent correctly all the derivative values for any case whatever, provided the scale of ordinates be varied according to the scale of abscissæ employed. Using the second as the unit value of time, and remembering that transportation velocities are measured in kilometers per hour or in miles per hour (according to the system of units used), the

variation of train velocity, dv , produced in the time interval dt will be equal to a certain number of kilometers per hour or miles per hour. We will therefore have as a measure of train acceleration a ratio of two variations, one of which variations (dv) is that of a velocity, expressed in kilometers or miles per hour, and the other (dt) that of a time measured in seconds; thus

$$A = \frac{dv}{dt} = \frac{\text{kilometers per hour}}{\text{seconds}} = \text{kilometers per hour per second}$$

or else

$$A = \frac{dv}{dt} = \frac{\text{miles per hour}}{\text{seconds}} = \text{miles per hour per second}$$

The expression on the right-hand side defines for each case the "natural" unit of acceleration for measuring variations of velocity when these velocities are themselves measured in kilometers or in miles per hour. This unit establishes the scale of ordinates by which the value of the function obtained by formula (C) is to be read and understood.

By defining and measuring acceleration in the manner just indicated the velocities are measured and expressed in precisely the same manner all the time, namely, before, during and after the acceleration. There is only one unit of velocity. If, for example, that unit is the kilometer per hour, it will be kilometers per hour of velocity that the vehicle will gain or lose during the period of acceleration and not meters per second. There is no translation required, no coefficient to be introduced at any time. Given the value of the acceleration, A , during any interval of time whatever, the corresponding increment of velocity can be found from the formula

$\Delta V = A \Delta t$ or, in general, in the time interval, t , we will have

$$V = \int_0^t dv = \int_0^t A dt.$$

If the acceleration, A , remains constant during a given number of seconds, t , we have

$$V = At$$

Those who are not yet convinced of the advantages of this method are invited to make the same calculations by it and by the "other" method and to note the time required by the two.

It has been asserted in England that the method advocated lacks mathematical rigor. This criticism is unfounded and results from the misinterpretation of a formula of differentiation. The pleas against this method are:

(1) Two units of time, the hour and the second, are used when a single unit should suffice.

(2) Since acceleration is the second derivative of the distance with respect to time, i. e., because

$$y'' = \frac{d^2 s}{dt^2} = A,$$

the quantity in the denominator should be the square of a time-unit; in other words, the definition should comprise a number of units of time which "repeats itself," such "as per second per second," which means that the same number should occur twice as a divisor, as "(seconds)²."

In answer to the first point, there is, theoretically, no objection to the use of two time-units in the definition of acceleration because the true definition of acceleration, that which is used by everybody, even by the physicists, is related to the velocity-time function, which

can itself be defined in any manner whatever. Practically the academic method does not avoid two units of time anyhow, because while it introduces only one unit of time, the second, in the formula, it is always necessary to have recourse to another unit of time, the hour, to "translate" the result of the measurement made by that method, to render it intelligible.

In answer to the second point, it is not at all necessary to derive the acceleration function directly from the distance function. On the contrary, its most logical definition and that which specifies the real unit of acceleration is derived directly from the velocity function. Even if we did wish to derive the acceleration function from the distance function it is not necessary that the two successive differentiations of distance with respect to time be both made by reference to the same unit-value of time. We can obtain the second derivative after having changed the unit of the variable (x) of the first derivative and after having given it any other value whatever (X) provided we change suitably the scale of ordinates of the second derivative by the introduction of a factor equal to the ratio of the two units (X and x) of the variable. That constant is only necessary when we want to retain the same unit of acceleration in all cases. By defining and adopting a practical unit we eliminate the constant just mentioned. The result is a rational logical method where the relations between the three kinematical functions are established as naturally for the units of time, distance and speed in use in the industry of transportation, as they are established for other units of time distance and speed with the academic method.

There may be some academic interest, but there is no practical interest in making the unit of industrial measure of train-acceleration the same as the unit of measure of the acceleration of a mechanism in a physical laboratory. It complicates instead of simplifying the industrial measurements. It is indeed in order to avoid complications and difficulties that practical units have had to be and are still being created and that so much use is made of them.

The constant factor of the ratio between an acceleration measured by the "practical" and by the "academic" methods is easily found by expressing a given acceleration by both methods. This factor turns out, naturally enough, to be equal to the ratio of the two units of velocity which have to be used with the academic method, one to calculate acceleration, the other to "translate" the result. These ratios are 3.6 for the meter unit and 0.682 for the foot unit. The practical unit is 3.6 times smaller than the academic unit with the metric system, i. e., 1 meter per second per second = 3.6 kilometers per hour per second. In the case of the "foot" unit, the foot per second per second = 0.682 mile per hour per second, i. e., the mile per hour per second = 1.46 ft. per second per second (the unit used in England). These observations are inspired and at the same time confirmed by more than 10 years of experience in America with the mile per hour per second as a "practical" unit of train acceleration.

The method of industrial definition and measurement of train acceleration presented in this article is therefore one which has long since proved its worth and its practical utility and advantages can no longer be contested.

An electric railway is to be constructed from Oraka to Takaradzuka, Japan, a distance of 15½ miles, with a branch from Minomo to Armia, 2½ miles. It will cost \$1,427,500 and will be controlled by British capitalists.

THE KNOXVILLE WATER CASE

The general interest in the decision of the Supreme Court of the United States in the case of the Knoxville Water Company is such as to warrant a general statement of the conclusions reached by the court. The decision was handed down Jan. 4 and was the result of an appeal from the Circuit Court of the United States for the Eastern District of Tennessee of a case in which the mayor and aldermen of the city of Knoxville were appellants and the Knoxville Water Company was the appellee. The original case was a suit in equity and was brought by the company in the Circuit Court, Dec. 7, 1901, against the city to restrain the latter from enforcing a city ordinance fixing the maximum rates to be charged by the company. The company alleged that the rates in the ordinance were so low that they denied to the company a reasonable return upon the property employed in the business and thereby took it for public use without compensation, in violation of the fourteenth amendment of the Constitution of the United States. The case was tried before a master, who found that the net income under the new rates would be less than 6 per cent on the valuation of the company's property as found by him. In the opinion of the master 8 per cent, which included 2 per cent to provide for depreciation, was the minimum net return which the company was entitled to earn. The judge of the Circuit Court, in his opinion confirming the master's report, adopted practically the master's valuation of the whole plant and property, as well as his conclusions, and issued a permanent injunction against the enforcement of the ordinance.

In its decision the Supreme Court first concludes that the ordinance, although municipal, derived its authority from the Legislature and must be regarded as an exercise of the legislative power. In such cases, the court said, it will set aside legislation only where its constitutional invalidity is very clear.

The decision then takes up the question of the valuation of the property which, according to the master, on March 30, 1901, the date of the passage of the ordinance, was \$608,000. This sum was made up by adding to the appraisal of all the tangible property the sum of \$10,000 for "organization, promotion, etc.," and \$60,000 for "going concern." The Supreme Court declined to express an opinion as to the propriety of including these two items in the valuation of the plant, for the purpose for which it was valued in this case, but left that question to be considered when it should necessarily arise. Assuming them, however, to be correct, it took up the master's valuation of the tangible property, which was based upon the testimony of a witness of the company as to the cost, at the date of the ordinance, to reproduce the existing plant as a new plant. The company contended that the master, in fixing this valuation, made allowance for depreciation. The Supreme Court could see no evidence to support this claim, but declared that some substantial allowance for depreciation should have been made for that portion of the property, such as machinery, which was subject to depreciation. A witness called by the city placed the reproduction value at \$363,000 and estimated the allowance that should be made for depreciation at \$118,000, or 32 per cent. In the view which the Supreme Court took of the case it did not consider it necessary to determine how much of the master's valuation of the tangible property ought to have been diminished by the depreciation which the property had undergone, except to say that there should have been considerable diminution, sufficient at least to raise the net

income found by the Circuit Court above 6 per cent, upon the whole valuation thus diminished.

The court brushed aside the somewhat faint claim of the company that its capitalization should have some influence in determining the valuation of the property, as the evidence showed that all, or substantially all, of the preferred and common stock had been issued to contractors for the construction of the plant and that the nominal amount of the stock issued was greatly in excess of the true value of the property furnished by the contractors.

The Supreme Court also considered that the master and the Circuit Court erred in estimating the gross receipts under the new ordinance. The company had been in the habit of making a discount of 5 per cent on all bills which were promptly paid, and this discount was considered in estimating the effect of the proposed rates. The Supreme Court pointed out that the ordinance required no discount. While the abandonment of the discount would deprive the company of an efficient aid to quick collection of these bills and hence would add somewhat to the cost of collection, the court considered that in the case of a prime necessity like water there were other methods of enforcing prompt payment.

In its original case the company had referred to both the "complete" and "incomplete" depreciation of the plant. These terms were accepted by the court which defined complete depreciation as "that part of the original plant which through destruction or obsolescence had actually perished as useful property," and "incomplete depreciation" as "the impairment in value of the parts of the plant which remained in existence and were continued in use." The company had claimed that in fixing the value of the plant upon which it was entitled to earn a reasonable return, the amounts of complete and incomplete depreciation should be added to the present value of the surviving parts. The Circuit Court refused this contention and was upheld. Upon this point the Supreme Court decision says:

A water plant, with all its additions, begins to depreciate in value from the moment of its use. Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. The company is not bound to see its property gradually waste without making provision out of earnings for its replacement. It is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given term of years the original investment remains as it was at the beginning. It is not only the right of the company to make such a provision, but is its duty to its bond and stockholders, and, in the case of a public-service corporation at least, its plain duty to the public. If a different course were pursued the only method of providing for replacement of property which has ceased to be useful would be the investment of new capital and the issue of new bonds or stocks. This course would lead to a constantly increasing variance between present value and bond and stock capitalization—a tendency which would inevitably lead to disaster either to the stockholders or to the public, or both. If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired, whether this is the result of unwarranted dividends upon over issues of securities, or of omission to exact prices for the output, the fault is its own. When, therefore, a public regulation of its prices comes under question the true value of the property then employed for the purpose of earning a return cannot be enhanced by a consideration of the errors of management which have been committed in the past.

In another part of its decision the Supreme Court held that the Circuit Court was in error. Although the ordinance was passed in 1901, it had never been observed. In

the meantime, the gross income of the company had largely increased. The decision of the Circuit Court was based on the return of the company for the fiscal year ended 1901 so that full evidence of the results for the subsequent years was not included in evidence before the Supreme Court. Hence the latter was unable to say what the effect of such evidence would be. But this evidence was relevant and of great importance and it was an error not to have considered it and to have based judgment upon one year only.

The Supreme Court decided, therefore, that the judgment of the lower court could not stand as "there was error in the appraisal of the present value of the plant, in the deduction of the reductions made by the ordinance and in the exclusion of evidence relating to the operations of the company after the enactment of the ordinance."

The Supreme Court states that its jurisdiction in cases of this kind should be invoked only in the clearest cases. In this instance more than seven years had passed since the enactment of the ordinance and it had never been observed. "If a company of this kind chooses to decline to observe an ordinance of this nature and prefers rather to go into court with the claim that the ordinance is unconstitutional, it must be prepared to show to the satisfaction of the court that the ordinance would necessarily be so confiscatory in its effect as to violate the Constitution of the United States." This same thought, it says, is expressed in *ex parte Young*, 209 U. S., 123; *San Diego Land & Town Company v. National City*, 174 U. S., 739, 754; *San Diego Land & Town Company v. Jasper*, 189 U. S., 439. On the other hand, it cannot be doubted that in a clear case of confiscation it is the right and duty of the court to annul the law. *Reagan v. Farmers' Loan & Trust Company*, 154 U. S., 362; *Covington, etc., Turnpike Company v. Sanford*, 164 U. S., 578; *Smyth v. Ames*, 169 U. S., 466. But the court did not consider the present case as being one of this kind. It says:

Upon any aspect of the evidence the company is certain to obtain a substantial net revenue under the operation of the ordinance. The net income, in any event, would be substantially 6 per cent, or 4 per cent after an allowance of 2 per cent for depreciation. (See *Stanislaus County v. San Joaquin Company*, 192 U. S., 201.) We cannot know clearly that the revenue would not exceed that return. We do not feel called upon to determine whether a demonstrated reduction of income to that point would or would not amount to confiscation. Where the case rests, as it does here, not upon observation of the actual operation under the ordinance, but upon speculations as to its effect, based upon the operations of a prior fiscal year, we will not guess whether the substantial return certain to be earned would lack something of the return which would save the effect of the ordinance from confiscation. It is enough that the whole case leaves us in grave doubt. The valuation of the property was an estimate and is greatly disputed. The expense account was not agreed upon. The ordinance had not actually been put into operation; the inferences were based upon the operations of the preceding year; and the conclusion of the court below rested upon that most unsatisfactory evidence, the testimony of expert witnesses employed by the parties. The city authorities acted in good faith, and they tried, without success, to obtain from the company a statement of its property, capitalization and earnings.

In conclusion the court expresses itself as follows:

The courts in clear cases ought not to hesitate to arrest the operation of a confiscatory law, but they ought to refrain from interfering in cases of any other kind. Regulation of public-service corporations which perform their duties under conditions of necessary monopoly will occur with greater and greater frequency as time goes on. It is a delicate and dangerous function and ought to be exercised with a keen sense of justice on the part of the regu-

lating body, met by frank disclosure on the part of the company to be regulated. The courts ought not to bear the whole burden of saving property from confiscation, though they will not be found wanting where the proof is clear. The legislatures and subordinate bodies to whom the legislative power has been delegated ought to do their best. Our social system rests largely upon the sanctity of private property, and that State or community which seeks to invade it will soon discover the error in the disaster which follows. The slight gain to the consumer which he would obtain from a reduction in the rates charged by public-service corporations is as nothing compared with his share in the ruin which would be brought about by denying to private property its just reward, thus unsettling values and destroying confidence. On the other hand, the companies to be regulated will find it to their lasting interest to furnish freely the information upon which a just regulation can be based.

If hereafter it shall appear under the actual operation of the ordinance that the returns allowed by it operate as a confiscation of property, nothing in this judgment will prevent another application to the courts of the United States or to the courts of the State of Tennessee. But as the case now stands there is no such certainty that the rates prescribed will necessarily have the effect of denying to the company such a return as would avoid confiscation.

STANDARD SPECIFICATIONS FOR COAL

The committee on standard specifications for coal of the American Society for Testing Materials held a meeting in Pittsburg on Jan. 29. Dr. J. A. Holmes, of the U. S. Geological Survey, Washington, D. C., was elected permanent chairman of the committee. B. F. Bush, president, Davis Coal & Coke Company, Baltimore, Md., was elected permanent secretary. The subject of the sale of coal on heat value specifications was discussed exhaustively, and it was the consensus of opinion that such a method of sale would be feasible. The chairman appointed a committee to classify the users of coal who could properly purchase under standard specifications. The committee reported the following classifications: (1) Steam plants; stationary power, locomotives, ships, naval, etc. (2) Producer gas. (3) Domestic coal; low-pressure heating plants, anthracite, bituminous and coke. (4) Metallurgical; coke, smithing. (5) Gas (illuminating). (6) Cement and miscellaneous drying operations.

Sub-committees were appointed to consider specifications for each of these classifications and report to the general committee next June, when the society holds its annual meeting at Atlantic City. Committees were appointed on sample taking and on educational work. Professor W. F. M. Goss, University of Illinois, was appointed chairman of the committee on specifications for steam plants, and D. T. Randall was appointed chairman of the sub-committee on sample testing. The membership of these various committees is equally divided between representatives of the consumer and the producer, except that, according to the rules of the society, the chairmen of all committees must be either consumers or engineers.

Recent statistics compiled by the French Minister of Public Works show that on June 1, 1908, there were on that date in Europe 317,654 km (197,660 miles) of steam railroad track, exclusive of industrial and secondary railroads. Germany led the list. The other important countries, in their order, were Russia, France, Austria-Hungary, Great Britain and Ireland, Italy, Spain, Sweden, Belgium, Switzerland, Denmark, Turkey, Roumania and Holland. In length of track built during 1907 Russia led, with 1715 km, or 1071 miles.

DISCUSSION OF CAR OPERATION IN BOSTON

At a recent monthly meeting of the car-house foremen and division superintendents of the Boston Elevated Railway Company the subject of car operation was discussed from the point of view of the mechanical department. Through the courtesy of the company the following report of the proceedings is here printed. The meeting was so successful that it was decided to bring the facts closer to the car-service employees and two similar meetings were held with the street inspectors and motormen instructors as attendants. John Lindall, superintendent of rolling stock and shops, presided at all the meetings, and the electrical side of car operation was discussed more in detail by John W. Corning, electrical engineer. A noteworthy feature of the work was the exhibition of graphic charts of the car defects occurring in 1907 and 1908 by months and by equipment classifications and the presentation of full-sized diagrams of the current variations during the correct and incorrect operation of a car. Each man was also given a blue print, as illustrated herewith, showing a recording ammeter record taken on a well-run and a poorly operated car and at the conclusion of the meetings the men adjourned to the shop yard, where a test car had been fitted up with a recording ammeter. This car was run in various ways with small groups of men inside on each trip and curves were obtained showing the current demand of the car under different methods of handling.

At the outset Mr. Lindall pointed out that the meeting was not called in a critical spirit, but for the purpose of effecting possible improvements in the service. He explained the uses of the system of defect records (which were described in the *STREET RAILWAY JOURNAL* for April 4, 1908) and showed how the troubles occurring in service have been reduced. Car body defects in November, 1908, were about 400 compared with about 510 a year ago; motor defects were 240, against 720 in 1907; truck defects were 16, against 65; control troubles were 172, against 275; brake defects, 31, against 80, and trouble reported and nothing found, 41 cases, against 150. It was then stated that the manner in which the cars are handled in service has an important bearing upon the failures of equipment and the cost of maintaining it. Last year the committee appointed by the American Street & Interurban Railway Engineering Association to report upon the maintenance and inspection of electric railways sent out a letter to practically all the companies in the United States asking for certain data and information. One of the points brought out in the replies was that about 42.6 per cent of the commutator and brush troubles were due to fast feeding of controllers. When motor equipments are figured consideration is given to the weight of car, weight of load the car is liable to carry, grades on the line, number of stops per mile, scheduled speed and the line voltage. Motors are designed to fulfil these requirements with sufficient capacity to perform the service without excessive heating which deteriorates the insulation, and they are also designed to commutate properly the normal current required for service without serious sparking at the brushes and blackening and burning at the commutator. They are not designed to fulfil these conditions if the motors are not connected up properly, if they are run with the brakes on, or if the power is applied too rapidly. During the past two years the company has done a great deal of work on the equipment to make the motors operate under more nearly normal conditions. Resistance has been rearranged and controllers

changed to smooth the acceleration and cut down the current peaks. Lost motion has been taken out of the truck and brake rigging with beneficial results and the company feels that if the handling of the cars by the motormen can be improved further reductions in car defects and maintenance will follow.

Mr. Corning explained the needs of smooth acceleration and showed the waste of power in keeping the current on too long, particularly when the brakes are applied needlessly. If the rail is not dry when the power is applied too rapidly slippage and grinding of the wheels result with slow car movement. About a year ago the company made some demonstrations to its inspectors, showing that better time could be made by applying power less rapidly on a slippery rail. A chart was then discussed with reference to proper and improper operation of the controller, the current curve being shown in red for good handling and in black for poor. The commutating capacity of the motor was explained with reference to the diagram. Thus the current rose only to a maximum of 55 amp in the series position with smooth handling, against about 85 amp with rough manipulation. With proper operation the full multiple current was 125 amp, reached in 9 seconds after starting, and with rough work the maximum current in

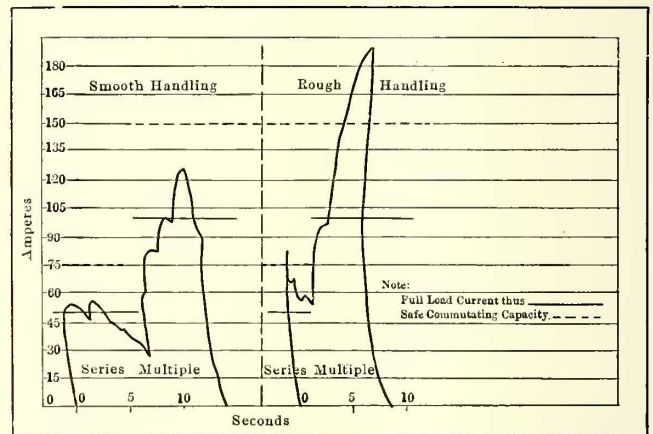


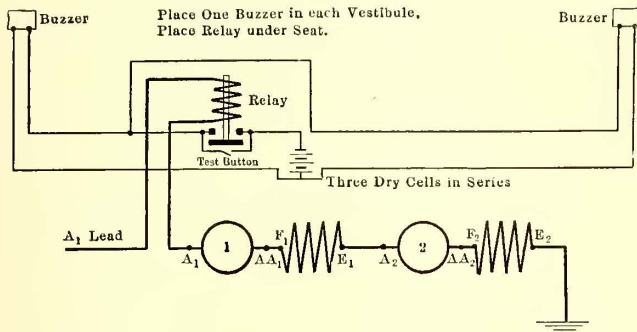
Diagram Showing Current Consumption of Motors with Different Rates of Feeding

multiple reached about 195 amp in 7 seconds. With proper operation the current did not rise above the safe commutating capacity of the motor and barely exceeded the full-load current. In rough handling the full-load current was exceeded in both series and multiple and the safe commutating capacity was considerably exceeded. When this is a frequent occurrence it causes a roughness in the commutator, which ultimately leads to sparking. The current peaks with a car carrying passengers on a grade are still more serious. The effects on passengers and possibility of accident claims resulting from the sudden starting of cars were also considered. The effect of rough handling on the motors was then discussed. The wrench that the bearings get due to sudden rushes of current is undesirable, as is the shock to gears and pinions. The shock to the trucks is bad and the car bodies tend to loosen up at the joints. Another effect of the too rapid movement of the controller is the resulting overheating of the motors.

Mr. Corning pointed out that with the curves exhibited the maximum current per motor was 90 amp with improper operation and only 70 amp with good operation. This has an appreciable effect on the power stations, where it is desirable to limit the maximum current as much as possible.

The heating of the motors is proportional to the square of the current. The rheostat losses are also greater with improper operation.

A trial device has been placed on the cars as suggested by Paul Winsor, chief engineer of motive power and rolling stock, to warn the motorman when he exceeds the proper current in accelerating. This device is illustrated by the accompanying drawing and it consists of a relay



Electric Rn. Journal

Diagram of Overload Warning Buzzer Connections

in the motor circuit adjusted to close a dry battery and buzzer circuit when the current reaches about 80 amp. This relay operates a buzzer at each end of the car, and is set just beyond the commutating capacity of the motor, so that the motorman could so accelerate his car as he maintained the proper speed without causing the buzzer to ring.

In approaching electric track switches it is necessary to operate the car slowly for the reason that there is in the switch mechanism one coil or solenoid whose function is to determine which way the tongue should move. This coil is operated by the current taken by the motors, and the company's measurements show that it takes about 40 amp to operate the coil when it is working properly. As a car is being accelerated from rest this value will be obtained by two or three controller notches without using the brake, and by moving the controller properly, securing a speed of about 7 m.p.h. This is about as fast as the motorman should run through the trolley pan, as a higher speed may prevent the track coils from moving the switch tongue all the way over and thereby cause a derailment or a split switch.

The following points were noted by inspectors as desirable to avoid:

Controller flashed by slow movement in making the transition point and also by quick feeding and holding between notches.

Resistance burned out by running on short notches with motor heating.

Running cars over cut-outs while in the loop, causing motors to flash and fuse to blow.

Overworking motors and grinding out shoes while nearing a stop by applying brakes with the power on or when running over rough rail to steady car.

Fuses blown by rear brake being set, which motorman had failed to detect.

Fuses blown at electric track switches by applying brake too hard.

Car pushed when motor could have been cut out.

Open cars pushed with reverse on center.

Car pushed with switch not properly thrown.

Car pushed with fuse blown and not replaced.

Car pushed with circuit breaker not set.

Throwing to multiple with wheels spinning and resulting in flashing of motors.

Reversing to make ordinary stops.

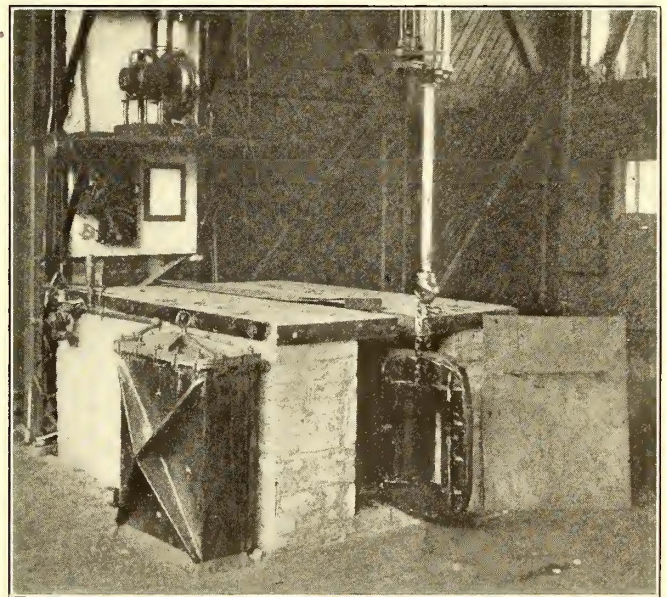
A SIMPLE IMPREGNATING PLANT

A simple impregnating outfit has been built by the shop employees of the Northwestern Elevated Railroad Company, of Chicago, John E. Osmer, master mechanic. This outfit includes a heating oven, an impregnating tank and an air supply for forcing compound into the coils. An accompanying illustration shows the general appearance of this complete outfit as it is built on the shop floor.

The heating oven is 5 ft. x 6 ft. x 4 ft., inside dimensions, and is built of brick with the top supported on angle irons. Beginning above the door in the front of the oven a slot about 4 in. wide extends throughout the length of the top from front to rear. This slot has a sheet-iron cover for retaining the hot air when the oven is in use. This opening makes it possible to handle coils direct from the winding room to the inside of the oven carrying them with the pneumatic hoist shown in the illustration. A short length of chain is provided to lift the coils, and when a coil is being put into the oven this chain passes through the slot in the roof of the oven, which slot is directly under and parallel with the runway of the pneumatic hoist.

The oven is heated with nine electric car heaters placed along one side wall. On the opposite side wall are hooks for supporting small coils. By means of the heaters the temperature within the oven can be maintained at 190 deg. Fahr.

Close to one side of the oven is the pressure tank, 10 in. wide, 22 in. long and 27 in. deep, inside measurements. It is heavily ribbed on the sides and the cover so that it may withstand a pressure of 100 lb. per square inch. When a coil is immersed in the compound in this tank and the cover bolted on pressure for forcing the compound into the coil is supplied by air from the shop pipes. The shop supply of air is maintained at 110 lb., but a feed valve and



Impregnating Outfit in Shops of Northwestern Elevated, Chicago

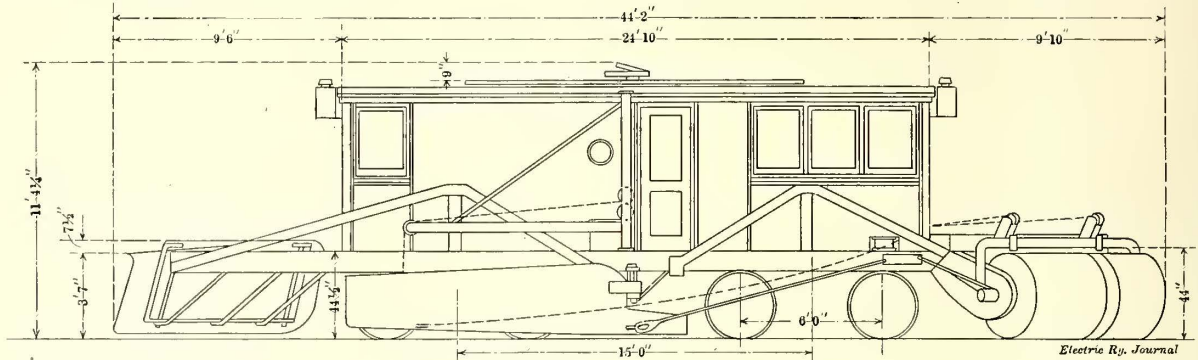
a safety valve set at 60 lb. maintain the pressure within the tank at from 50 lb. to 60 lb. An ordinary gage serves to indicate the pressure within the tank.

When a coil has been repaired it is carried from the winding room to the inside of the oven by the overhead crane as mentioned and there heated for a sufficient length of time to have the moisture driven out. After heating, the coil while still hot is submerged in the compound which

half fills the cast-iron pressure tank just described. When all bubbling has ceased the cover is securely bolted to the tank and 50 lb. air pressure is applied above the liquid for about 60 minutes; then the cover is removed and the coil is raised and temporarily held on strap-iron saddles while the excess liquid drips back into the tank.

end and the steel broom soon cuts through the snowdrifts.

The shear in front, which is supported directly on the extended side sills of the car body and is also braced from above, is fitted at its outer and lower end with a square steel plate which can be set to any desired height, and the height of the shear itself can be regulated by means of a



Side Elevation of Minneapolis Snow Plow

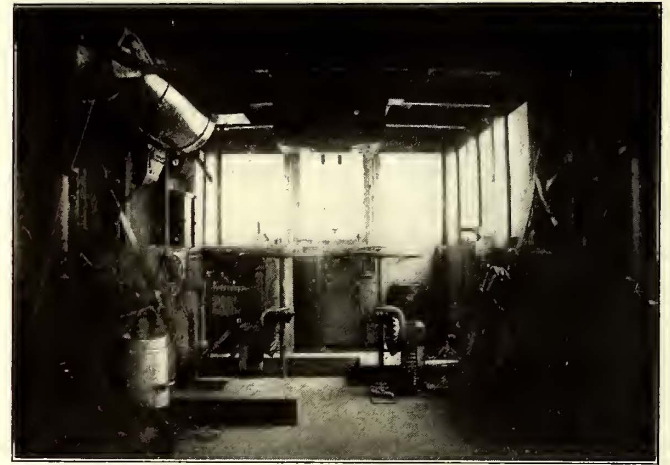
Field coils that have become loose in service on the company's 160-hp motors are brought into the shop, the rivets are tightened, the coils are heated and then submerged in the compound under pressure. After drying they are put back into service and satisfactory insulation by this method has been shown.

reel and drum from the cab. The bottom of the shear is shod with steel blocks rounded so that they will slide on the rails, and is so constructed that when it strikes obstruc-

NEW SNOW PLOW FOR MINNEAPOLIS

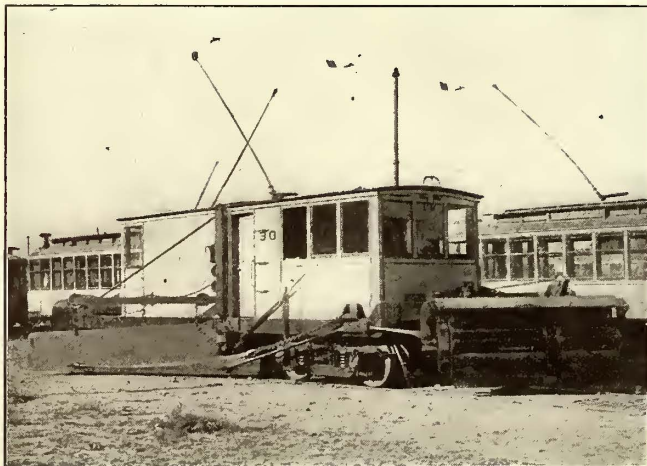
A new type of snow plow has recently been developed at the shops of the Twin City Rapid Transit Company, of Minneapolis. One of these plows was built for service last year, and proved so successful in combating the drifts, which are heavy and frequent in Minnesota, that four others of the same pattern were built last summer.

The new plow is a combination shear plow and sweeper, with the shear at one end and a rotary sweeper at the other. It is equipped to operate in either direction and from both ends, although as a rule the plow end will be the forward end of the plow. In this case the shear and wings will clear the tracks of the greater part of the snow and the amount between the rails left by them will be removed by the sweeper in the rear. When the side wings are extended the plow will remove the snow from a strip 19 ft. wide, including the strip between the tracks, and



Interior of Cab of Snow Plow

tions, such as paving blocks, it will rise and ride over them without difficulty. The side wings are also arranged so that they can be dropped from the cab, and when thus



View of Sweeper End



View of Shear Plow End

will throw the snow out 12 ft. from the outside rail. If heavy, frozen drifts which cannot be moved by the front wing are encountered, the plow is operated from the other

set are held rigidly in place by a kind of toggle joint. Both of the wings may be raised and lowered by means of jib cranes and air power.

The steel broom at the rear end of the car is 52 in. in diameter and is revolved by a chain from a special motor carried in the cab. This broom is also raised and lowered by air power.

All electrical cables composing the car wiring are carried in boxed-in troughs on the floor of the cab, so that they are easily accessible in cases of emergency. The resistances are carried on the roof. The car is mounted on Baldwin No. 4 trucks and is equipped with four GE-73 motors with C-6 type M control for operating, a GE-67 motor for revolving the broom, compressors, etc. The weight of the plow complete is 66,500 lb., and it is 44 ft. 2 in. over all.

ELECTRIFICATION OF SALT LAKE & OGDEN RAILWAY

The Salt Lake & Ogden Railway operates a steam railroad, carrying freight and passengers between Salt Lake City and Ogden, Utah, 35 miles distant, over private right of way averaging 66 ft. in width, thus giving ample space for future double-tracking. At the terminal cities it has excellent facilities and free entry under franchises, with loop tracks around the federal building of each city. The road is built for steam railroad service, with practically no curves and a maximum gradient of 1.1 per cent. The track is standard gage laid with 85-lb. rails. It is now proposed to electrify this road and also retain the steam locomotives in service for handling at night the rapidly growing freight business.

Simon Bamberger, ex-State Senator for Utah, is the active head of the corporation, with the title of president and general manager; H. A. Strauss, vice-president. The Falkenau Electrical Construction Company, Chicago, is consulting engineer, and is now engaged in the design of the electrified system and the preparation of plans and specifications for the new work. It is anticipated that it will be possible to so carry forward the work that electric operation may be begun by July.

Hourly local service and a limited service will be given between the two cities. The equipment throughout will be designed for high-grade fast interurban service. The new electric motor cars to be purchased will be equipped with four motors of approximately 100 hp each, multiple-unit control, automatic air brakes, heavy trucks, and will contain smoking and baggage compartments. These cars will be geared for a maximum speed of 60 m.p.h. In addition to the purchase of new cars, the electrification work will include equipping electrically approximately 40 existing cars now in use, which will be utilized as trailers in trains consisting of from two to six units in conjunction with the new motor-car equipment.

Mr. Strauss has recommended the use of the direct-current system at 650 volts, with overhead span construction. This conclusion was reached after weighing carefully the advantages and disadvantages in this undertaking of the a.c. single-phase system, the 1200-volt d.c. system and the standard direct-current system with a voltage of 650. Power for the line will be supplied either from a generating station to be erected by the railway company, or will be purchased from one of the several high-tension hydro-electric supply lines which now practically parallel the company's right of way. Four substations to receive and convert 88,000-volt current will be erected and equipped, each with two motor-generator sets of 300-kw capacity.

The road which is to be electrified traverses an ex-

ceedingly fertile and densely populated section, and has an enormous excursion traffic from both terminals throughout the summer months to a summer resort known as "Lagoon," owned by the interests controlling the railroad.

REPORT OF WISCONSIN RAILROAD COMMISSION

The second annual report of the Railroad Commission of Wisconsin, which has just been issued, relates to the work of the commission during the year ended June 30, 1908.

Of 114 formal complaints against railway companies, seven related to street and interurban railway service and rates. Of 673 informal complaints and other informal matters regarding railways, six related to street car service and rates.

Fifty-one indeterminate permits were issued to corporations which filed notices of surrender of franchise with the commission under the provisions of the law of 1907. Among these companies were the following: Menominee & Marinette Light & Traction Company; Ashland Light, Power & Street Railway Company; Merrill Railway & Lighting Company; Chippewa Valley Railway, Light & Power Company.

The following statistics of accidents are presented:

The steam railroads and the electric street and interurban railways together reported 240 persons killed and 2743 injured by them in this State during the year ended June 30, 1908. Of these the steam roads were responsible for 207 killed and 1867 injured; the electric railways for 33 killed and 876 injured.

The steam roads killed 4 passengers and injured 151 more; the electric railways killed 5 and injured 759. Forty-eight employees were killed by the steam railroads and 5 by electric railroads; while 1486 and 40, respectively, were injured. Crossings account for 34 of the deaths reported by the steam roads and 76 of the injuries; the electric lines reported 5 injured in this manner. Seventy-three trespassers on right of way and 15 trespassers on trains were killed by the steam roads, and one of each class by the electric roads; the injured of this class numbered 45 and 39, respectively.

Struck by train was the most common cause of death reported. The railroads killed 155 in this manner and injured 200 more; the electric railroads killed 23 and injured 65. The steam roads report 17 deaths by falling from trains and 176 injured; the electric railways 56 injured. Jumping on and off trains resulted in 11 deaths on the steam, 6 on the electric railroads; and 174 and 448 injuries. Coupling and uncoupling cost 6 lives and 120 injuries. Collisions caused 5 deaths and 72 injuries on the railroads and 120 injuries on the electric railways. One death and 12 injuries were caused by overhead obstructions.

The report gives the following figures of the expenses of the commission: Amount expended under the railroad commission law, \$48,169.77; amount expended under the public utilities law, \$17,513.74; total, \$65,683.51. The expense for the joint engineering staff of the Railroad Commission and the Wisconsin Tax Commission, including salaries and traveling expenses, but exclusive of instrumental equipment, was \$31,199.09, divided as follows: Public utilities, \$13,132.50; Railroad Commission, except public utilities, \$9,128.82; Tax Commission, \$8,937.77.

Among various suggestions for legislation the commission makes the following:

The administration of the public utilities law has revealed no weaknesses in its essential provisions. In several instances the commission has been obliged to place a somewhat liberal interpretation upon it in order to make the law fit the concrete situations which were presented. It will be assumed, however, that the interpretation thus placed upon the law is in harmony with its spirit and the

intention of the Legislature, unless the Legislature directs otherwise. The only amendment to the public utilities law which may be suggested is one extending the period of time during which public utility companies, organized before the enactment of the law, can surrender their franchises and secure in lieu thereof indeterminate permits. The utilities law limited the time during which a franchise could be surrendered to July 1, 1908. Since this date a number of companies have inquired of the commission as to the manner in which they could now surrender their franchises. In our judgment it is desirable that utilities still operating under franchises granted before the enactment of the law, should have an opportunity to surrender the same at any time in the future. Possibly it is in the interest of the public to go a step further and, under the reserve power of the constitution, by statute repeal all franchises still in existence and grant in lieu thereof indeterminate permits. The second suggestion is obviously a much larger proposition, but we are inclined to believe that it merits careful consideration.

The public convenience and necessity law could to advantage be modified so as to permit the commission to consider the financial ability of the applicants in passing upon the application for such certificate, as some doubt exists at present of the right of the commission to inquire into such matter. The law might be further amended to authorize the commission to permit modifications of the certificate of public convenience and necessity at any time subsequent to its first issuance.

CHICAGO RAILWAYS REHABILITATION PROGRESS

Using a full page in the Lincoln Centennial issue of a Chicago daily paper on Feb. 7 the Chicago Railways Company presented a statement of its rehabilitation progress. A portion of the record was entitled "What the Chicago Railways Company Is Doing to Give Chicago a Perfect Traction System." The statements follow:

"Accepted its franchise ordinance Jan. 29, 1908. On Nov. 15, 1908, had completed 50 per cent of its rehabilitation requirements and was 25 per cent ahead of the amount specified in the ordinance for that period.

"Has removed the trailers and installed new 'pay-as-you-enter' cars on seven of its biggest trunk lines. Has built 74.40 miles of new track—modern grooved rails laid in concrete.

"Has 650 'pay-as-you-enter' cars of the most up-to-date model, either in service or in various stages of completion in the Pullman shops. (The ordinance requires that 225 new cars shall be installed a year after the acceptance.)

"Has installed 227 miles of vitrified clay tile duct for underground cable, about 50 per cent of the required amount. Has replaced 75 miles of trolley with heavier wire, or 44 per cent of the amount specified.

"Has let contracts for 126 miles of underground cable. Has laid 35 miles of auxiliary cable.

"The following buildings are completed; some of them cover the area of a city block: Car shops, paint shops, a modern warehouse and additions at West End, near Fortieth Avenue; car station at Twenty-fifth and Leavitt Streets, with a capacity of 145 cars; car station at Lincoln, Sheffield and Wrightwood; substation at Milwaukee Avenue and Cleaver Street; machine shop at Dewey Court. In addition to these buildings the station at Madison and Fortieth Avenue has been remodeled to accommodate 70 new 'pay-as-you-enter' cars; the Armitage barn, to accommodate 90 of the new cars; Devon Avenue, to hold 125 of the long vehicles; Lawndale station, to accommodate 75 cars, and Lincoln Avenue station, to accommodate 95 cars—a total of 455. With the new barns that are to be constructed, there will be accommodations for nearly 2000

cars, and the stations will be up to date in every respect, so that the cars can be thoroughly cleaned every day."

The company now has in service nearly 300 of the new "pay-as-you-enter" cars and 350 more are in the shops fast approaching completion. At an early date the contract will be placed for 550 additional cars of the same type and before the end of this year the Chicago Railways Company will have in operation 1200 of the new "pay-as-you-enter" cars representing an outlay of approximately \$7,000,000.

The new cars are in operation on seven of the principal lines of the company—Madison Street, Evanston Avenue, North Clark Street, Milwaukee Avenue, Armitage Avenue, Blue Island Avenue and Ogden Avenue. Other lines are being equipped as fast as possible. Meanwhile the heavy double-truck cars from the principal thoroughfares have been placed on other lines, to the great improvement of the service generally.

The total expenditure for rehabilitation so far has been about \$10,000,000. The track is said to cost about \$50,000 per mile. The company expects to complete the rehabilitation of all its lines this year. It has planned to build 112 miles of track, including 26 miles of extensions, before the close of next December. This will include new tracks in the important network which extends through the heart of the city, work upon which was started the latter part of 1908.

The tunnels connecting the loop district with the north and west sides have been out of service for the last two years, but the Board of Supervising Engineers lately has prepared plans for rebuilding the La Salle and Washington Street bores and it is assumed that the transportation difficulties in the downtown section will be overcome to a considerable degree by the construction of these subways and the relief of the bridges. The Van Buren Street tunnel practically is completed and the cars soon will be running through it, materially relieving congestion in that part of the city.

MAGYAR-AMERICAN ENGINEERS ORGANIZE

A number of Hungarian engineers and architects have organized the "American Society of Hungarian Engineers and Architects." The society has two objects: To bring in closer touch engineers and architects of Hungarian extraction living in this country, and to give moral support and information to newcomers, and to encourage the exchange of engineering, technical and industrial information between the technical men of Hungary and of the United States and to foster technical societies, sciences and industries. The society will hold monthly meetings, where papers will be read and discussed. The membership consists of mechanical, electrical and civil engineers, chemists, architects and craftsmen. Following are the officers of the new society: President, A. Henry Pikler, M.E., member of the American Institute of Electrical Engineers, engineer in charge of transformer department, Crocker-Wheeler Company, Ampere, N. J.; vice-president, Karoly Z. Horvay, architect, chief draftsman, building bureau of Board of Education, Brooklyn, N. Y.; secretary, Zoltan de Nemeth, M.E., New York Edison Company; treasurer, Sandor Oesterreicher, E.E., associate member of the American Institute of Electrical Engineers and of the American Society of Mechanical Engineers, New York Edison Company; assistant secretary, Ernest L. Mandel, B.S.C.E., bureau of Commissioner of Public Works, New York City.

FENDER AND WHEELGUARD HEARINGS BEFORE THE NEW YORK PUBLIC SERVICE COMMISSION

On Feb. 4 and 5 the New York Public Service Commission, First District, gave two hearings in pursuance of its intention to learn the attitude of the street railway companies under its jurisdiction with regard to a proposed form of order specifying the adoption of wheelguards with or without fenders. The first hearing, held on Thursday, Feb. 4, was for the railways of Kings, Queens, Bronx and Manhattan boroughs, comprising nearly all the mileage in New York and vicinity. The second hearing was held on Friday, Feb. 5, and was attended by representatives of the electric railways in the Borough of Richmond. Commissioner Maltbie presided at both sessions.

THURSDAY'S SESSION

Commissioner Maltbie, in opening the Thursday session, referred to the recently issued report of the Schenectady and East Pittsburg fender and wheelguard tests made by the sub-committee on safety devices. While it was true that the proposed form of order would be based largely on the work of this sub-committee, the Public Service Commission would by no means be bound to it. He assumed that the street railway companies would not deny the necessity of some kind of protection, and expected that their arguments at the hearing would be confined to the desirability of using one or the other form of protection on their cars.

A. W. McLimont, chairman of the sub-committee on safety devices and electrical engineer of the Public Service Commission, was then duly sworn. He testified that the report as issued was correct, and summarized the recommendations made therein. The committee had recommended, he said, that all cars should have automatic wheelguards, and in addition that the cars in the less congested boroughs of New York should also have projecting fenders.

The first railway representative called was A. H. Masten, one of the lawyers for the Metropolitan Street Railway Company. Mr. Masten said that the receivers of the company had been engaged for some time in making tests of wheelguards and other safety devices. Those which they are now testing are the two which received the highest percentages in the report made by the sub-committee of the commission. J. L. Quackenbush, another legal representative of the Metropolitan Street Railway Company, said that the wheelguard views expressed in the report were the same as those given out about a year ago by Oren Root, general manager for the receivers of the Metropolitan Street Railway Company.

The next witness was F. W. Whitridge, receiver of the Third Avenue Railroad Company, Union Railway Company and other lines. Mr. Whitridge said that as the tests conducted by the commission were made on lay figures, they bore absolutely no relation to what exists in practice, unless the person struck is asleep or drunk on the track. Of 2700 cases which came to his notice, not one had presented conditions similar to the tests. For that reason he was disposed at first to take a light view of the report, but some time ago he came to the conclusion that there ought to be some kind of a safety device on every car. He had already installed 50 Hudson & Bowring wheelguards, and he was gratified to find he had selected the very device which had received the highest mark from the commission. He spoke highly of the record which the H-B guard had made in many cities throughout the world,

and believed it was the best thing available in case a person should be in the positions given in the tests. He had no objection to equipping his cars as quickly as possible. He did object, however, to the proposition that the cars operated in Bronx Borough should be equipped with projecting fenders in addition, because some parts of that section are quite as congested as Manhattan Borough. Fenders were nothing but a nuisance where wheelguards are installed. The one objection he had with regard to the sub-committee's statement on wheelguards was the proposal that the wheelguards should be attached to the truck rather than to the body of the car. There were several objections to this, but the main one was that the plan of attaching wheelguards to the truck is patented. At this time 50 of the new pay-as-you-enter cars are equipped with the H-B wheelguard, and the rest of the cars are being furnished with this device as rapidly as possible. He expected to complete in a very few weeks the equipment of all of the electric railways operated by him as receiver. In reply to a question from Commissioner Maltbie, Mr. Whitridge stated that he would ask the wheelguard manufacturer how long it would take to equip all the cars, so that the commission would be able to set a date in its proposed order. In conclusion, Mr. Whitridge said that in view of the sentimental notions which prevail regarding the sacredness of human life, it was very desirable to do everything possible to save it. Inasmuch as the commission had approved the device which he considered the best, he had no complaints to make.

A. H. Masten, representing the Metropolitan Street Railway Company, was recalled to the stand. He did not agree with Mr. Whitridge in having no objection to the proposed order as to wheelguards. His company's experience thus far with the two devices tested had not been sufficient to say that one has a marked superiority over the other. One has worked very satisfactorily except in a few cases, and in general the company has not had time to decide which is the better. It seemed unwise in advance of further preliminary tests to standardize such devices at this time and to require the railways to install absolutely one or the other of the two guards. Commissioner Maltbie pointed out in reply to Mr. Masten that the proposed order will not confine the railway companies to any particular device, as they will have the privilege to use anything that will pass satisfactorily such tests as the commission may direct. In reply to a question from the commissioner, Mr. Masten said that the two wheelguards which his company has on trial are the Parmenter and the Hudson & Bowring types. He admitted that both had been in use elsewhere, but asserted that they had not been previously tried out under conditions like those in New York City. He did not wish to suggest the date on which the proposed order should become effective without conferring with the operating department.

Oren Root, the general manager for the receivers of the Metropolitan Street Railway Company, was then called to the stand. He said that he could not tell how long it would take to equip the cars with an improved wheelguard; that would depend entirely on the deliveries of the manufacturers. Of the two wheelguards which his company is trying out, the Parmenter has been in use on the Madison Avenue line for about a year, and therefore has been quite thoroughly tested. The H-B guard, however, has come into the American market more recently, so that his company's experience with it is rather limited. He was not prepared to give an opinion until the Eighth

Avenue line is actually equipped with the H-B type. The tests of the commission were of value in indicating the type of safety device to be used, but he did not believe that the results thus secured should be conclusive. They ought rather to be supplemented by tests in actual operation. The only objection that he had was that any particular device should be specified by the commission. The percentage of accidents in which a wheelguard might be of use is very small; nevertheless, when an accident of that character does occur it is important that the wheelguard should be of the most efficient type.

J. J. Kuhn, of Dykman, Oeland & Kuhn, representing the Central Park, North & East River Railroad Company, was not prepared to say whether it is necessary to equip the cars with both fenders and wheelguards. He did not think that the commission should order the company to put on expensive equipment merely as an experiment. Perhaps the commission would consider further experimenting. Commissioner Maltbie pointed out that the order will not specify any particular device, and that a railway company can submit any device it chooses, subject to approval. Mr. Kuhn said that his engineers had told him that fenders were more desirable than wheelguards, as a loose wheelguard dropping on the track could easily derail a car. Commissioner Maltbie said in reply that if the wheelguards were properly maintained they would not fall down, and Mr. Kuhn admitted that he had not heard of such accidents. He thought, however, that either a wheelguard or fender should be ordered by the commission, but not both. As he had no engineers of the company with him, he asked that another hearing be given to go into the matter further.

George W. Linch, receiver for the Second Avenue Railroad Company, said his company was willing to go ahead with wheelguards or fenders if absolutely necessary. He had had no chance to experiment, but F. W. Whitridge, receiver of the Third Avenue Railroad Company, had invited him to witness his company's experiments. At present the cars of his company are equipped with Sterling-Meaker pilot wheelguards.

J. F. Teyser, of Mayer & Gilbert, representing the Twenty-eighth & Twenty-ninth Streets Crosstown Railroad, said the proposed order of the commission would not apply to his company, as it operates only five horse cars, and the safety devices would impede the movements of the horses.

J. L. Quackenbush, representing the New York City Interborough Railway, had the same objections as Mr. Whitridge to placing fenders on cars operated in Bronx Borough. He wished to confer with Mr. Whitridge and E. A. Maher, general manager of the Third Avenue Railroad and the Union Railway companies, on this question. Commissioner Maltbie said that another hearing would be held to discuss the feasibility of fenders, and that the present hearing would be confined to a discussion as to when the order on wheelguards should become effective.

Oren Root, general manager for the receivers of the Metropolitan Street Railway Company, was prepared, however, to proceed with the discussion on the fender question. He said that fenders had been found worthless on the congested lines of Manhattan Island, and the last had been removed eight or ten months ago. Under the traffic conditions in Manhattan Borough it was practically impossible to keep such devices in proper repair. The speed of the cars is very much less on Manhattan Island. A fender to prevent accidents must be operative, and in many

cases during his company's seven to eight years' experience it had been found that many were not operative at the end of the day, or even of the trip. The object supposed to be protected by the fender rolled along the side of the car, and there had been a material proportion of cases where ankles and legs had been broken when passengers were knocked down or run over by vehicles on being thrown aside by the fender. For instance, on Broadway, where the average speed was 5 to 6 m.p.h., a person who was crossing the street based his ability to avoid a car on the observation of the position of the platform height, not of the position of a projecting fender. This error resulted in many accidents to pedestrians in crossing the streets. He did not see any particular reason for specifying fenders above Fifty-ninth Street, as the congestion in some parts of upper Manhattan, notably on Eighth Avenue, was as great as it was downtown. Even in the upper districts a fender would cause many injuries. A wheelguard underneath the car was the only practicable plan; besides, it was not feasible to have a fender on the car in addition to a wheelguard, as the fender would interfere with the efficiency of the wheelguard. The front fender would not save life, and might throw the body away in such a manner that the wheelguard would not work. In response to a query from Commissioner Maltbie, Mr. Root admitted that it would be possible to tie up the fender when in congested districts. It was almost invariably the case, however, that the fender does not pick up the body, but leaves a limb in position to be run over by a wheel.

J. J. Kuhn, representing the Coney Island & Brooklyn Railroad, asked for time to confer with the engineers of the company.

W. S. Menden, chief engineer of the Brooklyn Rapid Transit Company, understood that the recommendations contained in the report were the things desired by the commission. Commissioner Maltbie pointed out that the report was not final, and that the commission would not take action until the companies had presented their side of the case. Mr. Menden said that the operating conditions in Brooklyn as to cars and track differed very much, as they ran from the smallest single-truck to the largest double-truck cars over the bridges, paved streets with girder rail, on unpaved roadways with T-rail, on steam railroad track, etc., hence it was difficult to determine whether a wheelguard would be practicable. His company had experimented with wheelguards some years ago, and at that time found them impossible to operate. He, therefore, desired that the commission would give the Brooklyn Rapid Transit Company at least 30 days more to consider this question. Commissioner Maltbie wanted to know why the company had not been experimenting within the last few years. Mr. Menden said that his company could not operate the guards on account of irregularity of paving, and that in some parts of Brooklyn the wheelguards would be torn off on account of interlocking rails and other causes. As to fenders, the company also had a number of objections to them, although it had installed what it considered the best available. Commissioner Maltbie said the commission well understood that nothing is ideal. He did not agree with Mr. Menden that the hearing should be adjourned for 30 days, as the company was no doubt informed of the tests and had had time to look around for available devices.

Mr. Menden could not promise that he would be prepared with all the facts in less than 30 days, as in all probability it would be necessary to try out a number of

the devices under the different conditions existing on the various lines. Commissioner Maltbie inquired whether the company was not already in possession of the necessary data on clearances throughout the system, and Mr. Menden said that it was, but that actual trials were necessary to determine unforeseen obstructions. He said that there would be no objection to the installation of fenders if the commission approved the type used by the Brooklyn Rapid Transit Company. Commissioner Maltbie wanted to know why the company had not submitted this fender for trial at Schenectady. Mr. Menden said he had understood that only manufacturers were invited to submit their devices. Unfortunately, their fender manufacturer died a few months ago. The company was willing to put on anything that should be found practicable, but the conditions are peculiar in Brooklyn, and he thought that he ought to be given more time on the question of wheelguards. This fender was as satisfactory as any with which the company was acquainted. Mr. Maltbie said that the commission had not decided to what tests it would confine itself. Mr. Menden requested that the commission look into the accident record of his company to learn about the effectiveness of its fender. He added that an order for the application of fenders would not be satisfactory to the company unless it was for the one it was now using.

G. B. Hanavan, representing the New York & Queens County Railway Company, said that the operating conditions on his company's lines are similar to those of the Brooklyn Rapid Transit lines operated in Queens County as regards unpaved streets and irregular paving. His company installed less than two years ago the Sterling-Meaker fender, which obtained a rating of 76.8 per cent in the commission's tests. He did not question the necessity of a fender, and in view of the record made at the commission's own trials, he saw no reason for displacing the type now in service. As to wheelguards, that was a fairly debatable question, in connection with which he desired time to study the matter of paving and other obstructions. The report of the sub-committee on tests showed that it was aware of objections of this character. In general, he could say that his company had acquiesced in the commission's fender order in advance. Commissioner Maltbie stated that in considering the question of fenders in use, authenticated trials in service would receive due credit, further examination being made only if considered necessary. Mr. Hanavan also represented the Long Island Electric Railway Company, and pointed out that this road had a peculiar condition, inasmuch as the larger part of the line is in the territory under the jurisdiction of the Public Service Commission, Second District. It seemed to him that some co-operation was desirable between the two commissions, so that the orders made by one would be acceptable to the other.

C. L. Addison, vice-president of the Ocean Electric Railway Company, said that the 19 cars operated by his company were all equipped with the Consolidated car fender, which his company considered a first-class device. In addition, the cars are equipped with fixed wheelguards made up of plain boards. As the fender used had received a rating of 78.2 per cent at the commission's tests, he did not think that it would be fair to have the commission order this design displaced, neither could the company afford to purchase new fender equipment. Commissioner Maltbie said that the companies would be asked to submit their designs after the order is issued, and action will be taken in accordance with the recorded performances of the fenders. Wheelguards will be taken up later.

In concluding the session, Commissioner Maltbie said that it was not a question of approving one design, nor even of demanding a certain percentage. The discussion on safety devices for the companies represented at this meeting was then adjourned to 3:30 p. m., Thursday, Feb. 11.

FRIDAY'S SESSION

At Friday's session A. H. Larkin appeared as counsel for the Staten Island Midland Railway and the Richmond Light & Railroad Company. Mr. Larkin stated that the companies he represented were using a type of fender (Providence) which had received 78.2 per cent in the report of the commission's sub-committee on accidents. Consequently, he thought that his companies were in the right so far as fenders were concerned. The wheelguard would be of small service on most of the system, owing to the track conditions; nevertheless, the companies fully appreciated that the inquiry of the Public Service Commission was along lines of benefit both to the public and the railroads. It was merely a question of whether wheelguards would be such a substantial, additional benefit that the commission would be justified in ordering the Staten Island companies to place them on all the cars.

Commissioner Maltbie asked if the automatic track wheelguard, which drops on the track, would not be the best. Mr. Larkin thought it would, as such wheelguards can normally be carried with the same clearance above the rails as the other parts of the equipment.

The next witness was Thomas J. Mullen, superintendent of the same railways. He said that in four years' operation of these lines he knew of only three cases where bodies struck by cars had passed under the fender and were caught by the trucks. He did not know the total number of accidents during this period. The companies owned about 230 car bodies and 200 equipments. It would cost about \$6,000 to equip all of the cars, as he did not think it good policy to attempt changing wheelguards from one car to another. During the winter the company operates about 58 cars. Mr. Mullen said he was not familiar with the amounts paid out for personal injury suits. Commissioner Maltbie asked if he did not think an expenditure of \$6,000 was justified, even if it resulted in saving only one life a year. Mr. Larkin replied to this question by stating that it was the policy of his companies to do everything possible to make operation safe and reduce accidents. If, in the judgment of the commission, the possible reduction in accidents would justify the installation of wheelguards, they would cheerfully install them. He had no further testimony to offer, as Mr. McLimont had treated the whole matter very fairly in the report of the sub-committee. He was free to admit that wheelguards afforded extra safety in paved streets, but it was doubtful if they would do so on country roads, especially in winter, on account of snow and ice.

Mr. McLimont said that the snow and ice trouble could be obviated by turning the trip gates up where the track is thus obstructed. Automatic wheelguards are successfully used in Canada under such conditions.

A new device has recently been introduced on the tramway system at Rebsburg, which is intended especially to reduce the wear of the trolley wire on curves. By means of special tools a sheath of hard copper sheet, 1 mm in thickness, is pressed round the trolley wire in lengths of 1 m, so that the seam is on the upper side. These sheaths can easily be renewed when they are worn through.

TOPICS PROPOSED FOR DISCUSSION AT THE 1909 CONVENTION

At the recent meeting in New York of the committee on subjects of the American Street & Interurban Railway Association, William A. House, president, United Railways & Electric Company, Baltimore, one of the members of the committee, submitted to the committee a series of suggested topics, which was prepared by him after consulting with the heads of his various departments. The list is so comprehensive that it will be impossible for the various associations to take up all of the subjects suggested, but the material furnished was of great value to the committee and contains a number of topics which will, no doubt, be considered at future meetings. The list follows:

ROAD DEPARTMENT

1. Concrete Track Construction:

Is it advisable to go extensively into this form of track construction in view of the following conditions?

1. Its enormous cost, together with the fact that it is still in its experimental stages.
2. Its providing such a permanent foundation for the track structures as to make it exceedingly difficult and expensive to adapt the tracks to new conditions which are constantly being brought about by the city in connection with the construction of sewers and the laying of improved paving, etc.

2. Corrugated Rail:

We are experiencing more and more difficulty with the corrugation of girder rail in city streets and we think that the various arguments and explanations which have been advanced supposedly to elucidate the causes of this particular kind of rail depreciation are not thorough, conclusive or convincing, as this corrugation seems to take place under all conditions of track construction, at least in so far as we are now advised, wherever and however located, on curved as well as straight track alignment, and under both light and heavy equipment, when operated at either low or high speed.

3. Track Pit Construction:

The merits of girder rail as compared with T-rail track construction for pits.

4. Preservation of Timber:

Is it not advisable to prolong the life of ties and poles by the use of some of the numerous wood preservatives now on the market?

5. T-Rail in City Streets:

This type of track construction is a most important question, especially for electric railways operating in the smaller municipalities, and is one which, in our opinion, will receive more careful consideration and be more universally adopted in the future in the small and large municipalities, as its value on account of lowness of first cost, as well as subsequent maintenance, becomes more generally appreciated.

6. Improved Joints:

There are a number of appliances now on the market for giving more stability to rail joints, among the most prominent of which are the "Continuous," the "Atlas," the "Cox" and the "Weber" rail joints.

The following methods of welding the ends of the rails are also extensively used:

- Electric welding.
- Cast welding.
- Thermit welding.

From our experience with all of the above methods of improved ways of keeping up track joints we have found electric welding the most satisfactory.

MOTIVE POWER DEPARTMENT

7. Purchase of Coal:

The advisability of purchasing coal in the open market on contract to supply a given amount daily, instead of contracting for same to be furnished under strict specifications limiting the amount of ash, fixed carbon, volatile carbon and moisture.

A number of large consumers follow the former method while others follow the latter, each considering theirs the better one.

8. Reinforcement of Iron Street Poles with Concrete and Steel Filler to Strengthen Against Corrosion at Street Level:

Several companies have adopted the method of putting steel rods in poles, then filling them with concrete (forming reinforced concrete filler), to save scrapping them and replacing with new ones. This has also been done to stiffen poles to enable them to stand strains put on them by feeders at street corners where the feeders make turns.

9. Concrete Pole:

The reinforcement of concrete has now reached a stage where it is possible to construct poles of sufficient strength to stand the side strains imposed on them by overhead construction and yet maintain sightliness of construction.

A number of companies have such poles in use and their experience would be interesting.

SHOPS DEPARTMENT

10. Reporting Accidents and Defects of Equipments:

Many accidents are not reported by crews or workmen, as they consider them of such a slight nature as not to be worthy of attention, and no report being received, the proper repairs cannot be made.

This is a very serious mistake. One of the large Eastern steam railroads (B. & O.), on looking closely into this matter, found that the amount of money expended by it daily due to this cause alone was \$10,000. In nearly all the cases looked into had a report been made the outlay would have been avoided.

11. A Department of Statistics:

An operating department especially should be in possession of the performance of all materials that are being handled, as the cost per car-

mile of the various items used is the only and final basis for obtaining a knowledge of what is being done. To do this requires quite an elaborate statement into which they are unable to go on account of the more pressing work of carrying on the routine of the department. Does this pay?

12. When Should Apparatus Be Withdrawn from Service and Scrapped on Account of Excessive Repairs.

The cost of maintaining apparatus in operating condition for one or two years is often so excessive as to represent an outlay equal to the first cost of new apparatus. Of course, this is an extreme condition, but conditions more or less similar are continually met with, and it becomes a question that should be thoroughly gone into.

CLAIM DEPARTMENT

13. The Claim Department and Its Relation to the Operating Department:

Reasons:

a—The importance of all accidents being reported promptly to the Claim Department.

b—The importance of co-operation between the Operating and the Claim Departments in all matters relating to accidents.

c—The opportunities afforded the Claim Department by learning the causes of many accidents and suggesting a remedy to the Operating Department for its consideration.

d—The importance of having the employees of the Claim Department report to the Operating Department any infraction of the rules by employees of the latter department which may come under their observation and which may lead up to an accident.

14. The Unreported Accident, Its Evil and Remedy:

Unreported accidents:

Conductors fail to report accidents because:

a—They do not think it is necessary.

b—They do not want to take the time to make the report.

c—Because the people say to the conductors they are not injured and the first heard from them is through an attorney or suit.

The evil:

a—The Claim Department is in the dark as to whether the claim is based upon a real accident or fake.

b—The difficulty of making proper investigation.

c—Lack of defense which enables the plaintiff to recover a verdict in cases which if properly defended might result in a verdict for the defendant.

The remedy:

How to eliminate this character of accidents is a matter on which it is felt every Claim Department will be glad to hear a free and full discussion.

TRANSPORTATION DEPARTMENT

15. Weekly Bulletins to Platform Employees:

Giving them fuller knowledge of their work so as to raise them to a higher standard of efficiency.

16. Employees' Savings Department:

Does it not encourage men to save and prolong their stay with a company, since as soon as they have accumulated sufficient savings they are enabled to invest in a home near their place of employment and thus take a greater interest in the success of the company by reason of the fact that they feel they are more closely identified with it?

17. Photograph Identification:

To protect against "floaters" or discharged men who obtain employment under assumed names.

18. Rearranging Car Routes:

Is it advisable to change long-established routes, and what is the effect of such change on traffic?

19. Regulating Traffic:

Requesting shoppers to do their buying earlier, and the baseball managers to hold their games earlier in the afternoon, so as to relieve the rush-hour service.

PURCHASING AGENT

20. Accounting of the Purchasing Department:

Which is the more advantageous way for this to be done, in the department itself or in the Auditing Department?

21. Should the Purchasing Agent Also Be the Storekeeper?

With some companies such an arrangement is in effect, whereas with others the two positions are separated. Which is the more advantageous, and why?

In connection with this subject would say the purchasing agent of one of the largest railway systems in the country (Boston Elevated) made the remark at the last convention that he considered he saved money for his company by devoting all his efforts to the matter of purchases and having nothing whatever to do with the keeping of stores.

22. Sub-Storerooms:

Are they advisable, and if so, should they be operated under the jurisdiction of the main storeroom, or else be under the control of the head of the department to which they are attached?

ACCOUNTING DEPARTMENT

23. Bill Form—Advantage or Disadvantage:

Has the bill form which has been advocated and adopted by some street railway companies and other large corporations proved of advantage or disadvantage? In either case give reasons.

24. Head of Accounting Department:

Is the head of the Accounting Department of a street railway simply a recorder of figures, showing certain results and facts, or should he be generally informed on physical conditions of the road, and what should be his relationship with the heads of the operating departments?

CASHIER'S DEPARTMENT

25. Transfer Advertising:

Will greater benefit be derived from sale of the privilege or from their use for advertising your own parks, other attractions, etc.?
(This company uses it for its own purposes.)

26. Employee Tickets:

Does the abuse of employee tickets in the shops, power, track and overhead line departments justify an increase in wages equivalent to the allotment of tickets per diem in order to discontinue their use?

27. Conductors-Receiver's Department:

Insuring correct returns being made by conductors and their confidence in receivers' reports.

This is requested so as to establish if possible a system of forms and methods better than those now in use.

INSURANCE DEPARTMENT

28. Insurance of Railway Properties:

Methods employed for minimization of fires and protection of properties. Experience of companies in the adjustment of losses. Results attained in securing satisfactory rates.

What can be done to secure closer relationship between the assured and the insurance companies for securing better rating and prompt settlement of losses?

Would the valuation placed upon property by a standard appraisal company prior to a fire be of benefit to a railway company in the adjustment of a loss?

Do insurance companies accept their valuations, and what has been the experience of railway companies who have had their property so appraised?

GENERAL

29. Draw Distinction Between Operating and Maintenance Expenses and Depreciation:

It would be desirable to know in this connection what is the position to be taken by the management of a large street railway in ascertaining the depreciation on its equipment, tracks, overhead and machinery, and what, if any, provision is to be made for same out of its earnings.

30. What Should Be the Relationship Between a City Government and a Public Service Corporation, with Respect to Taxation, Where the Corporation Pays to the City, in Addition to the Usual Tax on Stock and Real Estate, a Certain Percentage of Its Gross Receipts, and Is a Means of Building Up the Taxable Basis of the City, by Reason of the Extension of Its Lines Into Undeveloped Sections, Which Lines Are Operated at a Loss?

31. Is a Large Street Railway System, Which Has a Number of Suburban Lines Reaching All of the Principal Suburban Towns and Villages Within an Area of Twenty Miles, Justified in Operating Its Own Express Business, or Would It Be Preferable to Lease the Privilege to an Express Company?

32. Standardizing and Adopting Uniform Statements and Reports Issued by the Various Departments of a Street and Suburban Railway Company for the Information of Its President and General Manager.

HISTORY OF THE TWIN CITY RAPID TRANSIT COMPANY

The three concluding full-page newspaper advertisements containing the history of the Twin City Rapid Transit Company, of Minneapolis, Minn., were published on Jan. 30 and Feb. 1 and 2. The advertisement of Jan. 30 compares the street railway mileage, area and population of 12 cities in the United States and Canada of the same class as Minneapolis. Minneapolis has the largest area of any of the 12 cities with which it is compared and has less people per square mile of area. A table is published to show that the Minneapolis Street Railway Company serves a larger area with less population per square mile than any other street railway in any city of its class in the United States and Canada, and it claims to give the people of Minneapolis a street railway service for a 5-cent fare which is unexcelled. The growth of the street railway system is summarized as follows: In 1875 Minneapolis had an area of 11.5 square miles and a total mileage of 2.5 miles. In 1909 the area of Minneapolis is 53 square miles, or 4.6 times its area in 1875. The mileage of the street railway system, on the other hand, has grown to 156 miles, or 62.3 times its mileage in 1875.

The advertisement which appeared in the papers of Feb. 1 was entitled, "Cost of Construction and How the Money Was Raised." The point was emphasized that very large expenditures have been occasioned in the past by reason of the obsolescence of the early types of equipment through the advancement of the art of street railway transportation and by the requirements of the city. It is pointed out that expenditures for improvements and reconstruction are necessarily a part of the capital of street railway enterprises during the years of their development and remain a valid part of the capital in the final development of the system. To demand that these successive investments of new capital put into the property for improvements be wiped out would be confiscation. The methods of raising money through giving of bonuses to investors is defended on the ground that the method was compulsory, for the development of the country was dependent upon it, and the results, in all fairness and justice, must be accepted. The present conditions in well-settled communities are better. For more than 15 years all the

stock issued by the Minneapolis Street Railway Company has been sold at par for cash.

The concluding advertisement, dated Feb. 2, is a brief summary of the previous articles. From the primitive horse car line in 1875 the property of the company has been developed to its present state of efficiency, and each stage of the development has called for expenditures of large sums of money in excess of earnings from operation. For 24 years, or up to 1899, not a dollar was paid in dividends, and since 1899 the dividends have ranged from 2½ per cent to 5 per cent. The physical condition of the property is second to none in the country. There is no city in the world of a comparative population or area where a greater return is received for fare paid than in Minneapolis. Attention is called to the fact that the average wage scale of trainmen throughout the country is 20 per cent lower than is paid in Minneapolis, and the company considers its high wage scale is necessary and that it should be continued. All items entering into the construction and maintenance of equipment and roadway have increased in cost during the past 10 years from 50 to 125 per cent. The 5-cent piece, however, has grown no larger.

The company states as its opinion that it is a certainty that new lines cannot be built, extensions cannot be made and other improvements carried on for anything less than a straight fare of 5 cents, with transfers. Reductions in fare will inevitably mean reduced wages and lower efficiency of employees, as well as reduce service, evidenced by the poor appearance and condition of cars, track and roadway. During the past 10 years, the company has spent for betterments an average of \$1,000,000 per year. During the next 5 or 10 years developments and improvements may make it necessary to expend even larger sums of money if the company is to maintain its position as one of the best street railway companies in the world. The final advertisement concludes with this statement: "Should any question be raised as to the rate of fare (which is the foundation of our business and the basis of all our calculations as to revenue) it would be evident that the company cannot make definite plans for the future and will encounter serious difficulty, if not absolute defeat, in its efforts to finance future betterments. We submit our record of 33 years as indicating a broad-gage and progressive policy in the community. We want to be enabled to continue it."

THE 1908 PROCEEDINGS OF THE ENGINEERING AND THE TRANSPORTATION & TRAFFIC ASSOCIATIONS

The secretary of the American Street & Interurban Railway Association has just issued in an imposing volume of about 900 pages the combined proceedings of the Engineering and the Transportation & Traffic Associations. The divisions of the volume devoted to each organization bear as frontispieces splendid sepia portraits of Presidents Simmons and Allen. The makeup of the articles and the appearance of the text and illustrations are all that could be desired. The volume is separately indexed and so thoroughly that any part of the proceedings, whether in the papers or discussions, can be found very readily. This book alone is worth far more than the \$5 associate membership fee required to get it to all interested in electric railway work and for that reason it should prove quite potent as an inducement to those who are considering joining the association.

COMMITTEES OF THE CENTRAL ELECTRIC RAILWAY ASSOCIATION

President A. A. Anderson, of the Central Electric Railway Association, has appointed the following committees for the year 1909:

STANDING AUDITING COMMITTEE

M. W. Glover, auditor (chairman), Ohio Electric Railway;

A. F. Elkins, auditor, Columbus, Delaware & Marion Railway;

Walter Schroyer, auditor, Indiana Union Traction Company.

RULES AND REGULATIONS GOVERNING ANNUAL TRANSPORTATION

Geo. Whysall, general manager (chairman), Columbus, Delaware & Marion, Railway;

W. S. Whitney, general passenger agent, Ohio Electric Railway;

H. A. Nicholl, general manager, Indiana Union Traction Company;

F. W. Brown, general freight and passenger agent, Michigan United Railways;

J. O. Wilson, general passenger agent, Cleveland, Southwestern & Columbus Railway.

CLAIMS COMMITTEE

E. C. Carpenter, claim agent (chairman), Indiana Union Traction Company;

J. M. Boyer, claim agent, Ohio Electric Railway;

F. R. Fahlsing, claim agent, Fort Wayne & Wabash Valley Traction Company;

Chas. A. Floyd, claim agent, Chicago, Grand Rapids & Holland Railway;

F. W. Wakeman, claim agent, Northern Ohio Traction & Light Company.

A. L. Neereamer, secretary.

FINANCE COMMITTEE

C. N. Wilcoxon, general manager (chairman), Cleveland, Southwestern & Columbus Railway;

Geo. Whysall, general manager, Columbus, Delaware & Marion Railway;

W. G. Irwin, president, Indianapolis, Columbus & Southern Traction Company;

H. E. Vordermark, auditor, Fort Wayne & Wabash Valley Traction Company;

F. D. Norviel, general passenger and freight agent, Indiana Union Traction Company.

INSURANCE COMMITTEE

H. M. Staats, manager (chairman), American Insurance Company;

F. W. Coen, general manager, Lake Shore Electric Railway;

H. P. Clegg, president, Dayton & Troy Electric Railway.

LIGHTNING ARRESTER COMMITTEE

W. E. Ralston, superintendent power and shops (chairman), Cleveland, Southwestern & Columbus Railway;

Chas. F. Turner, superintendent motive power, Columbus, Delaware & Marion Railway;

F. E. Cole, superintendent, Louisville & Northern Railway & Lighting Company;

H. S. Dickey, general superintendent, Winona Interurban Railway;

C. J. Ferneding, general manager, Dayton & Xenia Transit Company;

Fred Hecklar, master mechanic, Lake Shore Electric Railway;

F. D. Bundy, master mechanic, Ohio Electric Railway;

M. M. Baxter, electrical engineer, Western Ohio Railway;

G. H. Kelsay, superintendent of power, Indiana Union Traction Company;

M. J. Kehoe, electrician, Fort Wayne & Wabash Valley Traction Company.

UNITED STATES MAIL, COMPENSATION FOR HANDLING

H. A. Nicholl, general manager (chairman), Indiana Union Traction Company;

F. W. Brown, general freight and passenger agent, Michigan United Railways;

Geo. Whysall, general manager, Columbus, Delaware & Marion Railway.

PUBLICITY COMMITTEE

Geo. S. Davis, editor (chairman), *Electric Traction Weekly*;

L. E. Gould, Western editor, *ELECTRIC RAILWAY JOURNAL*;

E. B. Grimes, vice-president, Ohmer Fare Register Company.

RULES BOOK COMMITTEE

C. N. Wilcoxon, general manager (chairman), Cleveland, Southwestern & Columbus Railway;

F. D. Carpenter, general manager, Western Ohio Railway;

F. W. Coen, general manager, Lake Shore Electric Railway.

STANDARDIZATION COMMITTEE

R. C. Taylor, superintendent motive power (chairman), Indiana Union Traction Company;

Fred Hecklar, master mechanic, Lake Shore Electric Railway;

M. M. Baxter, electrical engineer, Western Ohio Railway;

W. E. Ralston, superintendent power and shops, Cleveland, Southwestern & Columbus Railway;

L. W. Jacques, master mechanic, Fort Wayne & Wabash Valley Traction Company;

H. D. Murdock, superintendent, Indianapolis & Louisville Traction Company;

L. M. Clark, master mechanic, Terre Haute, Indianapolis & Eastern Traction Company;

R. N. Hemming, assistant superintendent, Ohio & Southern Traction Company.

SUBJECT COMMITTEE

C. C. Reynolds, general manager (chairman), Terre Haute, Indianapolis & Eastern Traction Company;

A. J. Purinton, general manager, Toledo & Chicago Interurban Railway;

H. U. Wallace, general manager, Chicago, Lake Shore & South Bend Railway;

L. J. Drake, Jr., Galena-Signal Oil Company;

F. W. Brooks, general manager, Detroit, Monroe & Toledo Short Line;

W. A. Carson, general manager, Evansville Railways Company.

SUPPLY COMMITTEE

J. F. Ohmer, president (chairman), Ohmer Fare Register Company;

L. J. Drake, Jr., Galena-Signal Oil Company;

S. D. Hutchins, Westinghouse Electric & Manufacturing Company;

W. H. Bloss, Ohio Brass Company;

H. C. Marsh, General Electric Company.

TRAFFIC COMMITTEE

W. S. Whitney, general passenger agent (chairman), Ohio Electric Railway;

F. D. Norviel, general passenger and freight agent, Indiana Union Traction Company;

J. H. Crall, general passenger and freight agent, Terre Haute, Indianapolis & Eastern Traction Company;

A. E. Klauser, general manager, Toledo, Port Clinton & Lakeside Railway;

F. I. Hardy, superintendent transportation, Fort Wayne & Wabash Valley Traction Company;

J. F. Starkey, district passenger and freight agent, Indiana Union Traction Company;

C. C. Collins, traffic manager, Western Ohio Railway;

Geo. S. Henry, traffic manager, Indianapolis & Cincinnati Traction Company;

C. C. Trees, auditor, Kokomo, Marion & Western Traction Company;

M. J. Insull, general manager, Louisville & Northern Railway & Lighting Company.

TRANSPORTATION COMMITTEE

T. F. Glover, general manager (chairman), Terre Haute, Indianapolis & Eastern Traction Company;

E. L. Schmock, assistant secretary, Cleveland, Painesville & Eastern Railroad;

H. C. Warren, general manager, Toledo & Indiana Railway;

R. W. Reynolds, general superintendent, Chicago, South Bend & Northern Indiana Railway;

C. F. Smith, general manager, Toledo, Urban & Inter-urban Railway.

VIGILANCE AND MEMBERSHIP COMMITTEE

C. D. Emmons, general manager (chairman), Fort Wayne & Wabash Valley Traction Company;

R. W. Hunter, Poole Bros.;

C. R. Button, Telegraph Signal Company;

R. G. Cummins, general manager, Marion, Bluffton & Eastern Traction Company;

Chas. Currie, general manager, Northern Ohio Traction & Light Company;

F. J. Green, general manager, Springfield, Troy & Piqua Railway.

LIMITED TRAINS BETWEEN EVANSTON AND MILWAUKEE

On Feb. 8 the Chicago & Milwaukee Electric Railroad placed in service the first of its three-car limited parlor-buffet trains, which will operate between Milwaukee, Wis., and Evanston, Ill., connecting at the latter city with the Northwestern Elevated service into Chicago. Nine new cars have been especially built for this parlor-car train service by the Jewett Car Company and the first of the trains was thrown open to inspection at Evanston on Feb. 6 and at Milwaukee Feb. 7. The general public was extended an invitation to inspect the train, and as a result there was at Evanston a continuous file of visitors passing through the train from front to rear during the three hours the train was exhibited.

The through service between Evanston and Milwaukee is made possible by the completion on Oct. 31, 1908, of the



Chicago-Milwaukee Limited Train in Terminal Station at Evanston

double-track Wisconsin division of the Chicago & Milwaukee Electric Railroad from Racine to Milwaukee. The company now has a well-built double-track road 72.8 miles in length over which it will give service between its Evanston terminal, where connection is made with the Northwestern Elevated into Chicago, and its Milwaukee terminal, which is located at Second Street and Grand Avenue, close to the business center of the city. From North Chicago Junction to the Milwaukee City limits the roadway is so located and built that trains can be operated at very high speeds. In this 41-mile section of double-track road the total curvature is but 76 deg. and no curve is sharper than 1 deg. Except for one grade of 1 per cent the maximum grade between Waukegan and Milwaukee is 0.5 per cent. The track is laid with 80-lb. rails and is well ballasted with stone and gravel. To obtain this exceptionally low grade a very large amount of earth handling was necessary. There are several cuts of more than 225-

000 cu. yd. and one fill of 500,000 yd. The longest cut is 8000 ft. and the largest fill is 7000 ft. long.

The new equipment, which is being put into the limited service between Evanston and Milwaukee, includes three combination passenger, smoking and baggage cars, three passenger coaches and three combination parlor-café observation cars. In the *ELECTRIC RAILWAY JOURNAL* of Oct. 3, 1908, a floor plan was presented showing the seating arrangement of these three types of cars as coupled for train service. The head car of the three-car trains is divided into three compartments: At the front is a baggage room with wooden drop seats; next is a smoking compartment seating 16, and the rear half of the car is a passenger compartment seating 26. A toilet room is built against the middle bulkhead. The middle car is undivided and seats 54 passengers. It is provided with a toilet room at the rear. Except in the smoking compartment, where green leather is used, the seats in the two forward cars have mahogany arm rests and are upholstered in green plush. The baggage compartment is finished in "mission" style. Rubber aisle mats are used.

The rear car is divided into two compartments. One compartment seats 7 and the other seats 20. The seats in this parlor car are wicker chairs with green leather cushions and trimmings. The floor is covered with a thick green carpet. In fact, the general tone of all the interior decorations with the exception of the rich mahogany woodwork is green. The facilities for serving meals in the parlor car are most complete. Provision is made for serving 12 at one time on tables which may be attached to the sides of the car between the comfortable portable chairs. The cook has an enclosed kitchen fully equipped with utensils and alcohol stoves. Two toilet rooms are provided, each of which has a Duner flush hopper and a wash basin with running water. It is proposed to give a complete buffet service and neat four-page menu cards, one for each meal, are to be distributed. The menu cards exhibit a wine list and on the last page is a map of the route over which the trains operate.

The cars for this new train service are each 52 ft. 6 in. long over all and are built with center sills extending from buffer to buffer. The side platform sills of steel extend back under the cars to form the top side bearings. Each car is mounted on two Baldwin trucks with rolled-steel wheels, Symington journal boxes and carrying four GE-73 motors per car. A locomotive type pilot is mounted on each truck. All cars are arranged for double-end service and have type M control and Westinghouse automatic air brakes. An extra swinging door is arranged so that when the control and the brake valves are not in use they may be completely enclosed. If this end of the car forms the head end of the train the door is swung open and fastened against the bulkhead to form a cab for the motorman. Some of the special equipment on these cars includes Curtain Supply Company fixtures; O. M. Edwards balanced sash window fixtures; Knutson trolley retrievers; Ohmer registers; Van Dorn couplers; Q & C steps, and Peter Smith heaters.

Four limited trains of three cars each will be operated each way during the day. The running time for the 73-mile ride between Evanston and Milwaukee will be 2 hours and 15 minutes. Three trains will be required to fulfil this special limited service. Fourteen local trains each way make the run in 2 hours and 45 minutes. Between Evanston and Waukegan over the south half of the line there is a 15-minute headway. The cash-fare rate is a little less than

2 cents per mile. From Evanston to the Milwaukee city limits, 69 miles, the one-way fare is \$1.20. The local fare in Milwaukee is 5 cents. Round-trip tickets are sold at a reduction over one-way tickets. The following table shows the rate at which round-trip tickets good returning within 30 days are sold:

| Where ticket fares are | | Chartered car rates are | | Where ticket fares are | | Chartered car rates are | |
|------------------------|--------|-------------------------|---------|------------------------|--------|-------------------------|---------|
| One way | Return | One way | Return | One way | Return | One way | Return |
| \$0.05 | \$0.10 | \$10.00 | \$15.00 | \$0.60 | \$1.10 | \$25.00 | \$43.00 |
| .10 | .20 | 10.00 | 15.00 | .65 | 1.20 | 27.00 | 47.00 |
| .15 | .25 | 10.00 | 15.00 | .70 | 1.25 | 29.50 | 50.00 |
| .20 | .35 | 10.00 | 15.00 | .75 | 1.30 | 31.50 | 54.00 |
| .25 | .40 | 10.50 | 18.00 | .80 | 1.40 | 33.50 | 58.00 |
| .30 | .50 | 13.00 | 22.00 | .85 | 1.50 | 35.50 | 61.00 |
| .35 | .60 | 15.00 | 25.00 | .90 | 1.60 | 37.50 | 65.00 |
| .40 | .70 | 17.00 | 29.00 | .95 | 1.70 | 39.50 | 68.00 |
| .45 | .80 | 19.00 | 32.50 | 1.00 | 1.75 | 42.00 | 72.00 |
| .50 | .90 | 21.00 | 36.00 | 1.05 | 1.80 | 44.00 | 76.00 |
| .55 | 1.00 | 23.00 | 40.00 | 1.10 | 1.90 | 46.00 | 80.00 |

These car rates are for maximum load of 60 passengers, and conductors will collect regular rates or tickets for each passenger in excess of 60.

A charge of \$5 is made for each hour that the car is used beyond the limits of the published time card. If a car is kept waiting at any point along the line an additional charge of \$1 per hour is made.

On account of the excellence of the new through-train service an additional fare varying from 5 cents to 25 cents, according to the mileage, is collected by the conductor. Including this charge, the through fare from Chicago to Milwaukee is 60 cents less by the electric line than by steam. It is stated in the time card that the payment of such excess fare does not entitle a passenger to a seat in the café-parlor car to the exclusion of those who wish to patronize the café service.

COMMITTEES OF THE TRANSPORTATION & TRAFFIC ASSOCIATION

President C. Loomis Allen, of the Transportation & Traffic Association, has announced the organization of a number of the committees of that association. Following the plan adopted by the association, the members of the committees on the training of employees and that upon interurban rules are divided into classes, so that the terms of all do not expire at the end of the year. In the latter case the committee is made up of six members, three of which go out of office at the end of each year, but in the case of the committee on training of transportation employees the appointment is for three years and the terms of office of two members expire during the year. The names of the committees appointed follow:

COMMITTEE ON TRAINING OF TRANSPORTATION EMPLOYEES

One Year

J. W. Brown (chairman), superintendent, West Penn Railways Company, Connellsville, Pa.;

W. R. W. Griffin, superintendent, Rochester Railway Company, Rochester, N. Y.

Two Years

F. S. Cummins, general manager, Inter-Urban Railway Company, Des Moines, Ia.;

C. D. Emmons, general manager, Fort Wayne & Wabash Valley Traction Company, Fort Wayne, Ind.

Three Years

C. E. Learned, superintendent inspection, Boston Elevated Railway, Boston, Mass.;

W. H. Douglass, general superintendent, Northern Ohio Traction & Light Company, Akron, Ohio.

COMMITTEE ON INTERURBAN RULES

One Year

J. N. Shannahan (chairman), vice-president and general manager, Washington, Baltimore & Annapolis, Baltimore, Md.;

F. D. Carpenter, general manager, Western Ohio Railway Company, Lima, Ohio;

J. E. Duffy, superintendent, Syracuse Rapid Transit Railway Company, Syracuse, N. Y.

Two Years

H. E. Chubbuck, general manager, Illinois Traction System, Champaign, Ill.;

Howard F. Grant, Stone & Webster, Boston, Mass.;

H. A. Nicholl, general manager, Indiana Union Traction Company, Anderson, Ind.

COMMITTEE ON EXPRESS AND FREIGHT TRAFFIC

G. W. Parker (chairman), general freight agent, Detroit United Railway, Detroit, Mich.;

E. H. Hyman, manager, Electric Package Company, Cleveland, Ohio;

A. Eastman, general express and passenger agent, Utica & Mohawk Valley Railway Company, Utica, N. Y.;

L. E. Fischer, vice-president, Illinois Traction System, Danville, Ill.;

P. P. Crafts, general manager, Iowa & Illinois Railway Company, Clinton, Ia.;

C. V. Wood, traffic manager, New England Investment & Security Company, Springfield, Mass.

COMMITTEE ON PASSENGER TRAFFIC

M. C. Brush (chairman), vice-president and general manager, Newton Street Railway Company, Newtonville, Mass.;

Franklin Woodman, general manager, New Hampshire Electric Railways, Haverhill, Mass.;

E. F. Peck, general manager, Schenectady Railway, Schenectady, N. Y.;

F. W. Coen, general manager, Lake Shore Electric Railway Company, Cleveland, Ohio;

W. S. Whitney, general passenger agent, Ohio Electric Railway Company, Cincinnati, Ohio;

J. R. Pratt, Indianapolis Traction & Terminal Company, Indianapolis, Ind.

In addition, there will be committees on transfers and transfer information and on city rules. The membership of these committees will be published when completed. The work of the association at the next convention will be confined to the reading and discussion of the reports of these six standing committees, one of which, that on transfers and transfer information, is a new committee. The work of this committee, it is believed, will be of great interest, and special study will be given to this subject.

It is expected the two committees on rules, one on city rules and one on interurban rules, will submit revised codes that will provide for recent changed conditions and will, it is hoped, give a standard book of rules for both city and interurban service that will standardize operating practice. The other subjects selected are of very timely interest, and an interesting convention for the transportation and traffic officers of the member companies of the association is practically already guaranteed.

The recently published statistics of the electric traction systems of the United Kingdom are divided into three classifications: The first covers 136 systems of tramways which obtain electricity from a combined lighting and traction station; the second table refers to tramway systems which have generating stations for traction only, there being 47 systems of this kind; the third table relates to 16 electric railways under construction. The total length of tramway track now recorded in the tables is 3843 miles, compared with 3651 miles last year. In the course of the next few months the total length of railroad track in England on which electrical working is in operation will be 411 miles.

COMMUNICATION

TRANSPORTATION OF MAIL CARRIERS

NORFOLK & PORTSMOUTH TRACTION COMPANY,
NORFOLK, VA., FEB. 4, 1909.

To the Editors:

At a meeting of the American Street & Interurban Railway Traffic & Transportation Association at Atlantic City there was considerable discussion about the prices paid for the transportation of mail by the United States Postal Department. It developed that, with the exception of a very few companies which are large enough to have established railway mail service through the streets of the city, the handling of mails is confined to electric interurban and suburban routes. I presume that the relations of many of these lines with the government are very similar to those of the steam railways, and that the price of 3 cents per mile, which would be given a company like ours, for instance, for the transportation of one or two sacks, is not increased when the number carried reaches as many as a dozen. This, then, is a matter which can be adjusted by the individual companies or by an agreement in which all the small companies who carry mail might join. The proposition which interested me at that time, but which I did not bring up, was not so much the carrying of mail as the carrying of the carriers, and after this meeting was over I sent out a circular letter, which read as follows:

At the last meeting of the Traffic & Transportation Association the question of transportation of mail carriers was up for discussion. There seem to be various methods in regard to this. Our own is as follows:

The Post Office Department in Norfolk has a certain appropriation for the transportation of mail carriers. We take this money, divided into equal monthly installments, and the carriers are permitted to ride free when in uniform with the pouch on their shoulders. There is probably some abuse of this system and there seems to be no special reason why these men should be carried below cost. With a view of correcting it, I would be glad if you would give me the method pursued by you.

We shall be glad to give you any information at any time we can serve you. Thanking you for your prompt reply, we are

Very truly yours,

This was sent out to 225 companies operating in the principal cities of the United States. In reply we got data from 189 places, a list of which is enclosed. A recapitulation of this list shows as follows:

In 134 cities no concessions at all are made, the government buying regular tickets for the postmen, or the postmen paying regular fare. In 31 cities postmen are carried under contracts similar to our own, riding on the uniform without payment of fare. In 14 places special rates are made, but the carriers are provided with tickets at these special rates. In 10 places carriers are allowed to ride without paying any fare, this being a franchise condition in most of these places.

It would seem from the above that a good many of the companies were very much in the same position as we are in at Norfolk. The Post Office Department was allowed so much money for the transportation of carriers and, by agreement with the postmaster, this money was divided into quarterly payments. The men were then permitted to ride when in uniform and on duty, without paying fare, the purpose being to facilitate in this way the work of the Post Office Department and the movement of such mail as was distributed by the carriers. The dif-

ficulty with this form of contract is the fact that in all growing towns the number of carriers is constantly being increased and that the post office authorities, having no particular interest in so doing, do not conserve the interests of the transportation companies by asking for corresponding increases in the amounts of their appropriations.

For the past few weeks we have been collecting data on this subject, and find that with 56 carriers in Norfolk we receive \$1,300 per annum. The total number of rides per diem averages 279, or five rides for each carrier, hence the revenue per ride is only 1.27 cents. On the strength of this information we have decided to notify the local post office authorities that on July 1 the present contract will be cancelled and that the money in the hands of the postmaster for this transportation will have to be used in the purchase of tickets at the regular rates, which are six tickets for a quarter.

It will be noticed from the list that the most of cities in which the carriers ride free are on the Pacific Coast, and that the carriers are included in the same category as policemen and firemen. This is probably the result of a careless draft of the franchise in the first instance, as no particular benefit would accrue to the municipality because the local trolley company assumes this burden for the United States Government. For this reason it should not be difficult, if the matter was taken up with the city authorities, to have this clause in the franchise abrogated.

E. C. HATHAWAY, General Manager.

DATA ON TRANSPORTATION OF MAIL CARRIERS

Pay regular fare in the following cities:

| | |
|----------------------|---|
| Atlantic City, N. J. | Government buys special tickets, but pays regular rates for same. |
| Albany, N. Y. | Government buys special ticket at regular fare rate. |
| Akron, Ohio. | Formerly had contract similar to ours, but canceled account of abuse. |
| Auburn, N. Y. | Formerly made special rate. |
| Augusta, Ga. | Formerly had contract. |
| Boston, Mass. | Government buys regular tickets on both surface and elevated. |
| Bridgeton, N. J. | Government buys regular tickets. |
| Buffalo, N. Y. | Government buys special tickets at regular rates. |
| Baltimore, Md. | Government buys regular tickets. |
| Cleveland, Ohio. | Policemen and firemen also pay fare. |
| Covington, Ky. | Formerly had contract; canceled account of abuse. |
| Chester, Pa. | Government buys tickets at regular rate. |
| Dayton, Ohio. | Government buys tickets at regular rate. |
| Denver, Col. | Formerly had contract. Now have special ticket which Post Office Department buys at regular rate. |
| Dubuque, Ia. | Straight 5-cent fare. |
| Duluth, Minn. | Government buys tickets at 5 cents each. |
| Davenport, Ia. | Government buys 5-cent tickets. |
| Dayton, Ohio. | Government buys tickets. |
| Des Moines, Ia. | Government buys 5-cent tickets. |
| Decatur, Ill. | Government buys tickets. |
| Detroit, Mich. | Government wants to go back to former contract, but railway company refuses. |
| Fort Worth, Tex. | Sell government special tickets at regular rate, good only between 7 a. m. and 7 p. m. |
| Fort Smith, Ark. | Government buys regular tickets. |
| Fond du Lac, Wis. | Government buys regular tickets. |
| Fort Wayne, Ind. | Formerly had contract. Now require regular fare in Fort Wayne and all cities along lines. |
| Houston, Tex. | Special ticket purchased at regular rate. |
| Jacksonville, Fla. | Government buys regular tickets. |
| Joliet, Ill. | Formerly had contract. |
| Jamestown, N. Y. | Government buys regular tickets. |
| Kingston, N. Y. | Formerly had contract. |
| Knoxville, Tenn. | Formerly had contract. |
| Leavenworth, Kan. | Formerly sold half-rate tickets. |
| Lincoln, Neb. | Formerly had contract. Government now buys tickets. |
| Lynchburg, Va. | Government buys tickets. |
| Lewiston, Maine. | Formerly had contract. |
| Marion, Ohio. | Government buys regular tickets. |
| Madison, Wis. | Formerly had contract. Firemen and policemen are also charged regular fare. |
| Milwaukee, Wis. | Government buys tickets. |
| Mount Vernon, N. Y. | Special ticket at regular rate. |
| New Britain, Conn. | Firemen are also required to pay regular fare. Policemen ride free. |
| Newburgh, N. Y. | Government buys regular tickets. |
| Newark, N. J. | Have had contract, but are cancelling same on all lines of Public Service Corporation. |
| Newport News, Va. | Formerly had contract. |
| Pueblo, Col. | Government wants to make contract, but railway company refuses. |
| Peoria, Ill. | Also carry part on contract and are glad to use either system. |
| Paducah, Ky. | Government buys regular tickets. |
| Portland, Maine. | Government buys regular tickets. |

Peoria, Ill.....Post Office Department wants to make contract, but railway company refuses.
 Providence, R. I.....Postmen formerly had 2½-cent ticket.
 Rochester, N. Y.....Formerly had contract.
 Salt Lake City.....Formerly sold 3-cent ticket to postmen.
 Springfield, Mass.....Operate 14 lines and have contract on only one line.
 Sioux City, Ia.....Formerly had contract.
 St. Joseph, Mo.....Had contract at one time.
 Schenectady, N. Y.....Formerly had contract. Government buys regular tickets.
 Springfield, Ohio.....Formerly had contract.
 Springfield, Mass.....Formerly had contract.
 Waterbury, Conn.....Government buys regular tickets.
 Washington, D. C.....Washington Railway & Electric Company formerly had contract. Capitol Traction Company refused to make contract.
 Wilkes-Barre, Pa.....Government buys regular tickets.
 Wilmington, Del.....Government buys regular tickets.
 Wichita, Kan.....Company refuses to make contract.
 Zanesville, Ohio.....Government buys regular tickets.

The following cities have contracts with the government, whereby the government pays them a lump sum and postmen in uniform are allowed to ride free:

Allentown, Pa.....Company not satisfied with arrangement.
 Atlanta, Ga.....Free riding limited to hours between 6 a. m. and 6 p. m. Company seems to be satisfied.
 Altoona, Pa.....Company is satisfied—thinks it gets more out of it than if Post Office Department bought tickets.
 Bangor, Maine.....Are looking up a better method of handling.
 Brooklyn, N. Y.....Do not say whether satisfied or not.
 Binghamton, N. Y.....Are satisfied.
 Bellingham, Wash.....Twenty dollars per year per carrier until 6 p. m. Sundays not included.
 Chicago, Ill.....Do not say whether satisfied or not. Chicago Railways Company.
 Chicago City Railway Company is obliged to use an arrangement of this kind by ordinance.
 Council Bluffs, Ia.....Limited to certain hours. Fifty-four dollars per man per year, approximately.
 E. St. Louis, Ill.....Between hours of 6 a. m. and 6 p. m. Do not say whether satisfied or not.
 Elmira, N. Y.....Two hundred dollars per year.
 Kansas City, Mo.....Three dollars per month per carrier. Contract adjusted every two years. Seem to be satisfied.
 Lancaster, Pa.....Are asking government to increase appropriation. Think they are now getting an average of 4 cents per passenger.
 Minneapolis, Minn.....Get \$36 per year per carrier. Expect to discontinue shortly.
 Nashville, Tenn.....Deficiency in government appropriation made up by carriers. Seem to be satisfied.
 Newtonville, Mass.....Are not satisfied with arrangement.
 Omaha, Neb.....Five thousand four hundred dollars for 125 carriers. Are not satisfied.
 Portland, Ore.....Are satisfied with arrangement.
 Quincy, Ill.....Two dollars per carrier per month. Think they get more out of it than when government bought tickets.
 Rockford, Ill.....Receive \$750 per year. Contract just made.
 St. Paul, Minn.....Thirty-six dollars per year per carrier. Expect to discontinue shortly.
 San Antonio, Tex.....Don't say whether satisfied or not.
 Seattle, Wash.....Not satisfied.
 Springfield, Mo.....Receive \$61.58 per month. Are not satisfied.
 Topeka, Kan.....Receive \$600 per year for transportation between 6 a. m. and 6 p. m. on week days. Not carried free on Sundays.
 Terre Haute, Ind.....Receive \$800 per annum. Transported between 6 a. m. and 6 p. m.
 Worcester, Mass.....Want to change.
 Wilmington, N. C.....Satisfied.
 Wheeling, W. Va.....Want to change. Also want to take up question of increasing rates for carrying mails.

The following cities make special rates for mail carriers:

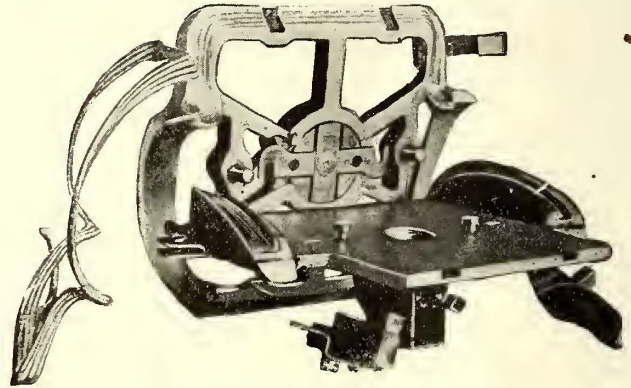
Butte, Mont.....Special ticket at 2½ cents each.
 Concord, N. H.....Special ticket at 4 cents each.
 Charleston, S. C.....Furnish special tickets, for which 3.68 cents each was received last year. Also carry messengers for \$10 per quarter.
 Harrisburg, Pa.....Three cents each.
 Fitchburg, Mass.....Two and one-half cents. Limited to daylight hours.
 Holyoke, Mass.....Sell tickets to government at two-thirds regular price, good for postmen in uniform.
 Grand Rapids, Mich.....Special ticket at special rate.
 Johnstown, Pa.....Three and one-half cents each. Do not favor making the low rate.
 Memphis, Tenn.....Sell tickets 1¢ for 50 cents. Will not make contract for lump sum.
 Richmond, Va.....Special tickets at 2½ cents each.
 Shreveport, La.....Sell government 3½-cent tickets.
 San Diego, Cal.....Sell special ticket, good only when in uniform, for 2½ cents. Formerly had contract for lump sum.
 Saginaw, Mich.....Sell tickets eight for a quarter.
 Tacoma, Wash.....Sell special ticket for 4 cents each, good only for carriers when in uniform.

The following cities allow mail carriers to ride free, without compensation:

E. Liverpool, Ohio.....Compelled to do so by franchise.
 Los Angeles, Cal.....Condition of franchise.
 Little Rock, Ark.....Condition of franchise.
 Oklahoma City, Okla.....Required by franchise. Think carriers are useful to company in cases of accidents and are satisfied with arrangement.
 Oakland, Cal.....Franchise condition.
 Poughkeepsie, N. Y.....Not a franchise condition.
 Phillipsburg, N. J.....On account of mail contract with government.
 Spokane, Wash.....Franchise condition.
 San José, Cal.....Franchise condition.
 San Francisco, Cal.....Not a franchise condition. Negotiations pending for remuneration.

A SPECIAL COIL FORMER

The American General Engineering Company, of New York, in filling an order for a South American electric railway had occasion to design a rather novel factory armature coil former for a GE-58 motor. The armature coil of this motor, as shown alongside the opened former, has a peculiar bend, which cannot be obtained on coil formers of ordinary design. This bend is made on the form illustrated by means of a spring clip on one side and a pressure clamp on the other. As each turn is brought through to these side locks, the latter are opened and closed by a quick snap of the operator's thumb.



Coil Former for GE-58A Motor

An important feature, which is applicable to other designs of armature coils, is the method of locking the halves of the coil former. Usually the former is locked on the belt side by two drag-fit pins, which do not prevent the loosening of the halves when the wires in the former are being flattened with a hammer. In this design the halves are locked with a central double-hook pin which is locked or released with half a turn from the outer side through a central shaft and handle. The strain on the plate is taken by the dowel pins and not by the two screws. The former is constructed of steel bronze, with reinforcing ribs in the upper half.

MEETING CARBON BRUSH SPECIFICATIONS

At the October, 1908, convention of the American Street & Interurban Railway Association it was stated in discussing the report of the committee on maintenance and inspection of electrical equipment that 18 per cent of railway motor troubles was due to carbon brushes. The specifications suggested at that meeting have been taken up by the Speer Carbon Company, St. Mary's, Pa., which asserts that it has produced a brush that will stand far more severe tests than those recommended.

The company's new FP brush is for railway motors, which require a hard brush to cut the mica and keep the commutator in condition. This brush is very close grained, low in resistance and, it is said, will not break or chip off. It is best adapted for railway motors that have no slotted commutators. Grade No. 300 is for motors with grooved commutators, where the mica gives no trouble. This brush is very low in resistance, carries high amperage and is medium soft, but tough. It is said to be very fine grained, dense and will not chip or break under the most severe conditions. The brush marked H is for a.c. motors, where a soft, close-grained and homogeneous brush is required. This brush is high in conductivity and will stand heavy overloads. Lamination is said to be entirely eliminated in all of these new brushes.

THE WESTINGHOUSE STORAGE-BATTERY REGULATING SYSTEM

A storage battery with an automatic regulating system forms an ideal solution of the problem of keeping a constant load on the generating system. This is automatically effected by the regulator controlling the voltage of the booster in series with the battery. This regulator in turn is controlled by the load conditions. The battery and the booster are usually placed across the line in parallel with the generator circuit, but between it and the load.

If desired to regulate an a.c. system the battery and booster are connected across the d.c. terminals of a rotary converter and the battery charges and discharges by means of a regulator controlled from the a.c. circuit. With this system either a.c. or d.c. circuits can be regulated simultaneously. In case only an a.c. circuit is to be controlled a boosted rotary can be used and the booster eliminated, using a small exciter in its place, which is controlled by

d.c. generator direct-connected to a steam engine, three three-phase alternators of 105, 165 and 600 kw, respectively, direct-connected to steam engines, and a 250-kw, two-phase rotary operating from a three-phase a.c. circuit.

Before the installation of the storage battery and regulator it was necessary for a great part of the time to keep both the 200-kw a.c. unit and the rotary converter in operation. Since then either unit is ample for the entire d.c. load.

Fig. 2, with reference letters, shows the regulator. The e.m.f. of the booster, or boosted rotary, is altered by changing the excitation of a single separately excited field winding. This field winding receives its energy from a small exciter which has, in addition to a self-excited shunt winding, two equal and opposite pilot field windings. The current in these two windings is controlled by the making and breaking of the double relay contacts *E* in Fig. 2. These contacts in turn are controlled by the primary relay of the regulator, which consists of a current member *A* working in conjunction with the potential member *B*, closing or opening the energizing circuit of the relay magnet *D*.

Current coil *A* works in a permanent magnetic field and is balanced by an adjustable spring tension. The current flowing through the coil *A* is proportional to the current flowing through a shunt in the circuit to be controlled, and to the ends of which the terminals of the coil are connected. This is equivalent to an ordinary ammeter movement, with the exception that the range of motion is exceedingly small. The voltage coil *B* is exactly equivalent, excepting that its position varies according to the voltage of the booster exciter.

The primary relay contact *C* is established by the conjunction of the current and potential coil levers. This contact, therefore, intermittently energizes the electromagnet *D*, which operates the main relay contacts *E*. The lower contact *E* energizes one of the pilot fields, while the other contact *E* energizes the equal and opposite field. These pilot fields act in opposition so that with the same amount of current flowing through both there would be no voltage upon the exciter. If one of them receives exciting current it will tend to start up an exciter voltage in a given direction, but the shunt coil of the exciter will tend to carry the field to full saturation. This will be checked by the potential coil of the relay. It will thus be seen that as the external load changes on the system contact is broken, the booster voltage is raised, due to the exciter voltage rising, and the battery is caused to discharge. This discharge will continue at an increasing rate until the operating equilibrium of the system is again restored and is entirely independent of the condition of battery charge or discharge as long as there is enough booster pressure behind the battery to give the required discharge to maintain the load constant. Vice versa, if the load drops the opposite effect is secured, namely, the other pilot coil tends to cause the exciter to build up in the opposite direction, which is further aided and carried to a maximum by the shunt coil, thus causing the battery to charge.

Practically no energy is handled by the regulator, since the voltage produced by the pilot coils is only 20 per cent of the total voltage of the exciter. The exciting energy of the booster will not, at a maximum, be over 8 per cent, and the energy handled by the regulator will be a fraction of 1 per cent of the booster field energy; as a result the regulator operates with absolutely no sparking of the contacts, which means that there will be practically no wear.

A five-step high resistance *F* is connected in series with

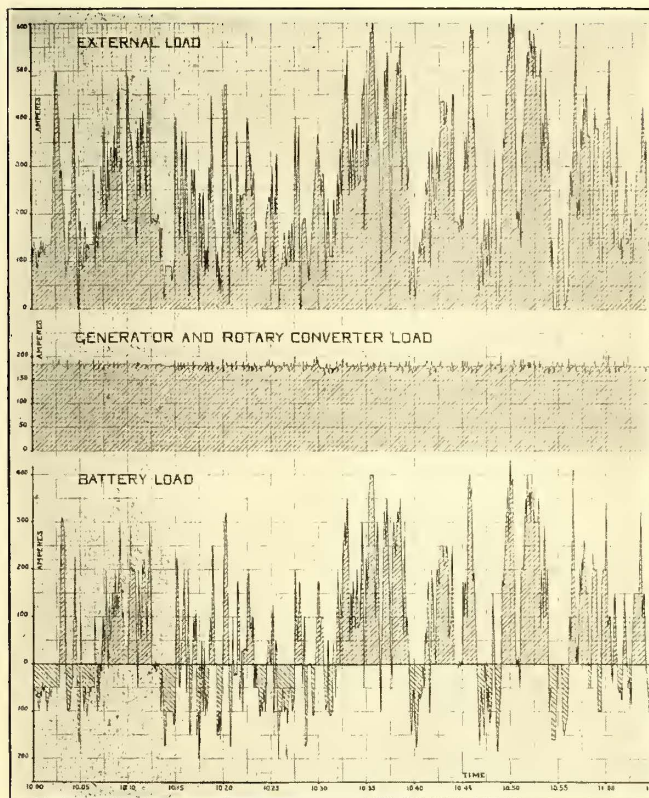


Fig. 1—Log of Battery and Regulator Test

the regulator, to furnish current for the separately excited fields of the rotary. It is asserted that all of these requirements have been more than met by the type of relay regulator used by the storage-battery department of the Westinghouse Machine Company and hereinafter described.

Fig. 1 is the log of a battery and regulator test showing a constant rotary load with a variable external load at the plant of the Southern Colorado Power & Railway Company, Trinidad, Col. This load is due to a railway in Trinidad and an interurban railway running through mining towns for 13½ miles. The company operates five to eight cars, four during light traffic, three of which are city cars and one interurban, or five city cars and three interurban cars during heavy traffic. During certain parts of the day it also uses one of the interurban cars as a locomotive to haul coal. The average load runs about 100 kw, while the maximum reaches upward of 400 kw.

The generating plant consisted of one 200-kw, 550-volt,

the lead from the controlling shunt. This resistance is cut into or out of circuit by a handle of rotary switch *G*. Thus the effective drop across the current coil *A* can be varied by cutting in or out resistance, which will mean a greater or less current flowing through the shunt to produce a given deflection of the current coil arm *A*, as the case may be. The generator load will therefore be varied through five steps by shifting the switch *G*. The load can further be adjusted anywhere between these steps by changing the tension of the current coil spring by the handle *H*. This covers the entire range of capacity of the generating system so that the average load on the machines can be held anywhere from full load to 10 per cent of full load.

The average load does not slowly rise as the battery becomes further and further discharged or drop off as the battery becomes charged. This effect, if desired, can be very easily secured by raising or lowering the sensibility weight *I* of the regulator. The degree of regulation is limited entirely by the speed of the booster and does not depend in any way upon the regulator, as the speed of action of the regulator is far beyond the speed of magnetization of any commercial type of booster. A booster could be built to change its voltage with exceeding rapidity, but as the cost increases with the speed of magnetization, beyond a certain point such refinement of regulation is not commercial, besides being unnecessary.

The true measure of regulating quality is the comparison of the fluctuation of the average generator load taken into consideration with the maximum changes of the external load. For instance, a greater fluctuation of the generator load would be expected when the average generator load is only 25 per cent of the maximum external load than when the average generator load is 75 per cent of the external load.

Bearing this in mind the following table will be of interest:

| Type of regulator, period, source of data. | Westinghouse long period, 1½ hours, So. Col. Pr. & Railway Co., Jan. 22, 1908. | | Westinghouse short period, 80 seconds, So. Col. Pr. & Railway Co., August, 1907. | |
|--|--|-----------|--|-----------|
| | Amp. | Per cent. | Amp. | Per cent. |
| External load: | | | | |
| Maximum | 630 | 0.00 | 434 | 0.00 |
| Minimum | 0 | .. | 14 | .. |
| Variation, total | 630 | .. | 420 | .. |
| Generator load average | 181 | .. | 187 | .. |
| Maximum | 210 | .. | 194 | .. |
| Minimum | 153 | .. | 177 | .. |
| Variation, total | 57 | .. | 17 | .. |
| Variation above average | 29 | 16 | 7 | 3.8 |
| Variation below average | 28 | 15.5 | 10 | 5.5 |
| External load variation: | | | | |
| Maximum above average generator load .. | 449 | 248. | 247 | 132. |
| Maximum below average generator load .. | 181 | 100. | 173 | 92.7 |
| Per cent absorbed by battery regulator system .. | .. | 91. | .. | 95.9 |
| Maximum variation generator load, plus or minus average generator load divided by maximum variation external load, plus or minus average generator load .. | .. | 6.46 | .. | 4.13 |
| Maximum variation in power output* of generator, plus or minus average generator load .. | .. | 1.9 | .. | 2.2 |

*Basis of ampere-hours found by integrating load curve of generator.

It will be seen by referring to this table that the maximum current fluctuation on the generating system is only 9 per cent in the test extending for 1½ hours and 4.1 per cent in short test, of what the current fluctuation would have been if the battery and regulator had not been used. Furthermore, that the energy fluctuation was only 1.9 per cent in the long test and 2.2 per cent in short test, of what it would have been if the regulator and battery had not been used. When it is considered that the maximum variation above the average generator is 248 per cent in the long test and 132 per cent in the short test and the maximum variation of the external load below the average

generator load is 100 per cent in the long test and 93 per cent in the short test, the closeness of this regulation will be appreciated.

If this device is used as an a.c. regulator: In place of the d.c. coil *A*, the arm of which makes contact at *C*, a polyphase wattmeter movement will be substituted, the arm of which will make contact at *C* in the same manner. For controlling the average load the transformer ratio will be changed by moving the handle *C* instead of cutting out resistances, as in the case of the d.c. regulation. In all other respects the two regulators are identical.

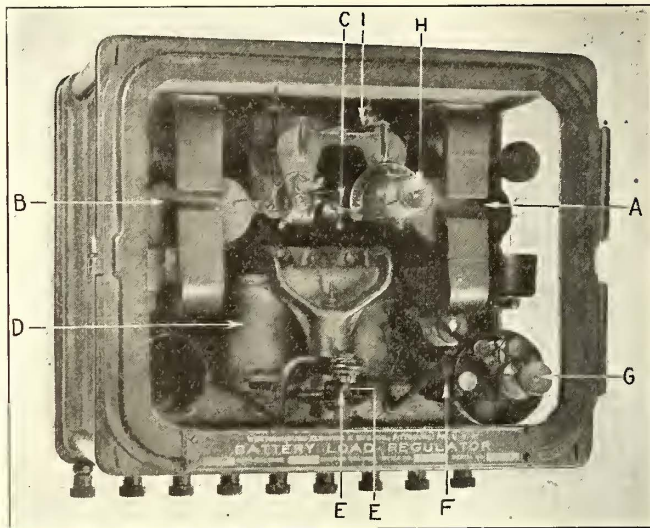


Fig. 2—Battery Load Regulator

Only two adjustments are necessary to effect any desired change in operating conditions—one to change average generator load, the other to limit the amount of battery charge or discharge. These changes are effected by simply turning one handle for each desired change. The station busbar system does not require extensive alterations, such as the insertion of resistances or solenoids.

SEAMLESS STEEL TROLLEY POLES

The General Electric Company has placed on the market a new light seamless steel trolley pole constructed of cold-drawn seamless tubing with a reinforcement 16½ in. in length at the butt inserted cold under such high pressure that the reinforcement practically is part of the pole proper. The diameter of the pole (1½ in.) is uniform from the butt to within 3 ft. from the top, at which point it tapers to 1 in. at the end to receive the harp. This construction increases the transverse strength and eliminates any trouble caused by a large bow in the pole, especially noticeable when the trolley wheel is depressed to the maximum in passing under low overhead clearances. The deflection of a 12-ft. pole with a 43-lb. weight at the end is only 10 in. with no permanent set.

The seamless steel trolley pole is several pounds lighter than lap-welded poles of the same length. It is believed that the resulting decrease in inertia by reducing the heavy arcing, pounding and wrenching will materially increase the life of the trolley wheels. These poles are especially adapted for use with the United States 13 roller-bearing trolley base furnished as standard on all General Electric equipments.

The tramways system of Porto Alegre, Brazil, has been purchased by an English company for \$530,000.

ELECTRIC RAILWAY LEGAL DECISIONS

NEGLIGENCE

Illinois.—Street Railroads—Collision—Question for Jury—Negligence—Contributory Negligence—Children—Action—Declaration—Existence of Duty—Failure of Duty.

In an action for injuries received from being struck by a street car, held that the question of defendant's negligence was for the jury.

A declaration charging that it was the duty of defendant to provide suitable and safe contrivances upon its cars for the purpose of braking and stopping them when necessary, but not alleging a failure to provide such devices, is insufficient to charge negligence.—(Hackett v. Chicago City Ry. Co., 85 N. E. Rep., 320.)

Kentucky.—Compromise and Settlement—Questions for Jury—Carriers of Passengers—Action for Injuries—Witnesses—Credibility—Evidence to Show Bias.

In an action by a passenger against a street car company for injuries, whether plaintiff had compromised her claim prior to the action held to be a question for the jury.

In a personal injury action against a carrier, evidence that a physician who was a witness for defendant had proposed during the trial of the case to compromise it for \$400 was admissible, as tending to show that he was taking an interest in the case for defendant, and was biased.—(Louisville Ry. Co. v. Williams, 109 S. W. Rep., 874.)

Kentucky.—Damages—Personal Injuries—Pleading—Evidence Admissible—Matters to Be Pleaded.

Where plaintiff alleged that she received certain specified internal injuries, and sustained a shock to her nervous system, from a collision, but did not allege injury to her eyes, evidence as to the condition of her eyes after the injury was admissible, as bearing upon the question of the internal injuries received and the shock to the nervous system, which of necessity must be manifested by outward symptoms.

Such evidence should be excluded from consideration of the jury in fixing damages, as the injury to the eyes was not sued for.

Plaintiff by his pleading in an action for personal injuries should apprise the defendant of the injury for which recovery is sought, but the evidence by which the injury is to be established need not be indicated by the pleading.—(Louisville Ry. Co. v. Ellerhorst, 110 S. W. Rep., 823.)

Massachusetts.—Carriers—Street Railroads—Care as to Passengers.

A street car company, having stopped its car to let a passenger on, is bound to keep the car standing until she has got entirely on the car; but, where the passenger is a strong, robust woman in apparently perfect health, it need not keep the car standing until she has seated herself.—(Sauvan v. Citizens' Electric St. Ry. Co., 83 N. E. Rep. 405.)

Massachusetts.—Carriers—Injury to Passenger—Negligence.

Though the guard urges the passengers to speed in getting into a car of an elevated train, and a passenger within, standing by the door, holding to a rod, has her hold loosened by passengers passing by her, and her hand slips and the tip of a finger gets into the jamb of the door, and while it is there the guard closes the door onto it, there is no negligence, making the carrier liable for the injury, it not being shown that the guard saw or should have seen the position of the finger, or that he should have reasonably anticipated it, or that the hasty entrance of passengers urged by the guard would result in any injury to plaintiff.—(Hines v. Boston Elevated Ry. Co., 84 N. E. Rep., 475.)

Michigan.—Carriers—Street Railroads—Setting Down Passengers—Sufficiency of Evidence.

A street is not a passenger station for the safety of which a street railway company is responsible, and ordinarily a passenger having safely alighted from a street car becomes at once a traveler on the highway, but it is the duty of the street railway to exercise proper care to see that the place of alighting is safe.

In an action against a street railway company for injuries to plaintiff, a passenger, through falling, after alighting from a car, into an excavation made by defendant near its tracks, evidence held sufficient to warrant a finding that defendant was negligent in stopping its car where it did and inviting plaintiff to alight there without in some suitable way informing her of the conditions.—(Spangler v. Saginaw Valley Traction Co., 116 N. W. Rep., 373.)

Minnesota.—Street Railroads—Collision—Contributory Negligence.

The fact that the plaintiff had been, immediately before being run into by a street car, driving his team faster than a walk, in violation of a city ordinance, is not conclusive evidence of negligence, which will prevent the recovery of damages in an action against the street railway company, unless it also appears that such negligence contributed toward the causing of the accident.—(Mullane v. St. Paul City Ry. Co. and McDonald v. St. Paul City Ry. Co., 116 N. W. Rep., 354.)

Missouri.—Evidence—Documentary Evidence—Relevancy—Preliminary Proof—Matters Explanatory of Things in Evidence—Photographs—Condition at Time of Accident—Carriers—Actions for Injury to Passengers—Pleadings—Variance—Specific Acts of Negligence—Trial—Instructions—Cure of Instructions—Care Required of Carrier—Degree of Care Required of Carrier.

In an action by a passenger against a street car company for injuries from the overturning of a car two witnesses testified that they thought the conductor's name was "Rayborn" (as spelled by the stenographer), and one said he thought the conductor was W. B. Rayborn. The pleadings in an action by W. B. Reaburn, the conductor, against the same defendant, for injuries received in the same accident, were offered in evidence, and there was no pretense made at the trial that the plaintiff named in the pleadings in question was not the conductor of the car at the time of the accident in question, or that he was not the one mentioned in the oral testimony. Held, that admission of the pleadings was not error, on the ground of lack of evidence that the conductor of the train on which the plaintiff was injured was the same person who was plaintiff in the action in which the pleadings offered in evidence were filed.

Where, in an action against a carrier for injuries to a passenger, the answer of the carrier, in an action by another plaintiff for injuries in the same accident, was introduced in evidence to prove an admission therein, the petition in the former action was also admissible to explain the allegations of the answer, but should have been restricted to that purpose by the court in its instructions.

Photographs, showing condition of a trestle, track, and car in question, taken shortly after an accident occurred, are admissible in evidence when it is shown that they are correct representations of the conditions as they then existed.

If a petition, in an action by a passenger for injuries, charges negligence in general terms, then proof of negligence either in relation to the tracks or roadbed would make out a prima facie case for plaintiff; but, when the petition alleges specific acts of negligence, there is no right to prove other acts, and the allegations of specific acts of negligence cannot be treated as surplusage.

An instruction, as to the care required of a carrier of passengers as to keeping its tracks and roadbed in proper condition, which was erroneous because the petition alleged negligence only as to the tracks, is not cured by an instruction that, even if there were certain defects in the tracks and roadbeds, and the cars were derailed, and plaintiff was thereby injured, if defendant could prove that the derailment was not caused by any neglect on its part in providing and maintaining reasonably safe tracks and roadbed, plaintiff could not recover, since there was a re-statement of the matter relating to the roadbed which was not alleged, and the burden of proving defendant's negligence was placed on defendant, where it did not properly belong.

It is the duty of a carrier to use the utmost care and foresight, which capable and faithful railroad men would take under like circumstances, to keep its tracks and roadbed in a reasonably safe condition for the running of cars over them.

In an action by a passenger for injuries from the overturning of a car, where there was evidence that the tracks were not in a proper condition, defendant requested an instruction that a carrier of passengers is not obliged to foresee and provide against casualties which were not known to occur before, and which may not reasonably be expected, and that, if a carrier availed himself of the best known and most extensively used safeguards against danger, he has done all the law requires, and his liability is not to be ascertained by what appears for the first time after the disaster, to be a proper precaution against these occurrences; that the defendant and its agents, etc., in the management and operation of its cars, were by the law required to exercise only such care and prudence as was reasonably practicable, and if plaintiff was injured as the result of some occurrence, which careful and prudent men in the situation of defendant's agents would not reasonably have expected, then the occurrence was an accident, and defendant was not liable; that the mere fact that an accident occurred, and plaintiff was injured, does not of itself entitle plaintiff to

recover, and if defendant's servants exercised all the care and prudence that were reasonably practicable under all the circumstances, and the accident happened without negligence on their part, then plaintiff could not recover under any circumstances. Held, that the requests were properly refused, as not imposing a sufficiently high degree of care upon the carrier.—(Kirkpatrick et al. v. Metropolitan St. Ry. Co., 109 S. W. Rep., 682.)

New York.—Carriers—Injuries to Passenger—Evidence.

In an action against a street car company for injuries to a passenger, resulting from a trench in the street at which a car was negligently stopped, evidence that the trench was not dug by defendant, but by a gas company, is immaterial.—(Walsh v. Richmond Light & R. R. Co., 108 N. Y. Sup., 950.)

New York.—Carriers—Street Railroads—Passengers—Invitation to Board Cars—Evidence—Sufficiency—Negligence—Contributory Negligence—Evidence.

The fact that a car approaching a crossing slowed down after a person had signaled it to stop was not necessarily an invitation to such person to board the car; the motorman being bound to keep the car under control as it approached the crossing.

In an action for injuries to a person while attempting to board a slowly moving street car, caused by the car suddenly increasing its speed, evidence held not to show that such person was invited to board the car.

In an action for injuries to a person while attempting to board a slowly moving car, caused by the sudden increase of its speed, evidence held not to show that defendant was guilty of negligence, or that such person was free from contributory negligence.—(Howard v. Forty-second St., M. & St. N. Ave. Ry. Co. et al., 110 N. Y. Sup., 125.)

New York.—Master and Servant—Injury to Servant—Defective Appliances—Notice—Action for Injuries—Notice of Injury—Employer's Liability Act.

Plaintiff was handed a defective chain by his employer's master mechanic, with instructions to use it in removing an armature. While so using the chain it broke, and plaintiff was injured. It sufficiently appeared that the employer had notice of the defect in the chain. Held, that plaintiff could recover under Employer's Liability Act, Laws 1902, p. 1748, c. 600; he having properly served the notice of injury required thereby.

In an action by a servant for injuries under the employer's liability act, a notice of injury as follows: "Notice is hereby served upon you, pursuant to chapter 600, p. 1748, of the Laws of 1902, that William Eddington was injured while in your employ at your place of business in the Union Railway Shed, West Farms, on the 16th day of June, 1904, by having an armature fall on him while working in a pit" is sufficient in form under the statute.—(Eddington v. Union Ry. Co. of New York City, 109 N. Y. Sup., 819.)

New York.—Negligence—Evidence—Burden of Proof—Street Railroads—Injuries to Person on Track—Contributory Negligence.

In an action for injuries, plaintiff must show that his conduct did not so concur with defendant's negligence as to have become a proximate cause of the injury.

Where, in an action for the death of one who was run over by an electric car between street crossings, it appeared that just before he started to drive a team of horses across the track he looked eastward along the track at a point where it was visible for 600 ft., and then proceeded 35 ft. to the track, where he was struck by a car coming from the east, he was guilty of contributory negligence, as if he had looked again before crossing the track, he must have seen the car so as to have been able to avoid the accident.—(Baxter v. Auburn & S. Electric R. Co., 83 N. E. Rep., 469.)

New York.—Street Railroads—Maintenance of Trolley Poles—Liability for Injuries.

A driver of a truck was injured by a wheel being caught by a trolley pole of a street railroad company on property owned by a ferry company for its business. The pole was about 6 in. outside of the curb. It was necessary to maintain a pole near where it was. Permission from the ferry company to move the pole behind the curb had been denied. The ferry company had denied the railroad company the right to make any physical change of the surface of the ground where the pole was located. Held, that the company was not liable, either on the ground that it negligently maintained the pole, or on the ground that it failed to place a hub stone at the base of the pole, since it was only required to exercise reasonable care, which did not require of it any attempt to proceed to condemn the right to maintain the pole back of the curb.—(Lanigan v. Brooklyn Heights R. R. Co., 110 N. Y. Sup., 30.)

New York.—Street Railroads—Collision with Vehicles—Damages.

In an action for injuries to plaintiff's horses and truck in a collision with defendant's car and for the services of a veterinarian, the evidence showed that the value of one of the horses before the accident was \$200 and that right afterward it was not worth over \$5, but that after treatment by the veterinarian it was able to do light work. Its value after recovery was not shown. Held, that defendant, having been called on to pay for the veterinary services, was entitled to the benefit of any resulting appreciation in the value of the horse, and in the absence of proof as to the difference in value prior to the injury and after recovery there was no basis for the assessment of damages to the horse.—(Solomon v. New York City Ry. Co., 107 N. Y. Sup., 744.)

Rhode Island.—Carriers—Passengers—Injury While Boarding Car—Contributory Negligence.

Where one pursues a street car after it has started, and in attempting to board it falls, he is guilty of contributory negligence, barring recovery for his injury.—(Lee v. Rhode Island Co., 68 Atl. Rep., 475.)

Washington.—Trial—Findings Inconsistent with General Verdict—Witnesses—Cross-examination.

A complaint in an action for personal injuries by a passenger against a street railway company alleged that while that, when the car started, plaintiff was standing with both feet on the steps of the car. Held, that the special verdict did not negative the general verdict that the car was started while plaintiff was alighting, which was the gist of the negligence charged.

Where, in an action for personal injuries by a passenger against a street railway company, it appeared on the direct examination of plaintiff's husband that he was commonly called "doctor," and that, when the conductor asked him his name, he handed him a handbill, containing his name, picture, location of his office and advertisement of his method of treatment, cross-examination was properly permitted as to whether he was a licensed practitioner, whether he prescribed for his wife, and the handbill was properly admitted in evidence, the jury being entitled to know who the witness was and the character of his business.—(Grant et al. v. Spokane Traction Co., 91 Pac. Rep., 554.)

Washington.—Carriers—Passengers—Personal Injuries—Contributory Negligence—Negligence of Operatives.

Where a passenger on a street car asked the conductor to stop at a certain street, and he said, "All right," and, upon approaching the street, the conductor closed the gates on the platform side of the car, and left the gates open on the opposite side, and then gave the signal to stop, and plaintiff, with a grip in his hand stood at the open gate and when the car slowed down as though to stop alighted, but was thrown and injured by the car starting up at full speed, the passenger was not guilty of negligence as a matter of law.

Such facts were sufficient to show that the motorman and conductor were negligent in starting the car again before plaintiff was safely off.—(Marbourg v. Seattle R. & St. Ry. Co., 94 Pac. Rep., 649.)

CHARTERS, FRANCHISES AND ORDINANCES

Kentucky.—Eminent Domain—Proceedings—Statutory Provisions—Construction—"Railroads"—"Railways"—Interurban Railroad—Length of Railway Constructed—Effect—Railroads—Charter—Construction—Termination of Road—"From"—Eminent Domain—Evidence as to Compensation—Examination of Witnesses—Use of Word "Value."

Ky. St. 1903, sec. 842a, provides that interurban electric railroad companies authorized to construct a railroad 10 or more miles in length incorporated under the laws of the commonwealth shall have the same rights, powers and privileges as are now granted to or conferred upon railroad companies. Sec. 835 et seq. permit condemnation of land by any company authorized to construct a railroad which shall be unable to contract with the owner of any land necessary for its use. A railroad corporation was organized to construct and operate a line of railway not exceeding 10 miles long from the city of Covington to the town of Erlanger, and such points beyond as might thereafter be determined upon, to be operated by electricity or other improved methods of rapid transit. Held, that the term "railroad," as used in sec. 835, has the same meaning as "railway," and that the company had the same right to condemn private property for a right of way that a steam railroad would have, especially since under its charter it might use steam.

The fact that the entire 10 miles of railway authorized by its charter had not been constructed by the company was

immaterial in the absence of a showing that it did not in good faith intend to complete the line as authorized.

Articles of incorporation of a railway company provided that it was to be constructed and operated "from" Covington to Erlanger, and such further points beyond as might thereafter be determined upon and over and along such streets, roads, etc., as might be acquired by due process of law. Held, that the expression "from" Covington meant from within the city, and that land within the city could be condemned for a right of way.

Though the market value of land to be taken under condemnation is the thing to be determined, the fact that the court did not require the uniform use of the term "market value" in questioning witnesses is not error where the term is occasionally used, though the word "value" alone was principally used by both counsel and witnesses.—(Devon v. Cincinnati, C. & E. Ry. Co., 109 S. W. Rep., 361.)

New York.—Street Railroads—Acquisition of Rights in Streets—Consent of Highway Officers.

A consent by the highway commissioners of a town to the construction of a railroad was not void because the route consented to was at the time entirely over private property, in which the public had not then acquired any rights whatever.—(People ex rel. Westminster Heights Co. v. Coler, Borough President, et al., 105 N. Y. Sup. 887.)

New York.—Railroads—Intersection—Duty of Companies—Enforcement—Determination of Place and Manner of Intersection—Rights of Village Trustees—Consent of Public Service Commission.

Under Railroad Law, section 12, Laws 1890, page 1087, chapter 565, requiring a corporation whose railroad is intersected by a new road to unite with the corporation owning the new road in forming necessary intersections and connections, the forming of such intersections and connections of tracks of crossing roads is a public duty, enforceable by the Attorney General, if not by individual shippers.

Railroad Law, section 11, Laws 1890, page 1087, chapter 565, prohibits the construction of a railroad in a village street without an order of the Supreme Court. Section 12 requires a corporation whose railroad is intersected by a new road to unite with the corporation owning the new road in forming necessary intersections, and provides that, if the two corporations cannot agree upon the points or manner of such intersection, the same shall be determined by commissioners, one of whom must be appointed by the court. Held, that a village, having authorized an electric railway to lay tracks in a street and across a steam railroad, must be deemed to have included the right of the companies to intersect their tracks to exchange cars, and the village trustees had the right to participate in the determination of the place and making of such intersection, and that, the two companies and the village being unable to agree upon the matter, the duty devolved upon the Supreme Court to make such determination, which may be done through commissioners.

Railroad Law, section 12, Laws 1890, page 1087, chapter 565, provides that if crossing railroads cannot agree upon the points or manner of intersection the same shall be determined by commissioners, etc. Section 11 prohibits the construction of a railroad in a village street without an order of the Supreme Court. Public Service Commission Law, section 53, Laws 1907, page 920, chapter 429, prohibits construction or extension of a railroad without a certificate of public convenience and necessity by the commission, and provides that, except as otherwise provided, no carrier shall exercise any franchise or right under the railroad law or any other law not theretofore lawfully exercised, without first having obtained the permission and approval of the proper commission, etc. Held, that section 53 does not supersede such provisions of the railroad law, that it is not necessary to procure the commission's consent before making a connection between crossing roads, and that section 53 does not require the commission to determine the point or manner in which an intersection is to be made.—(Village of Ft. Edward v. Hudson Valley Ry. Co. et al., 84 N. E. Rep., 962.)

New York.—Statutes—Construction—Language of Act—Intent of Legislature—Words and Phrases—"Net Income"—Street Railways—Franchise—Compensation to City—Statutes—Construction—"Net Income"—Action—Reference.

The words used in an act should be taken in their ordinary sense, and should be given such force as will effectuate the legislative intent.

The "net income" of a street railway, like net earnings, is that sum which remains after deducting from the gross income or earnings the cost of producing them, and any indebtedness of the company to government or to private

parties is a part of the expense of operating the railway, as ordinarily understood.

Laws 1867, p. 1275, c. 489, authorized a corporation to construct an elevated railroad in New York City, and sec. 9 provided the corporation should pay 5 per cent of its "net income" from passenger traffic upon Manhattan Island to the city in such manner as the Legislature might thereafter direct as compensation for use of the streets. Laws 1868, p. 2034, c. 855, sec. 2, provided that the company pay quarterly to the city comptroller 5 per cent of its net income for the improvement of the streets through which the road was constructed. Secs. 2 and 3 also provided that such payments should be the legal compensation in full for the use and occupancy of the streets, and the claims of the city should constitute a prior lien on the railway. Held, that it was the legislative intention that the compensation to the city be actual and substantial, and by "net income" was meant the gross passenger traffic receipts, less the general expenses of operating the road, and the amounts paid for general taxes, the rental damages to abutting owners for trespass upon their interests in the streets, and interest on the corporation's mortgage bonds are not to be deducted in determining the "net income," they being general charges against the corporation, and not against the passenger traffic.

In a suit by the city to recover 5 per cent of the "net income" from the passenger traffic of a street railway in certain streets, that being the statutory compensation provided for the use of such streets by it, where the referee before whom an accounting was had of the railway's earnings from its traffic was not requested to, and did not, separate the amount of any taxes upon the particular part of the railway structures and property, from the operation of which the company received the income, but merely stated in his findings the tax paid upon this franchise and personal property, the annual tax paid by the company cannot be deducted from the earnings by the court in rendering judgment in determining the "net income" from the passenger traffic on those streets out of which the city was entitled to compensation.—(City of New York v. Manhattan Ry. Co., 84 N. E. Rep. 745.)

Texas.—Eminent Domain—Compensation—Measure—Taking Entire Tract—Value of Land with Improvements—Damages—Excessive Damages—Evidence—Weight of Evidence—Number of Witnesses.

In proceedings by a street railway to acquire property by condemnation, the property should be valued as a whole, and the entire value thereof was properly shown, including the improvements thereon, which might be done either by valuing the lots in their improved condition, or by valuing the lot and improvements separately and adding the combined values.

In condemnation proceedings by a street railway company to acquire property consisting of a lot, dwelling house and automobile barn, the evidence examined, and held not to show that an award of \$55,000 was so grossly excessive as not to be the result of a fair and impartial consideration of the evidence.

In determining whether an award of damages for the value of property taken in condemnation proceedings was excessive, the mere excess in the number of plaintiff's witnesses who placed a lower value on the property than defendant's witnesses cannot control.—(Foley et al. v. Houston Belt & Terminal Ry. Co., 110 S. W. Rep., 96.)

Wisconsin.—Eminent Domain—Compensation—Persons Entitled—Proceedings to Take Property—Appeal—Harmless Error.

The laying of double tracks in a street and their use for interurban purposes was not a taking for interurban purposes, entitling the then owner to compensation, where the laying of the tracks was expressly authorized by amendment to the street railway franchise, under which the street was also used for street railway purposes.

Street railway tracks, roadbed, poles and wires used for street railway purposes and also illegally for interurban purposes, were not, by the mere enactment of Laws 1901, p. 686, c. 465, authorizing an interurban railway to condemn a right of way and the continuation of the use for interurban as well as street railway purposes, transformed into interurban tracks, etc., so as to entitle the then owner to compensation as for a taking for interurban purposes, but continued, as before, street railway tracks.

Where, in condemnation proceedings, the commissioners appraised the damages to the then owner at a specified amount and to his grantor as nominal, and the grantor was not entitled to any damages, his omission by petitioner from the notice of appeal from the award was a technical informality, and was not ground for dismissal of the appeal.—(Brickles v. Milwaukee Light, Heat & Traction Co., 114 N. W. Rep., 810.)

News of Electric Railways

Cleveland Traction Situation

Mayor Johnson admitted to a committee of the whole of the City Council on Feb. 2 that his insistence that a clause should be incorporated in the proposed new franchise which would allow the city or some corporation designated by the city to take over the property at \$110 a share for the stock had delayed a settlement. He said that the deliberations had not been reduced to writing, but that measures involved in the suggestions of Judge Tayler were put in writing. The Mayor favors the plan of allowing the company to declare dividends of not more than 6 per cent, any return on the investment above this amount to be used to reduce the fare. The plan regarding the sliding scale of fares is to operate the lines at a fixed fare for, say, six months, at the end of which time the rate is to be increased or decreased according to the results attained in operation.

The change in fares did not produce any great confusion, although a number of complaints were taken to the City Council in the form of resolutions. One member presented a 3-cent fare ordinance which he requested be presented to the Cleveland Railway, and if refused, to the Forest City Railway. It was referred to the committee on street railways.

Judge Tayler of the United States Circuit Court has requested Judge L. E. Knappen, Grand Rapids, Mich., to preside at the hearing of arguments on the expiration of the franchises on the Woodland Avenue and West Side lines.

A meeting of the City Council as a committee of the whole was held on Feb. 3. The receivers of the properties were present by invitation. In reply to questions regarding their experience with 3-cent fares and the reasons for the changes that were made in routing cars when the fare was increased, the receivers referred the members of the City Council to Judge Tayler. Receiver Scott, however, announced at the commencement that Judge Tayler had under consideration the routing of Quincy Avenue cars downtown instead of stopping them at East Fifty-fifth Street. Council finally agreed that Mayor Johnson and City Solicitor Baker should talk the various matters over with Judge Tayler and they met the Judge after the formal Council meeting and it was arranged to have the Quincy Avenue cars run to the Public Square. A rate of 3 cents had been established on Quincy Street, but the court and the receivers felt that this should be the rate for the entire trip, although the cars pass over a portion of the Euclid Avenue line, on which a 5-cent fare is charged.

Another meeting of the Council was held on Feb. 4 and the discussion of complaints was continued. The receivers were not present, as Judge Tayler preferred that members of Council take up all matters with the court. Councilman Flower said that the receivers should operate more cars over Quincy Avenue and intimated that the cars were not furnished because they would take business from Cedar and other lines which are collecting a higher fare. Mayor Johnson did not agree with this view of the matter and so expressed himself. Councilman Koch introduced a resolution to require the city to count the passengers on the 3-cent and the 5-cent lines so as to secure data to sustain the argument that more cars are needed on the low-fare lines.

Henry J. Davies, secretary of the Cleveland Railway, has pointed out the danger of including the purchase clause proposed by Mayor Johnson in any franchise that may be offered the company. Mr. Davies says that the price of the stock would never get beyond \$110 a share, the purchase price proposed by the Mayor, while the Cleveland Railway owns it, because of the liability of a forced sale at that figure any time. Then, if another sale directed by the city is prohibited, the price of the stock in the hands of the favored company would jump to 133, assuming that 6 per cent dividends are guaranteed, as proposed in Judge Tayler's plan. The continuous right of the city to take over the property at 110 at any time would also work to the detriment of the service as the natural disposition would be against applying earnings to betterments, and improvements could be made only by issuing new stock which the city would have to take over at 110 if it decided to purchase the property.

John J. Stanley, vice-president of the Cleveland Railway, stated in an interview that the company will not accept a franchise that will allow the city to force the sale of the property to any corporation it may designate at 110. He said that the city is asking too much in insisting upon a clause that shall compel the company to transfer its property before the expiration of the franchise.

The Forest City Railway organized as follows on Feb. 3: M. A. Fanning, C. H. Miller, Thomas P. Schmidt, Charles F. Seelbach, A. M. Willard, Herman Schmidt, F. A. Mehling, Fred C. Alber and Francis E. Wright, directors; M. A. Fanning, president; C. H. Miller, vice-president; Fred C. Alber, secretary and treasurer. It is claimed that a few hundred shares of the stock of the company which were not transferred to the Cleveland Railway, under the agreement of April 27, 1908, constitute the corporate authority for the legal existence of the company. While the company sold its property and franchises to the Cleveland Railway, it is claimed that it still has a right to exist as an independent company and to engage in the street railway business. This move followed the introduction in the City Council on Feb. 1 of a resolution to the effect that the Cleveland Railway be tendered a 3-cent franchise and that if it did not accept the grant the Forest City Railway be given a blanket franchise at that rate. Cleveland Railway officials think the election of directors and officers by the Forest City Railway was illegal.

City Solicitor Baker has prepared two letters to be presented to Council in which he will say that the grants to the Forest City Railway are of such a nature that the city cannot enforce the exchange of transfers between the lines and that the patrons of these lines are securing the benefit of a ride to any point on the entire system by the payment of 2 cents in addition to the regular 3-cent fare. He will, however, object to splitting the Denison-Central line at the Square, as both ends are 3-cent lines and he thinks that passengers are entitled to a through ride for one fare. As to the Payne-Bridge and Superior-Detroit lines this condition does not exist and he is not in a position to insist upon restoration of the through service.

The receivers have increased the service on Quincy Avenue by taking some of the cars from the Scoville line during the rush hours. On the other hand, the order that interurban cars carry city passengers has been modified, and only three lines will be required to do this and they will stop only at fixed stations on certain divisions. The receivers say that the service rendered by the local cars at all other points is sufficient and that the interurban companies are supported legally in their contention against making stops in the city.

Arrangements have been made for the special committee of the Chamber of Commerce to meet at stated intervals for the discussion of the street railway question. They will possibly make some suggestions to the committee which is now endeavoring to settle the street railway matter, and if the effort now under way fails they may formulate a franchise for presentation to the City Council.

Brill fare boxes will be placed on the Euclid Avenue cars within a few days. Johnson fare boxes have been fitted with Brill tops for the Payne, Bridge, Central and Denison lines. A record will be kept of the operation of these lines and the difference in collections will be noted.

At the meeting of the City Council as a committee of the whole on Feb. 8 Mayor Johnson advised the Council to give Judge Tayler time to consider the matters he has before him and stated that as a matter of courtesy to him nothing should be done until he gives his decision regarding the routing of cars. Mr. Johnson read from a pamphlet figures which he claims should prove that the deficit of \$120,000 for October, November and December, as reported by the receivers, should have been a surplus of \$42,000. He attacked the \$23,000 legal expenses of the receivers, the fund of 5 cents per car mile set aside for maintenance and the 7/10 of a cent per car mile for damage claims. The charge as prescribed in the lease, he said, is \$130,000 more than was actually spent. Mr. Johnson says that the operation of the lines at a 3-cent fare and a charge of 1 cent for transfers would have yielded a surplus of \$75,000 for the last three months of the year.

The 35 regular cars on Euclid Avenue went into operation as pay-as-you-enter cars on Feb. 8. They are equipped with Brill fare boxes. The trippers and the Euclid Heights cars have not been equipped.

Hearing on Cambridge Subway Stations

The Massachusetts Railroad Commission gave a hearing Feb. 3 on the petition of the Boston Elevated Railway Company for approval of the company's plans for stations at Harvard Square, Central Square and Sixth Street in connection with the Main Street subway, which the company is about to build in Cambridge.

George A. Kimball, chief engineer of elevated and subway construction, submitted plans and models of the proposed stations, and explained that in the company's plans for the Harvard Square station one of the tracks for subway trains is placed higher than the other, and the same arrangement is planned for surface car tracks entering the underground station, to avoid grade crossings. In the general scheme the simultaneous loading and unloading of passengers from the same car is avoided to reduce the opportunity for congestion. Outbound subway train traffic from Boston is delivered upon a platform at a level above the inbound track. From this platform three passageways for foot passengers lead to the cars for Arlington and the north, Watertown and Newton on the west, and the street above. The northerly and westerly traffic are separated in order to provide greater capacity for surface car movement and to avoid congestion. Passengers would all move in one direction.

Mr. Kimball then pointed out that there would be small entrance or exit structures in Harvard Square, on the company's property near Dunster Street, and in the sidewalk near the college building. Four surface car platforms would also be provided, two at Brattle Street and two at Massachusetts Avenue. Each platform would be 200 ft. long and about double the capacity of those at the Park Street loop of the Tremont Street subway. The passageways are to contain no stairways, and the steepest grade for walking is to be about 10 per cent. The only stairway climbing will be in ascending to the street.

At the Central Square station the subway passes under the center of Massachusetts Avenue, and the station is placed between Brookline and Pearl Streets. There will be a platform on each side of the subway tracks 234 ft. long, with stairways connecting to similar platforms on the surface of the street. The inward platform on the surface will be 7 ft. wide, and will have five stairway connections below. The outbound platform will be 11 ft. wide, with four stairways. The design narrows the sidewalk on the street to give 20 ft. between the curbing and the station fencing on each side for team traffic. The surface platforms would be enclosed to allow the passengers to transfer without the use of tickets. Shelters would be constructed above the platforms. This plan avoids the congestion which occurs when passengers go and come between surface cars and transfer booths or men located at the edges of the sidewalks.

At the Sixth Street station the subway will come at the foot of a long grade whence the trains leave the new bridge in crossing the Charles River from Boston, outbound. The station platform would be about 900 ft. west of the incline, which is to be built on a 3 per cent gradient. Passengers would here change by ticket between trains and surface cars on Massachusetts Avenue, Broadway and Sixth Street routes. The platforms here at the surface level would not be enclosed. The company deemed it inadvisable to put the station any nearer the incline on the grounds of danger and interference with rapid handling of trains. The hearing was continued until Feb. 10.

Spokane & Inland Empire Railroad Arranges to Make Employees Stockholders

Jay P. Graves, president of the Spokane & Inland Empire Railroad, Spokane, Wash., has addressed the following letter to the officers and employees of the company, setting forth a plan by which they may become stockholders of the company.

"A number of corporations in the United States have, during the last few years, adopted plans whereby their employees were afforded opportunities for acquiring their stock or securities on safe and easy terms, believing that thereby employer and employee were brought closer together to their mutual benefit.

"Believing thoroughly in the principle, and desiring to bring about and maintain between this company and its employees a community of interest and consequent good feeling, the company has arranged with the Union Trust Company, Spokane, to supply to any officer or employee of the company shares of its preferred rights or preferred stock at the market price, plus an interest which may have accrued on the purchase price between the time of purchase by the Union Trust Company and its sale, and a commission of 5 per cent on the amount purchased. No profit is made by the Union Trust Company except the commission, it purchasing the stock in the market and selling it to the purchaser at cost.

"Easy terms will be made, the purchaser paying not less than 15 per cent of the purchase price in cash, and the deferred payments being arranged to suit the purchaser, provided that not longer than five years will be allowed, the deferred payments bearing interest at 5 per cent per annum.

"In case the purchaser becomes sick or disabled, leaves the service of the company, is discharged, or dies before the stock is paid for, the Union Trust Company will, if requested to do so, cancel the contract and repay to the purchaser, or in case of death to his heirs, all sums paid on account of the purchase price. After the purchase is completed, the company will, in any of the events above stated, take the stock off the hands of the purchaser, or his heirs, at the price paid for same, plus 5 per cent per annum interest and less any dividends on the shares that may have been paid.

"The par value of the shares is \$100, the selling price by the Union Trust Company to be the cost plus commission and interest. Holders are entitled to dividends at the rate of 5 per cent per annum before dividends are payable to holders of the common stock. Above 5 per cent, up to 7 per cent, the two stocks share equally in dividends. The shares are redeemable at any time by the company upon the payment of \$135 a share and accrued dividends. Owing to the recent financial depression, it is believed that the shares can now be purchased for less than par."

Valuation of Minnesota Steam Railways

The Minnesota Railroad Commission has made public figures showing the results of its valuation of the physical property of steam railways in that State. Two sets of tables were prepared by the commission, owing to differences of opinion between the representatives of the commission and the railways as to land valuations. These estimates are entitled "A" and "B." The land valuation used by the railways in Estimate "A" is based on what the commission's investigations show it would probably cost the roads now to acquire the land for railway purposes. Estimate "B" bases the land valuation upon what it would probably cost now, if the land were not used for railway purposes, to acquire it for other than railway purposes. The total of the land value under Estimate "A" is \$73,201,758 and the total of Estimate "B" is \$41,275,260. The following estimates of the commission relating to the total valuation of the physical property are given:

| "A" | | "B" | |
|-------------------------------|-------------------|--------------------------|-------------------|
| 1907 Cost of Reproduction. | Present Value. | Cost of Reproduction. | Present Value. |
| \$411,735,195 | \$360,480,161 | \$360,951,548 | \$322,565,107 |

In the foregoing tables the differences between the two estimates of the commission are due altogether to different allowances for the cost of reproduction of land used for right-of-way and terminals. The railways estimated the cost of reproduction in 1906 at \$500,675,781.

Wisconsin Commission Inquires Into Storm Losses.—

The Railroad Commission of Wisconsin has sent letters to the public utilities companies and railroad corporations in the State asking for information regarding the losses due to the storm of Jan. 27 to 29.

Questions City's Right to Use Guarantee Deposit.—The right of Springfield, Ohio, to use \$500 deposited with it by the Ohio Electric Railway as a guarantee will be tested in the courts. Already \$400 of the fund has been expended to repair water mains that are said to have been injured by the jarring of the heavy cars operated by the company.

The Question of Appraising the Detroit United Railway.

—The committee of 50 prominent business men of Detroit selected by the Mayor to consider the terms of the renewal of the franchises of the Detroit United Railway has selected a sub-committee which now has under consideration the appointment of some one to appraise the property of the company. While nothing definite has been done as yet regarding the appointment, it is understood that Professor Cooley, of the University of Michigan, is being considered favorably. Professor Cooley is perhaps best known publicly from the work performed by him in the appraisal of the railroads of Michigan at the instance of the late Governor Pingree.

Institute Anniversary Dinner.

—The American Institute of Electrical Engineers will celebrate the completion of its first quarter of a century with an anniversary dinner, at the Hotel Astor on Mar. 11. The annual dinners of the Institute have always been extremely successful, while the historical character of this affair promises to make the occasion more than usually interesting. President Ferguson has appointed T. C. Martin chairman of the Dinner Committee; the other members appointed are as follows: T. Beran, M. Coster, M. M. Davis, H. A. Foster, G. A. Hamilton, R. T. Lozier, W. McClellan, F. A. Muschenheim, H. W. Pope, C. W. Price, F. A. Scheffler, E. A. Sperry, A. Spies, A. Williams and G. H. Guy.

Pennsylvania Street Railway Association.—In the *ELECTRIC RAILWAY JOURNAL* of Feb. 6 mention was made of the appointment of Henry M. Stine as secretary of the Pennsylvania Street Railway Association. Mr. Stine has entered upon his duties and has taken offices in the Harrisburg National Bank Building, Harrisburg. A meeting of the executive committee of the association was held on Feb. 2 and a plan was outlined at that time for following the bills introduced into the Legislature at the session now being held. R. P. Stevens, president of the association and president of the Lehigh Valley Transit Company, Allentown, Pa., also expects to spend a considerable part of his time in Harrisburg in connection with association matters. Meetings of the executive committee of the association will be held from time to time, as it may be deemed necessary. Practically all of the street railway companies in Pennsylvania are now members of the association, the membership having been increased recently by the addition of about 20 companies.

Hearing on Forest Fires in New York.—The hearings by the Public Service Commission of the Second District of New York on the prevention of forest fires along the lines of steam railroads are being held at Albany. The New York Central & Hudson River Railroad contends that all of the figures before the commission on the cost of changing locomotives from coal to oil burning are lower than those computed by its experts, and gave \$60,000 instead of \$27,000 as the cost of changing from coal to oil burning locomotives on the 75 engines necessary to operate the Mohawk & Malone line. The figures for seven months' use of oil and five months' use of coal were \$299,000 more than for the 12 months' use of coal. G. R. Henderson, for the State, gave \$163,572 as his estimate of the excess cost of oil for the same period. The plan which the company proposes for clearing and keeping clear its right of way, patrolling the system and arranging for the necessary fire equipment would involve an expenditure of \$33,983 for installation and an annual maintenance expense of \$30,251.

Public Service Commission Law in Vermont.—Governor Prouty, of Vermont, has approved the act changing the name of the Railroad Commission to the Public Service Commission and extending the authority of the commission to the telephone, telegraph, gas, water and power companies, mention of which was made in the *ELECTRIC RAILWAY JOURNAL* of Jan. 30, 1909. The present members of the Railroad Commission are to continue in office as Public Service Commissioners to the expiration of the term of their original appointment. Companies coming within the provisions of the act are required to furnish the commission with schedules of their charges for service and with such special information regarding the details of management as the commission may deem expedient. The commission, however, is not to make such information public except as it may be necessary in reports to the General Assembly or in judicial proceedings. Reports of all accidents are to be filed with the commission, and if in the opinion of the commission a public investigation is necessary the commission shall fix the time and place of the hearing. The commission also is given authority to readjust rates where it deems them to be discriminatory. Section 16 provides that "a corporation organized under the laws of Vermont, subject to the provisions of this act, shall not increase its capital stock nor issue mortgages, bonds or other securities except such as are payable within one year from date of issue, without first securing permission of the Public Service Commission on petition and hearing for that purpose." The salary of each commissioner is to be \$1,700 a year. The salary of the chairman, however, is to be \$2,200 a year.

LEGISLATION AFFECTING ELECTRIC RAILWAYS

Connecticut.—A resolution has been introduced in the Senate that the Judiciary Committee inquire "whether there is any danger of such action by public authorities of any other State as will encroach on the sphere of the constitutional authority of Connecticut over its own railroad corporations and over the railroads located within its territory, and if so, to recommend such legislation as may seem to be required for the purpose of preserving intact the just jurisdiction of Connecticut over its internal affairs." This resolution is understood to refer directly to the suit in Massachusetts seeking to compel the New York, New Haven & Hartford Railroad to relinquish control of the properties which it holds in Massachusetts through the ownership of stock. Among the bills introduced into the House are the following: Providing for the taxation of street railway stock at its face value; providing that street railway companies shall issue school tickets at half fare during a period of from one hour before to one hour after the school session; compelling street railways to maintain waiting rooms

at certain crossings. Among the bills introduced into the Senate is one which provides that an express business conducted by an electric railway shall be taxed as an express business and that returns of said business shall be made regularly each year to the Tax Commission.

Indiana.—The Indiana House has passed the Statsenburg bill authorizing toll roads to allow electric railways to use their rights of way.

Massachusetts.—The House, without debate, on Jan. 15 suspended the rules and admitted the New Haven-Berkshire bill admitting the petition of Representative Curtis and others authorizing the New York, New Haven & Hartford Railroad to purchase the franchise and property of the Berkshire Street Railway.

Minnesota.—Public utilities of all kinds, except street railways, are placed under the supervision of the State Railroad Commission in a public utilities bill introduced in the House. The bill also contains a provision for an "indeterminate permit" by which any public service corporation may relinquish its franchise and receive a permit without any time stated, provided it gives reasonable and satisfactory rates and service.

New York.—Governor Hughes of New York has sent to the Legislature for confirmation the reappointment of John E. Eustis as a member of the Public Service Commission of the First District and of James E. Sague as a member of the Public Service Commission of the Second District, whose terms of office expired on Jan. 31, 1909. Both Mr. Eustis and Mr. Sague are reappointed for the full term of five years. The nominations have been referred to the Finance Committee.

Ohio.—Governor Harmon has approved the Alsdorf bill, which, if enacted, will do away with 12 tax boards and create a State board of three members in their stead. This small board will fix the tax valuation of all public service corporations; a duty which has fallen to the County Auditors for the last 50 years. It is contended that three competent appointees could appraise these properties more equitably than the County Auditors. The Ohio Supreme Court has declined to allow a quo warranto suit to be instituted in that court to oust J. C. Morris from the office of State Railroad Commissioner. John C. Sullivan, appointed to the position by Governor Harmon, sought to bring the suit in the highest court in order to secure an early decision. The court stated that the matter was not so urgent but that the suit could be tried in the Circuit Court, and then, if desired, it could be brought to the Supreme Court on the points of law involved. Mr. Sullivan will probably file the suit in the Franklin County Circuit Court. Commissioner Morris holds that he was properly appointed, that his appointment was confirmed by the Senate, and that Governor Harmon has no right to appoint a successor until his term has expired.

Ontario.—Feb. 16 has been set as the date for the opening of the Ontario Legislature. Very few special measures are in prospect, and it is doubtful if the session will be prolonged. Only a few street railway matters have been broached so far. The Toronto Suburban Railway, it is understood, proposes to apply for permission to operate on Sunday, and incorporation is to be asked by the Tillsonbury & Southern Counties Radial Electric Railway, which proposes to build between Tillsonbury, London, Woodstock and Ingersoll.

Pennsylvania.—A bill has been introduced in both branches of the Legislature to enlarge the Pennsylvania State Railroad Commission from three to seven members, four of whom shall be practical railroad men of 15 years' experience. It is not expected that this bill will pass, but the opinion prevails that at least one member of the commission should be a practical railroad man, which is not the case at present, and an attempt may be made to amend the original act at this session. Mr. Tunis has presented a bill requiring both ends of trolley cars to be enclosed between Dec. 1 and April 1. A new merger act, which will permit corporations chartered under different acts, general or special, to merge, has been presented by Mr. Moyer, chairman of the Judiciary General Committee. The provision is made that the companies must not be engaged in different lines of business. Much interest is shown in the action to be taken by the Committee on Municipal Corporations on the Ehrhardt bill, which provides that the real estate of all public service corporations within the State shall be subject to taxation for county, city and borough purposes.

Texas.—A proposed amendment to the Constitution of Texas, which has for its object the encouragement of interurban electric railway projects in Texas, is pending in the Legislature. Its provisions give counties the right to vote taxes and issue bonds to build or aid in building interurban electric railways.

Financial and Corporate

New York Stock and Money Market

FEB. 9, 1909.

This is surely the day of small things in the stock market. Small trading, small price changes and small dealers. The volume of trading is hardly averaging 400,000 shares a day and it is said that the majority of this is done by floor speculators. A day or two of fractional advances is followed by a day or two of sagging prices. The small traders buy a few hundred shares apiece on a decline and that starts an advance; the prospect of a profit of a point or two is a sufficient signal to unload, with a consequent decline. The most important development during the past week was the final declaration of that long-promised dividend on Brooklyn Rapid Transit. It was only one per cent and no assurance was given that it would be repeated quarterly. The immediate effect of the declaration on the stock was not appreciable. As usual, the insiders had known what was coming long in advance—as evidenced by the 20-point rise in the stock in the last three months.

Within the past few days there has been renewed activity in the Interborough-Metropolitan issues. Considerable trading in both the preferred and the common has been done and the street is full of rumors as to what is about to happen. There have been only slight price changes, however, and there is little reason to believe that any practical system of reorganizing the Metropolitan Street Railway has been devised. A much better explanation of the commotion is the published statement that the Interborough properties are showing returns of \$14,000 a day more than those of the same period last year. The Street is anxiously waiting for the decision of the up-State Public Service Commission on the application of the Erie Railroad for permission to issue \$30,000,000 of bonds.

The money market continues easy and the demand for bonds is as eager as ever. The call of the United States Treasury for \$30,000,000 from National Banks has had little effect. Rates quoted to-day are: Call, 2¼@2½ per cent; 90 days, 2¾@3 per cent.

Other Markets.

The Boston stock market shows little disposition to do much trading in traction securities. A few shares of Massachusetts Electric have been sold, both of common and preferred, but prices are little changed. Boston Elevated has been traded in to a limited extent at about 129.

In the Philadelphia market, Rapid Transit and Philadelphia Electric have been fairly active. The former has maintained its price in the neighborhood of 27½, but the latter has shown a disposition to be weak and is down a few points from previous quotations. Electric Storage Battery is stationary around 44.

Tractions in Chicago are dull. Even the various series of Chicago Railways stock seem to be temporarily out of the market. Subway stock is the only issue which evinces any life, and the price of this is practically unchanged in the neighborhood of 26.

In Baltimore, the United Railways 4s are still the active issue in traction dealings. Every day quite a number of these bonds and the other issues of the same company are offered and bought. Prices, however, show little variation. The 4s are about 85, the incomes 51½, and 5s in the neighborhood of 79.

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

| | Feb. 2. | Feb. 9. |
|--|---------|---------|
| American Railways Company, Philadelphia..... | *45 | *45 |
| Boston Elevated Railway..... | 126 | 129 |
| Brooklyn Rapid Transit Company..... | 70¾ | 71 |
| Chicago City Railway..... | *185 | *185 |
| Cleveland Railway..... | — | — |
| Consolidated Traction Company of New Jersey..... | 274 | 274 |
| Consolidated Traction Company of New Jersey, 5 per cent bonds..... | a106 | a107 |
| Detroit United Railway..... | 56½ | 61½ |
| Interborough-Metropolitan Company..... | 15¾ | 16¾ |
| Interborough-Metropolitan Company (preferred)..... | 41¾ | 43¾ |
| Manhattan Railway..... | *151½ | 148½ |
| Massachusetts Electric Companies (common)..... | 13¾ | 14¾ |
| Massachusetts Electric Companies (preferred)..... | 65 | 69 |
| Metropolitan West Side Elevated Railway, Chicago (common)..... | *16 | *16 |
| Metropolitan West Side Elevated Railway, Chicago (preferred)..... | *48 | *48 |
| Metropolitan Street Railway..... | 42 | 42 |
| North American Company..... | 80¾ | 81¾ |
| Philadelphia Company, Pittsburg (common)..... | 42 | *41¾ |
| Philadelphia Company, Pittsburg (preferred)..... | 44 | 44¾ |
| Philadelphia Rapid Transit Company..... | 27¾ | 27¾ |
| Philadelphia Traction Company..... | *93 | 93 |
| Public Service Corporation, 5 per cent collateral notes..... | a100 | a100 |
| Public Service Corporation certificates..... | 276 | 277 |
| Twin City Rapid Transit Company, Minneapolis (common)..... | 99¾ | 104¾ |
| Union Traction Company, Philadelphia..... | 54¾ | 53¾ |

a Asked. * Last sale.

Report of Detroit United Railway

The annual meeting of the stockholders of the Detroit United Railway was held on Feb. 2. A. E. Peters, Detroit, was elected a director to succeed H. A. Everett, Cleveland, resigned. J. C. Hutchins, president of the company, said that arrangements have been made to retire the \$1,500,000 of notes which fall due in March. The report of the company for the year ended Dec. 31, 1908, as presented at the meeting, compares as follows with the report for the year ended Dec. 31, 1907:

| | 1908. | 1907. |
|---|-------------|-------------|
| Gross earnings..... | \$7,114,760 | \$7,073,245 |
| Operating expenses, including taxes..... | 4,559,123 | 4,465,043 |
| Net earnings from operation..... | \$2,555,637 | \$2,608,202 |
| Income from other sources..... | 64,957 | 60,505 |
| Gross income less operating expenses..... | \$2,620,594 | \$2,668,707 |
| DEDUCTIONS. | | |
| Interest on funded and floating debt: | | |
| Detroit United Railway..... | \$1,138,799 | \$1,106,548 |
| Rapid Railway System..... | 135,050 | 135,050 |
| Sandwich, Windsor & Amherstburg Railway.... | 23,785 | 18,000 |
| Detroit, Monroe & Toledo Short Line Railway.. | 122,131 | 121,700 |
| Detroit, Jackson & Chicago Railway..... | 198,900 | 172,950 |
| Dividends, Detroit United Railway..... | \$1,618,665 | \$1,554,248 |
| Charged to depreciation reserve..... | | \$343,750 |
| Charged to contingent liability reserve..... | \$300,000 | 276,000 |
| | 50,000 | |
| Total deductions..... | \$1,968,665 | \$2,173,998 |
| Surplus income..... | \$651,927 | \$494,708 |

PASSENGER STATISTICS, YEAR 1908.

| | |
|---------------------------------|-------------|
| Revenue passengers..... | 126,668,968 |
| Transfer passengers..... | 36,622,490 |
| Employee passengers..... | 5,472,416 |
| Total..... | 168,763,874 |
| Receipts revenue passenger..... | \$0.0525 |
| Receipts per passenger..... | 0.0394 |

MILEAGE STATISTICS, YEAR 1908.

| | |
|-----------------------------|------------|
| Car mileage..... | 30,111,196 |
| Earnings, car mile..... | \$0.2362 |
| Expenses, car mile..... | \$0.1514 |
| Net earnings, car mile..... | \$0.0848 |

The condensed balance sheet of the company as of Dec. 31, 1908, shows:

| ASSETS. | |
|--|--------------|
| Value of entire property..... | \$38,085,156 |
| Treasury securities..... | 3,095,459 |
| Accounts current..... | 710,536 |
| Sundry prepaid expenses account..... | 43,500 |
| Current assets, such as cash, materials and supplies, etc..... | 590,377 |
| Discount on gold notes and bonds..... | 164,751 |
| Total..... | \$42,599,779 |
| LIABILITIES. | |
| Capital stock..... | \$12,500,000 |
| Mortgage bonds and gold notes..... | 25,633,000 |
| Vouchers payable, bills payable, unredeemed tickets, etc..... | 1,028,789 |
| Total reserve fund..... | 946,825 |
| Surplus account (less adjustments) and net income, 1908..... | 2,491,165 |
| Total..... | \$42,599,779 |

In presenting the report, President Hutchins said:

"The company made liberal expenditures during the year in the maintenance of its tracks, rolling stock and other properties. On Jan. 1, 1908, the company's depreciation reserve stood credited with \$526,000. Some heavy expenditures were incurred for extensive renewals of tracks and foundations, involving heavier construction to meet increased traffic conditions, particularly on Jefferson, Michigan and Grand River Avenues, a part of the cost of which, to-wit, \$137,385, was charged against this depreciation reserve. There was added to the credit of the depreciation reserve during the year \$300,000, leaving said fund with a present credit balance of \$688,615. At the beginning of the year the company's surplus stood credited with \$1,996,363. There has been credited to a contingent liability reserve the sum of \$50,000 out of the earnings of the year 1908 and the sum of \$150,000 out of the surplus above mentioned, leaving a present surplus of \$2,491,165."

Massachusetts Railroad Commission Lists Dividend-Earning Roads.

The Massachusetts Railroad Commission has transmitted the following list of electric railways to the Bank Commissioner of Massachusetts, in accordance with the statutes providing that the Bank Commissioner shall annually be notified of the street railway companies which appear from the returns made by them to have annually earned and properly paid, without impairment of assets or capital stock, dividends of not less than 5 per cent upon their capital stock for the past five years: Boston Elevated Railway, Boston & Revere Electric Railway, Citizens Electric Street

Railway of Newburyport, Dartmouth & Westport Street Railway, East Middlesex Street Railway, Fitchburg & Leominster Street Railway, Holyoke Street Railway, Pittsfield Electric Street Railway, Springfield Street Railway, Union Street Railway of New Bedford, West End Street Railway. The bonds of these companies are a legal investment for Massachusetts savings banks.

Annual Report of Northern Ohio Traction & Light Company

The Northern Ohio Traction & Light Company showed a decrease of slightly under 1 per cent in its gross earnings during the year ended Dec. 31, 1908, as compared with the previous year. The increase in the average mileage operated during this period was 3.4 per cent. The following table shows the totals for the year, as compared with the two preceding years:

| Year ended Dec. 31. | 1906. | 1907. | 1908. |
|---|-------------|-------------|-------------|
| Gross earnings for year..... | \$1,703,340 | \$1,909,061 | \$1,890,473 |
| Operating and taxes..... | 1,006,842 | 1,095,755 | 1,086,424 |
| Net earnings..... | \$696,498 | \$813,306 | \$804,049 |
| Applied to payment of interest on bonds and collateral trust notes..... | 483,174 | 513,242 | 526,532 |
| Available for company's uses..... | \$213,324 | \$300,064 | \$277,517 |
| *Dividends on stock..... | 113,527 | 158,778 | 134,151 |
| Surplus..... | \$99,797 | \$141,286 | \$143,366 |
| Average mileage in operation..... | 200 | 207 | 214 |
| Gross earnings per mile..... | \$7,885 | \$8,556 | \$8,168 |
| Net earnings per mile..... | 3,115 | 3,558 | 3,386 |
| Ratio of expenses to earnings..... | 59.11 | 57.40 | 57.47 |

*March and June dividends for 1908, 1/2 of 1 per cent; September and December dividends for 1908, 1/4 of 1 per cent.

From the surplus for 1908, shown in the foregoing, there was deducted \$112,007 on account of "depreciation, recon-

cent of the operating expenses. The following table shows the earnings and expenses in detail for three years:

| | 1906. | 1907. | 1908. |
|-------------------------------------|--------------------|--------------------|--------------------|
| Earnings. | | | |
| Passengers..... | \$1,449,900 | \$1,645,864 | \$1,623,070 |
| Light and power..... | 126,249 | 137,921 | 142,544 |
| Car mileage..... | 4,662 | 4,228 | 4,107 |
| Freight, etc..... | 41,250 | 43,299 | 44,615 |
| Parks..... | 61,419 | 68,561 | 66,656 |
| Interest and discount..... | 4,522 | 2,898 | 2,589 |
| Miscellaneous..... | 15,338 | 6,290 | 6,892 |
| Total..... | \$1,703,340 | \$1,909,061 | \$1,890,473 |
| Expenses. | | | |
| Maintenance way and structures..... | \$89,502 | \$95,820 | \$100,160 |
| Maintenance equipment..... | 132,568 | 155,945 | 147,603 |
| Operation power plants..... | 215,080 | 251,212 | 243,202 |
| Conducting transportation..... | 318,603 | 354,092 | 353,320 |
| General..... | 251,089 | 238,686 | 240,139 |
| Total..... | \$1,006,842 | \$1,095,755 | \$1,086,424 |
| Net earnings..... | 696,498 | 813,306 | 804,049 |

H. A. Everett, the president, says in his statement to shareholders:

"Notwithstanding the slight decrease in income for the year, the property has been maintained at its usual high standard. The total expenditure for maintenance was \$247,763, as against \$251,765 for the year 1907, a decrease of only \$4,002. This slight decrease is due entirely to the reduction in the cost of material and not to any lack of attention to either the roadbed or the equipment.

"There were replaced 21,000 ties in 1908, as against 15,000 in 1907.

"On North Howard Street, in Akron, 2000 ft. of the old 60-lb. rails on the southbound track were removed and replaced by 80-lb. 7-in. T-rail. On South Howard Street, between Market and Main Streets, the southbound track was renewed with 114-lb. 7-in. Trilby rails, laid on steel ties with concrete foundation and repaved with brick and asphalt, and notwithstanding that the new construction is of a more expensive type than the track it replaced, no part of this expense has been capitalized.

"The total amount expended for additions and betterments during the year was \$162,103, subdivided as follows:

| | |
|--|----------|
| Track, roadway and electric lines..... | \$44,688 |
| Buildings and fixtures..... | 1,645 |
| Power houses..... | 45,025 |
| Cars and equipment..... | 53,863 |
| Electric light department..... | 14,147 |
| Miscellaneous..... | 2,734 |

"On March 15 and June 15, the usual dividend of one-half of 1 per cent was paid. On account of the summer earnings showing a decrease, the directors thought it advisable to reduce the dividend for the third and fourth quarter of the year to one-quarter of 1 per cent.

"The company now has 663 stockholders of record, an increase of 128 over the previous year."

Annual Report of Ft. Wayne & Springfield Railway

The annual report of the Ft. Wayne & Springfield Railway, Decatur, Ind., covering the year ended July 31, 1908, shows gross revenue of \$48,498 and expenses of \$34,509, leaving net revenue of \$13,989. To this total there was added \$6,995, representing the net revenue obtained in the first six months of operation, and making a total of \$20,984. From this total two dividends, aggregating \$9,919, were paid, leaving a balance of \$11,065.

The total number of passengers carried during the year was 166,413. The number of employees carried was 7,905. The total number of passenger car-miles run was 154,601 and the number of baggage car-miles run was 13,595.

The report shows the following division of earnings by months:

| | Passenger earnings. | Freight and express earnings. | Sundry receipts. |
|----------------------|---------------------|-------------------------------|------------------|
| August, 1907..... | \$4,020.78 | \$587.12 | ... |
| September, 1907..... | 3,768.15 | 543.51 | \$22.98 |
| October, 1907..... | 3,237.89 | 829.60 | 22.50 |
| November, 1907..... | 2,619.00 | 342.25 | 209.00 |
| December, 1907..... | 3,230.17 | 293.00 | ... |
| January, 1908..... | 3,010.71 | 633.56 | ... |
| February, 1908..... | 2,827.92 | 423.53 | 5.15 |
| March, 1908..... | 2,804.20 | 626.72 | 18.04 |
| April, 1908..... | 2,651.37 | 530.46 | ... |
| May, 1908..... | 4,052.29 | 990.42 | 304.09 |
| June, 1908..... | 3,695.36 | 838.03 | 76.00 |
| July, 1908..... | 4,317.13 | 842.97 | 74.55 |

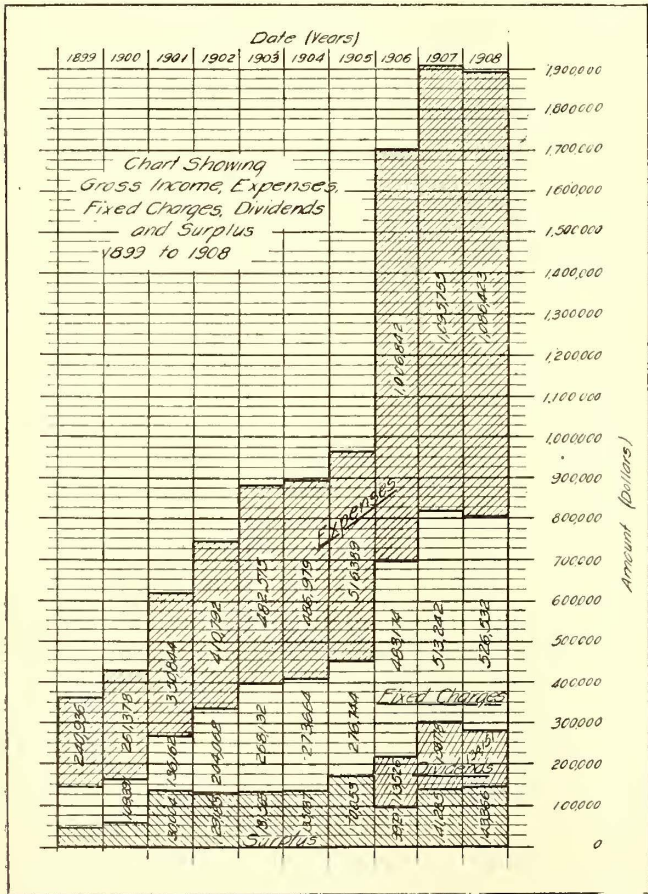


Chart of Earnings of the Northern Ohio Traction & Light Company

struction," etc., as compared with a similar charge in the preceding year of \$100,000. The final balance sheet surplus as of Dec. 31, 1908, was \$782,942. The condensed statement is supplemented by details of earnings and expenses. The gross revenue derived from freight amounted to 2.4 per cent of the total gross earnings from all sources. The gross earnings include \$66,657 from "parks," representing 3.5 per cent of the total gross revenue for the year.

The total expenditures for maintenance of equipment and of way and structures amounted to \$247,762, which is equivalent to 13.2 per cent of gross earnings, or 22.9 per

Brooklyn (N. Y.) Rapid Transit Company.—The directors of the Brooklyn Rapid Transit Company at a meeting on Feb. 5 declared an initial dividend of 1 per cent. The resolution authorizing the dividend, which provides that it shall be paid quarterly, thus putting the stock on a 4 per cent basis, follows: "Resolved, That a dividend of 1 per cent on the capital stock of this company be paid on April 1 to stock of record on March 10. Resolved, That as dividends are declared they be made payable on April 1, July 1, Oct. 1 and Jan. 1. A surplus over operating ex-

penses and fixed charges sufficient to pay a dividend has been shown by the reports of the company for some years, but a conservative policy has been followed, and none has been declared. At the same meeting the directors re-elected the retiring officers, abolishing, however, the office of third vice-president held by H. C. DuVal. Mr. DuVal was elected president of two of the subsidiary companies, the Coney Island & Gravesend Railway and the Brooklyn, Queens County & Suburban Railroad.

Calumet & South Chicago Railway, Calumet, Ill.—The Calumet & South Chicago Railway has recently sold \$150,000 of its first mortgage bonds to the First Trust & Savings Bank, Chicago, Ill. They increase the outstanding issue of first mortgage bonds from \$500,000 to \$650,000. The securities are similar to the rehabilitation bonds of the Chicago Railways Company and the Chicago City Railway.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—The bondholders committee of the Illinois division of the Chicago & Milwaukee Electric Railroad announces that sufficient bonds have been deposited with it to commence foreclosure proceedings and that after Feb. 15 no further deposits of bonds will be received except upon such terms as the committee may impose.

Chicago (Ill.) Consolidated Traction Company.—The Harris Trust Company, Chicago, Ill., announces that 75 per cent of the underlying bonds of the Chicago Consolidated Traction Company, aggregating \$2,250,000, have been deposited under the call of the protective committee appointed in November, 1908, when the North Side Electric Street Railway defaulted on its interest. The time for deposit expires March 1.

Denver (Colo.) City Tramway.—A meeting of the stockholders of the Denver City Tramway has been called for March 6 to vote to retire and discharge a bond issue and mortgage authorized at a special meeting of the stockholders on Aug. 27, 1908, and to authorize an issue of not more than \$25,000,000 of 5 per cent, 25-year bonds to be secured by a mortgage covering all of the property of the Denver City Tramway.

Greensboro (N. C.) Electric Company.—It is announced that this property has been sold to a syndicate organized by W. N. Coler & Company, New York, N. Y. A new corporation, to be called the North Carolina Public Service Company, will be formed with a capital stock of \$3,500,000, to take over the property. Coler & Company, at their office in New York, said that a statement would be made by them in the near future regarding extensions and improvements.

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—At the annual meeting of stockholders of the Indianapolis & Cincinnati Traction Company recently, the following directors were elected: W. I. Durban, W. J. Alford, T. F. Rose, G. A. Ball, J. F. Wild, C. L. Henry and J. J. Appel. The directors re-elected the following officers: C. L. Henry, president; T. F. Rose, vice-president; J. F. Wild, secretary; J. J. Appel, treasurer.

Interstate Railways Company, Philadelphia, Pa.—The Interstate Railways Company defaulted on Feb. 1 on the interest on its \$10,776,600 of collateral trust 4 per cent. bonds, and in accordance with a plan outlined by Edward B. Smith & Company, Philadelphia, Pa., for the reorganization of the company, bondholders of the company desiring to become associated with Smith & Company are urged to deposit their holdings with the Philadelphia Trust, Safe Deposit & Insurance Company, Philadelphia. E. J. Moore, C. F. Fox, John S. Bioren, William Rotch Wister and Charles H. Bean, who also own a considerable amount of the bonds of the Interstate Railways Company, have sent the following notice to bondholders of the company: "Bondholders are strongly urged not to deposit their bonds with any depository until a clear and comprehensive plan of reorganization has been submitted in full detail. Bondholders are requested to send their names and addresses, together with the amount of their holdings, to Thomas L. Mattson, No. 314 Chestnut Street, Philadelphia."

Kenosha (Wis.) Electric Railway.—The Kenosha Electric Railway, which, as announced on page 114 of the ELECTRIC RAILWAY JOURNAL of Jan. 16, 1909, has been purchased by the Investment Registry Company, London, Eng., has elected officers as follows: H. E. Spalding, president; Lloyd Harris, vice-president; Clayton R. Taylor, secretary and treasurer; H. E. Spalding, Lloyd Harris, Wm. L. Carpenter, Clayton R. Taylor and C. B. Shedd, directors.

London (Ont.) Street Railway.—The report of the London Street Railway for the year ended Dec. 31, 1908, was presented at the annual meeting of the company in London on Feb. 3. It shows as follows: Gross earnings, \$235,032 for 1908, as against \$232,376 for 1907; net earnings, \$67,405 for 1908, as against \$64,351 for 1907; surplus, \$39,010 for 1908, as against \$37,123 for 1907. In presenting the report

H. A. Everett, president of the company, said that \$50,000 of bonds had been disposed of recently; that there had been no further developments relative to the sale of the property to the city, and that at the election in January a substantial majority had been obtained to the proposal to operate cars on Sunday.

Mahoning & Shenango Railway & Light Company, New Castle, Pa.—At the annual meeting of the Mahoning & Shenango Railway & Light Company to be held on Feb. 16, it will be voted to issue \$3,000,000 in bonds to provide funds for extensions and improvements.

Metropolitan Street Railway, New York, N. Y.—Two thirds of the general mortgage and collateral trust 5 per cent bonds, of the Metropolitan Street Railway due in 1997 have been deposited with the Guaranty Trust Company, New York, for the committee of which Alexander J. Hemp-hill is chairman. The time for deposit of bonds has been extended to include Feb. 23, after which date no more deposits will be received except upon payment of \$5 per bond.

Montgomery (Ala.) Traction Company.—Richard Tillis has turned over to the Montgomery Traction Company 10,000 shares of stock of the company of a par value of \$100 per share, and all of these having been cancelled, the capital stock of the company has been reduced from \$2,000,000 to \$1,000,000. At the purchase of the property of the company by Mr. Tillis, the company was reorganized with a capital of \$2,000,000 so as to cover the bonded debt as required by law. Much of this indebtedness having since been eliminated, it was deemed advisable to reduce the capital.

Northwestern Elevated Railroad, Chicago, Ill.—It is announced that the Northwestern Elevated Railroad Company has arranged to finance its requirements and to refund the outstanding issue of 4 per cent bonds. It is proposed to sell \$3,668,000 of bonds owned by the company and to refund the entire issue of \$19,498,000 of bonds outstanding. At the same time, the preferred stock of the company will be placed on a dividend basis of not less than 4 per cent per year. The bonds which it is proposed to retire do not mature until Sept. 1, 1911. They are convertible into preferred stock and can be redeemed on any interest date at the option of the company at 102½ and accrued interest. If the bonds are called for redemption, the holder will still have the option of taking preferred stock instead of bonds.

New York State Railways, Rochester, N. Y.—The following official announcement has been made regarding the New York State Railways, which is to take over as a holding company the electric railways in New York State controlled by the Central Railway Syndicate: "More than 85 per cent of the preferred stock of the Rochester Railway having been deposited with the Guarantee Trust Company, New York, under its letter of Dec. 18, 1908, and the consolidation agreement having been approved, notice is now given that the time for further deposit of such stock has been extended to Feb. 10, 1909, after which date deposits will be accepted on such terms as may be hereafter fixed."

Newport News & Old Point Railway & Electric Company, Newport News, Va.—The Maryland Trust Company, Baltimore, Md., on Feb. 9 filed in the United States Court at Norfolk a bill asking a receiver for the Newport News & Old Point Railway & Electric Company.

Southern Street Railway, Chicago, Ill.—The committee of the City Council on local transportation has appraised the property and finances of the Southern Street Railway at \$750,000. The value of the physical property was placed at \$520,158, the franchise was valued at \$174,598 and approximately \$56,000 was allowed for paving done by the company. If the company accepts this value a lease of the property will be arranged with the Chicago City Railway, which will then operate it under the same conditions that it now does its own lines.

Toronto (Ont.) Railway.—The Toronto Railway has increased its annual dividend rate to 7 per cent.

Waupaca Electric Light & Railway Company, Waupaca, Wis.—Irving P. Lord and Wallace H. Lord have purchased from A. M. Penney, P. M. Olson and Charles Churchill stock of the Waupaca Electric Light & Railway Company to the amount of \$38,800 par value. The following officers have been elected: Irving P. Lord, president and general manager; W. H. Lord, secretary; Grace B. Lord, vice-president; Estelle A. Wheeler, treasurer and assistant secretary. It is understood that a number of improvements will be made to the property.

Western New York & Pennsylvania Traction Company, Olean, N. Y.—The Public Service Commission of the Second District of New York has authorized the Western New York & Pennsylvania Traction Company to issue to the Trust Company of America a mortgage of \$5,000,000 supplemental to its mortgage executed to the Colonial Trust Company, this company having been merged with the Trust Company of America.

Traffic and Transportation

Court Files Memorandum Regarding Attendance at Meetings of Commission in New York

Judge Lacombe of the United States Circuit Court on Feb. 4 filed the following memorandum, in accordance with a request by Receivers Joline and Robinson of the Metropolitan Street Railway, New York, for instructions concerning their attendance before the Public Service Commission of the First District of New York in the matter of the Eighth Street line and others.

"Receivers have asked the Court for instructions as to whether they should appear before the Public Service Commission on a hearing in the matter of Eighth Street line and another as to fenders and wheelguards.

"As to 'hearings' generally before the Public Service Commission the practice, as the Court understands it, is as follows:

"Being of the impression that some change in operation of street cars is desirable, the board sets on foot an investigation. Its inspectors watch the movement of cars and count them and their passengers; its engineers visit the property and make examinations—all of these send reports in to the commission. One or more of its members consider these reports, perhaps make further inquiry, and the subject is then brought before the board at an executive session, and presumably is carefully looked into and a form of order prepared which it is supposed will effect an improvement.

"That order is then served upon those in charge of the road with the statement that they will be given a hearing before the Public Service Commission or one of its members on some named day. When that day comes the reports of the board's officials and employees are laid before it, and in some cases they are further examined along the same lines. The representatives of the road are allowed to examine witnesses, who are cross-examined by counsel for the board.

"Thereafter in executive session the commission decides whether or not the proposed order, which it had already carefully prepared, should be made final, and, if it be, the order is served and obedience to it enforced by fine or mandamus. The same body is, therefore, practically complainant, prosecutor, judge, jury and sheriff. Under these circumstances it has seemed to the receivers (and the court approved their conclusion) that in cases where they had already fully informed the commission of the reasons why they objected to the order, they would accomplish nothing by attending the hearing; in such cases they have accepted final orders with the statement that they would obey them so far as possible.

"If fined for alleged subsequent disobedience it would be for them to show that compliance was impossible—as, for instance, that they could not reconstruct to cars a day after their repair shops and car barns were destroyed by fire, or that in certain congested streets they could not always run cars on a few seconds headway. In cases, however, where they dispute the commission's authority to make the proposed order, as in the Fifty-ninth Street 'zone' transfer case, they have attended hearings and put in testimony as an essential preliminary to an application for review in the State courts.

"The hearings now ordered may possibly so develop as to make it desirable to attend, should the wheelguards or fenders of some particular manufacturer or patentee be prescribed or should some order be made fining receivers for some alleged failure to run cars in conformity with orders, the receivers might conclude to bring the matter before the State Court, and in order to do so effectively it might be necessary for them to be represented on the hearing. The notices apparently contemplate something other than the ordinary car service hearings, and receivers may attend them."

Explanation by Public Service Commission of Cost of Fender Tests

In explanation of the expenditures made by it in connection with the tests of fenders conducted recently at Schenectady and Pittsburg, the Public Service Commission of the First District of New York has issued a statement which says in part:

"A schedule of tests was laid down, comprising 72 different tests for each fender, each of these tests having different conditions as to pavement, speed and position of dummy on the tracks.

"In order that the effectiveness of the devices could be studied to the fullest extent, the dummies were so built

with the joints in the dummies, and fully clothed, so as to re-act as nearly like persons as possible. The matter of clothing was found to be very important. The fender would apparently make a clean pick-up, and at the last second a part of the clothing would roll under the fender and catch in some place and pull the dummy off and cause it to get under the car. This happened frequently, and demonstrated clearly that fenders and wheel guards must be so constructed and arranged that the clothing of persons cannot get underneath.

"This may seem a simple proposition, but when the commission takes up the matter of requiring companies that have been having large numbers of accidents to change their fenders, the companies will doubtless insist that their fenders are of the best. Fortunately, the commission now has proof as to which are the best fenders and will produce such proof.

"The tests at Schenectady and Pittsburg lasted nearly two months and more than 1800 different tests were made. A photograph was made of each test, so that we now have satisfactory evidence as to what every one of the devices can do under the different conditions as to pavement and speed that exist in New York City. The entire tests have cost less than \$10,000. The report upon them will show that the commission conducted the tests in a careful and economical manner and has produced results that are bound to have great influence in the selection of safety devices for cars, not only in New York City but throughout the country, for we have received communications from city authorities and from street railway companies in other cities of the country asking for the report at the earliest moment in order that they might determine the character of fenders to be used in their cities."

Pay-As-You-Enter Cars in Washington.—On Feb. 21 the Capital Traction Company, Washington, D. C., expects to place 20 pay-as-you-enter cars in operation on its Fourteenth Street division.

Cars for Women Urged in Subway.—Mrs. Frederick W. Longfellow has suggested to the Public Service Commission of the First District of New York that the Interborough Rapid Transit Company should be ordered by the commission to reserve the last car of each train operated in the subway exclusively for unaccompanied women.

Recommendations by Pennsylvania Commission Regarding Waiting Rooms.—The Pennsylvania State Railroad Commission has recommended that the Lebanon Valley Street Railway establish a waiting room at its distributing point in Lebanon, Pa., at the terminus of its lines in Myers-town, at a point about the center of Annville, and at its terminus in Palmyra.

Dividend for Employees of the Columbus Railway & Light Company.—On Feb. 1 the Columbus Railway & Light Company, Columbus, Ohio, paid the employees a dividend in proportion to the amount of their wages for a fixed period. This dividend is secured by declaring a dividend of one-half of 1 per cent on the capital stock of the company.

Prize for Name of Limited Train.—The Illinois Traction Company, Peoria, Ill., has offered a cash prize of \$10 for the best name suggested for the new train between Springfield and St. Louis, which will be in operation on April 1. The trains will leave Springfield and St. Louis morning and evening and make the run in three hours. B. R. Stephens, traffic manager of the company, is conducting the contest, which will close on March 15.

Side-Door Subway Trains in New York Subway on Feb. 15.—The Public Service Commission of the First District of New York has granted the Interborough Rapid Transit Company an extension of time until Feb. 15 in which to place the experimental trains composed of cars equipped with side-entrance doors in operation in the subway. Commissioner Eustis in explanation said: "It has been a physical impossibility to get the cars ready sooner. The company has been experimenting with two kinds of pneumatic apparatus, with which the doors are to be opened. Owing to the failure of the manufacturers to deliver the apparatus that has been selected, some of the cars could not be equipped. Word has been received from the manufacturers that the cars to constitute the first train will be delivered by Feb. 10. That will make it possible to have the first train ready by Feb. 15."

New Timetable by Illinois Traction System.—A new 14-page timetable of the Illinois Traction System has just been issued by the general traffic department, of which B. R. Stevens, Springfield, Ill., is manager. It is attractively printed on cream-tinted paper with brown covers. On the first inside page there is a large map of the system and on the opposite page a table of contents with a plain

statement to intending passengers advising them to purchase tickets before boarding cars. The timetables for each of the divisions are presented on 10 pages and below the timetables is exhibited information with regard to the handling of baggage, mileage tickets, express and freight service and sleeping-car service. On the inside of the back cover a very interesting comparison is presented of the rates of fare by steam railroads and electric railways, showing the percentage saved by electric railways. The outside covers are decorated with engravings of passenger, express and sleeping cars.

Hearing on West Roxbury Service.—The Massachusetts Railroad Commission gave a hearing recently on the petition of residents of the Germantown section of West Roxbury for modifications in the service on the Grove Street-Oakdale line of the Old Colony Street Railway, with the request that the line be operated by the Boston Elevated Railway from Washington and Grove Streets to the Boston-Dedham line. A. A. Ballantine, counsel for the Boston Elevated Railway, stated that the company does not feel willing to operate its cars on a single track over which the cars of another company are run. R. S. Goff, general manager of the Old Colony Street Railway, then stated that the length of line in question is only about one-third of a mile, and presented figures showing the traffic on the line on Jan. 25, 26 and 27, 1909. The service is performed by a single car, which operates on a half-hourly interval from 6:35 a. m. to 10:35 p. m. between Grove and Washington Streets, West Roxbury, where the service of the Boston Elevated Railway ends, and the section of East Dedham called Oakdale, a total distance of approximately 1 mile. Mr. Goff stated that the line barely paid its running expenses.

Accident Fakir Held on Perjury Charge.—David A. Howard, age 28, colored, of Baltimore, Md., was arrested on Feb. 2, 1909, by Wm. M. Atkinson, of the Baltimore police, charged with attempting to defraud the United Railways & Electric Company, Baltimore, out of \$50 by false representation. On Jan. 8, 1909, Howard visited his wife, from whom he was separated, and in an altercation that followed he received a fracture of the left arm and several cuts about the head. Subsequently he made an affidavit that a wagon which he drove had been struck by an eastbound car of the United Railways & Electric Company and that he had been thrown out of the wagon and his arm broken. His arrest was brought about as the result of an investigation by Captain Pumphrey, Detective Atkinson and Special Agent Jos. J. Gilbert of the United Railways & Electric Company. After the arrest Howard confessed to Capt. Pumphrey, and Detectives Armstrong and Atkinson that the injuries he sustained were the result of the fight at the house of his wife. Justice Grannan, at the Central Police Station, held Howard for the action of the Grand Jury in default of \$2,000 bail on the charge of perjury and attempting to obtain money by false pretense.

Recommendation That District of Columbia Regulate Its Own Public Utilities.—Reporting on the Jenkins bill recently introduced in the House of Representatives providing for the purchase by the District of Columbia of the property of all public utility companies within its boundaries, District Commissioner Macfarland said to his fellow commissioners: "While the Commissioners recognize that the District electric railway commission, composed of the citizens of the District, appointed by the Interstate Commerce Commission to aid it in the execution of the duty imposed upon the Interstate Commerce Commission by Congress at the last session with respect to the regulation of the street railways of the District of Columbia, has done a valuable and efficient service, resulting in improvement, the Commissioners believe that this is a strictly municipal function which ought to be performed by the municipal government. There is no reason why the Interstate Commerce Commission should be performing this function even with the aid of District citizens, who give their time freely for that purpose. The street railway systems, the two gaslight companies, the electric light and power company and the telephone company ought to be under the supervision of the District Commissioners, and the recommendation of legislation for this purpose is earnestly renewed. It seems to me that Congress should be given opportunity to consider this proposition in the view that it might be adopted, and give the District the benefit of adequate public regulation of all the public utility corporations. If that fails to produce satisfactory results then the only recourse would be to acquire the plants and operate the public utilities as part of the municipal system. I move that the substance of this statement be adopted as the report of the Commissioners on this bill." It is expected that the Jenkins bill will be amended in accordance with these recommendations or that a substitute measure will be introduced.

Personal Mention

Mr. C. E. Morgan has been appointed general manager and purchasing agent of the Indianapolis, Crawfordsville & Western Traction Company, Crawfordsville, Ind., to succeed Mr. Eugene Holcomb.

Mr. Charles Murdock has been elected president of the Evansville & Southern Indiana Traction Company, Evansville, Ind., to succeed his father, Samuel Murdock, deceased.

Mr. John E. Eustis and **Mr. James E. Sague** have been re-nominated by Governor Hughes of New York as members of the Public Service Commission of the First District of New York and the Public Service Commission of the Second District of New York, respectively. Both Mr. Eustis and Mr. Sague are reappointed for five years.

Mr. H. C. DuVal, who was formerly third vice-president of the Brooklyn (N. Y.) Rapid Transit Company, on Feb. 5, was elected president of the Coney Island & Gravesend Railway and the Brooklyn, Queens County & Suburban Railroad. The office of third vice-president of the Brooklyn Rapid Transit Company was abolished at the annual meeting of the directors.

Mr. Alfred Anderson, who was recently appointed purchasing agent of the Metropolitan Street Railway, New York, N. Y., has long been connected with railroad and steamship interests. He was general purchasing agent of the Panama Railroad and the Panama Steamship Line for 10 years and also acted as general shipping agent and assistant purchasing agent of the Isthmian Canal Commission for four years.

Mr. Charles G. Lohman, who recently resigned as general traffic manager of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has been appointed assistant to Mr. J. E. Calish, assistant treasurer and general manager of the Buffalo & Lake Erie Traction Company, Erie, Pa. Mr. Lohman before being appointed general traffic manager of the Chicago, South Bend & Northern Indiana Railway was general superintendent of the company. He has been identified with electric railroading for about 10 years, having entered the employ of the Indianapolis Street Railway in 1899.

Mr. William B. Rockwell has resigned as general manager of the Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y., and Mr. R. A. Dyer, Jr., assistant general manager and electrical engineer of the Rochester, Syracuse & Eastern Railroad, has been appointed to succeed him. Mr. Rockwell has been connected with the Syracuse, Lake Shore & Northern Railroad since July, 1902. He is treasurer of the Hurley Track Laying Company and expects to remove to Mexico in May in the interest of the Hurley Track Laying Company, which has recently closed a contract for laying several hundred miles of track for the Canana, Rio Yagua & Pacific Railroad.

Prof. H. H. Norris, of Cornell, is being mentioned in connection with a nomination for a managership in the American Institute of Electrical Engineers. In a recent circular letter, signed by Professors Nichols, Bedell and Karapetoff, his qualifications for this office are mentioned as follows: "Professor Norris has been closely associated for the past few years with the affairs of the Institute as chairman of the educational committee and as a member of the committee on meetings and papers, and on sections. This gave him a close insight into the proper management and the best policies of the Institute, as well as personal acquaintance among the most prominent members of the Institute."

Mr. Louis C. Fritch, whose appointment as consulting engineer of the Illinois Central Railroad to supervise the perforation of plans for the electrification of that company's Chicago terminal was announced in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6, 1909, has been connected with the Illinois Central Railroad as assistant to the president since March 1, 1905. Mr. Fritch was born at Springfield, Ill., in August, 1867, and was graduated as a civil engineer from the University of Cincinnati. Subsequently he was admitted to the bar in Ohio. In 1884 Mr. Fritch entered railway work with the Ohio & Mississippi Railway as supervisor's assistant and was assistant engineer of that company from Jan. 1, 1886, to October, 1892. He then was appointed engineer of maintenance of way of the company, and chief engineer in charge of construction of the Cincinnati & Bedford Railway. From Nov. 1, 1893, to Sept. 1, 1899, Mr. Fritch was division engineer of the Baltimore & Ohio Southwestern Railroad, which absorbed the Ohio & Mississippi Railway. From Sept. 1, 1899, to Nov., 1902, he was superintendent of the Mississippi division of the

Baltimore & Ohio Southwestern Railroad. Since November, 1902, Mr. Fritch has been connected with the Illinois Central Railroad.

Mr. S. S. Neff, who recently resigned as general superintendent of the Atlantic City & Shore Railroad, Atlantic City, N. J., has been elected president of the Interstate Engineering & Supply Company, Philadelphia, Pa. This company will do a general engineering and contracting business, and Mr. Neff's first work with it will be in connection with the building of a 10,000-kw power station for the Metropolitan Electric Company at Reading, Pa., with substations between Pottstown and Wormelsdorf. Mr. Neff is a graduate of Rensselaer Polytechnic Institute, and was connected with the Pennsylvania Railroad for nine years after he was graduated as supervisor of maintenance of way and assistant civil engineer. Later Mr. Neff held positions successively with the Cornwall Railroad, the Great Northern Railroad, the Vandalia Railroad and the Lake Superior & Ishpeming Railroad. Subsequently he became connected with the Union Elevated Railway, Chicago, from which company he resigned in 1900 to enter the employ of the Boston Elevated Railway as consulting engineer. In February, 1901, Mr. Neff was appointed superintendent of the elevated lines of the Boston Elevated Railway. Mr. Neff was also at one time connected with the Mexico City Tramways.

OBITUARY

Jose F. de Navarro, for many years prominent in financial circles in New York, is dead. Mr. de Navarro was financially interested in the elevated railroads of New York and was one of those who arranged for the financing of the original elevated lines.

Thomas Lowry, president of the Twin City Rapid Transit Company, Minneapolis, Minn., died at his home in that city on Feb. 4. Mr. Lowry had not been well for about two years, and recently his health failed very rapidly. Mr. Lowry was born in 1843 on a farm in Logan County, Ill. His early education was secured at the country school house in Logan County, after which he spent a year in Lombard University, at Galesburg, Ill., and then studied law at Rushville, Ill., where he was admitted to the bar in 1867. The same year he opened a law office in Minneapolis and a few years later was made judge of the Hennepin County Court of Common Pleas. After the panic of 1873, when money was difficult to obtain and the people generally were discouraged, Mr. Lowry turned his attention to the struggling street railway in Minneapolis, with which he was afterward continuously connected, at first as vice-president and later, when the systems in Minneapolis and St. Paul were consolidated, as president. Through his efforts the Twin City Rapid Transit Company has been developed into one of the most modern and best-equipped properties in the country. Mr. Lowry was also president of the Minneapolis, St. Paul & Sault Ste. Marie Railway. In the early days of the American Street Railway Association, Mr. Lowry took a very active interest in its affairs and in 1890 was elected president of the association. He inherited from his Irish ancestry an inexhaustible fund of wit, which together with his optimism and zeal made him very popular, especially in the Twin Cities. One of the newspapers in eulogy of Mr. Lowry said, editorially: "The news of the death of Thomas Lowry will be received with deep regret by all who knew him. No man envied his wealth, for it was well earned and well spent. If for nothing else, he was remarkable for making his traction company the most popular institution in two great cities. To this his own unaffected modesty and high personal character largely contributed." The funeral services were held at Mr. Lowry's late home in Minneapolis on Feb. 6, the Rev. Mr. Shutter pronouncing the benediction. All the cars of the Twin City Rapid Transit Company and the trains of the Minneapolis, St. Paul & Sault Ste. Marie Railroad stopped for five minutes at 2 o'clock on the day of the funeral, as a last mark of tribute by the employees of these companies. Mr. Lowry is survived by his wife, two daughters and a son, Mr. Horace Lowry, superintendent of the Minneapolis division of the Twin City Rapid Transit Company.



Thomas Lowry

Construction News

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

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

RECENT INCORPORATIONS

***Nashville, Fayetteville & Birmingham Railway, Huntsville, Ala.**—This company has been chartered to build an electric railway to connect the cities named in the title. Office, Huntsville. Capital stock, \$50,000, all of which has been subscribed. Incorporators: John C. Dremer, president; James A. Moores, secretary; J. M. Robertson, treasurer; N. S. Boone, S. W. Fleming, G. F. Pitts and H. K. Bryson.

***Pearl Harbor Traction Company, Honolulu, Hawaii.**—An application has been filed with the Territorial Treasurer asking for a charter for this company which proposes to extend the lines of the Honolulu Rapid Transit Company to the Naval Station at Puuloa, Pearl Harbor. Capital stock, \$100,000. Officers: L. Tenney Peck, president; Alfred L. Castle, secretary; Charles H. Atherton, treasurer.

***Woodward (Okla.) Interurban Railway.**—Chartered in Oklahoma to construct an electric railway, 140 miles in length, and connecting the following cities: Mutual, Richmond, Stiling, Canton, Fort Supply, Buffalo and Englewood, Kan. Office, Woodward. Capital stock, \$25,000. Incorporators: James Spurlock, Homer Wilcox, Jos. Boquet, Jos. Ennis, William Payne, Robert Innis, Frank Tucker, Earl Workman and Ben F. Willett, all of Woodward.

***Portland, Baker City & Butte Electric Railway, Portland, Ore.**—This company has been incorporated in Oregon for the purpose of building electric railways through the State extending to Butte, Mont., by way of Clackamas County and touching at Baker City before leaving the State. Capital stock, \$2,000,000. Incorporators: Mark W. Gill, H. J. Martin and C. D. Charles.

***Paris & Mount Pleasant Railroad, Paris, Tex.**—Incorporated to build an electric railway from Paris passing in a southeasterly direction through the counties of Lamar, Red River and Franklin into the county of Titus and to Mount Pleasant, a distance of about 50 miles. Headquarters, Paris. Capital stock, \$75,000. Incorporators: R. F. Scott, T. J. Record, S. W. Williams, N. H. Ragland, J. J. Culbertson, H. P. Mayer, A. N. Rodgers, all of Paris, and H. A. Wilson, C. O. Lide and E. S. Lillienstern of Mount Pleasant.

FRANCHISES

New Westminster, B. C.—It is stated that the British Columbia Electric Railway is about to make application for permission to cross certain roads in the municipality of Coquitlam. The company plans to build an electric railway from Westminster Junction to Coquitlam Lake, a distance of about 7 miles.

National City, Cal.—The Board of City Trustees has granted the San Diego Southern Railway a franchise to operate its lines over the city streets and private right-of-way within the corporate limits of National City. The new franchise is an official recognition of the company's right to operate under the franchise granted to the old National City & Otay Railroad by the Board of County Supervisors before the city was incorporated.

Santa Barbara, Cal.—The City Council has passed an ordinance granting to the Santa Barbara Consolidated Railroad a franchise for a street railway along Bath Street from the southerly line of its intersection with Second Street, to the center line of intersection of Bath Street and Fourth Street.

Elgin, Ill.—Announcement is made that the Elgin, Woodstock & Lake Geneva Railway will apply at the next meeting of the City Council for a 50-year franchise to enter the city over two routes—one for passenger traffic and the other for freight traffic—with a terminus at the corner of Milwaukee Street and River Street. [E. R. J., Oct. 24, '08.]

New Orleans, La.—An ordinance will be introduced at the next meeting of the Police Jurors of the Parish of St. Bernard in Louisiana, by the New Orleans Railway & Light Company, asking for a franchise for a double-track railway to be operated from the Orleans Parish line to the plant of the American Sugar Refining Company in St. Bernard Parish. It is stated that the railway company will operate both passenger and freight cars.

Camden, N. J.—An ordinance which proposes the construction by the Camden & Delaware Tunnel Company of a tunnel under the Delaware River, between Philadelphia

and Camden, and the running of a railway through it was introduced at the meeting of the Camden City Council on Jan. 28. A franchise for the tunnel project has already been granted by Philadelphia Councils. The ordinance was read and referred to the Committee of the Whole to meet on Feb. 18. [E. R. J., Jan. 30, '09.]

Kenmore, Ohio.—The Turkeyfoot Traction Company, which plans to build an electric railway between Akron and Massillon, has been granted a franchise by the Kenmore Council. Thomas L. Childs, Akron, promoter. [E. R. J., Jan. 2, '09.]

Kansas City, Mo.—James A. Stewart, representing the Kansas City & Olathe Electric Railroad, has been granted a 30-year franchise to build and operate a single or double-track electric railroad over the public thoroughfare from Junction Cemetery, Shawnee, to the Missouri State line in Rosedale. The franchise also provides for a right-of-way for a spur to be run from the main line in Greystone Heights to the proposed new county bridge across the Kaw River at Seventh Street. This will give the road an entrance to Armourdale and establish a direct line from Kansas City, Kan., to Rosedale.

New York, N. Y.—The South Shore Traction Company has asked the Public Service Commission of the First District for a certificate of public convenience and necessity. It plans to build and operate an electric railway from the Nassau County line at Central Avenue, through Jamaica, Hoffman Boulevard and Thompson Avenue, to and across the Queensboro Bridge. At the easterly end the line will connect with one which will reach Patchogue. The Manhattan terminal at first will be at Fifty-ninth Street and Second Avenue. The company has offered a 5-cent fare from the easterly boundary of Queens to the Manhattan end of the Queensboro Bridge and an 8-cent fare for a through ride from the Queens-Nassau county line to Forty-second Street and the North River.

New York, N. Y.—The Bronx Traction Company, a subsidiary of the Union Railway, has asked the Public Service Commission of the First District to further its effort by granting the necessary permission to build its line from Westchester Avenue down Classon Point Road. A hearing was ordered for Feb. 16.

New York, N. Y.—The South Flatbush Railroad has formally petitioned the Board of Estimate and Apportionment for a franchise to construct an electric street railway 3 miles long from the Brighton Beach line of the Brooklyn Union Elevated Railroad, at Avenue Q to Avenue Q and Flatbush Avenue, Brooklyn. John C. Langan, Brooklyn, and J. J. Boughman, New Cumberland, Pa., are interested in this new line. [E. R. J., Jan. 16, '09.]

Youngstown, Ohio.—The City Council has passed an ordinance granting the Lake Erie & Youngstown Railway a franchise to build its line into Youngstown. It will extend direct from Youngstown to Conneaut. John H. Ruhlman, president of the company, states that work on the new railway will be started this spring. Gasoline motor cars will be operated. [E. R. J., Dec. 5, '08.]

Eugene, Ore.—The Lane County Commissioner's Court has granted to the Lane County Asset Company, recently organized at Eugene, a franchise to build an electric railway over the county roads from Eugene to Florence. The franchise provides that the survey be completed within 90 days from the granting of the franchise; 15 miles of the road must be completed in the first year, 25 miles the second year and the entire road built within three years. The applicants for the franchise are George M. Miller, J. W. Zimmerman, Charles H. Fisher and Fred Fisk, all of Eugene. [E. R. J., Jan. 30, '09.]

Media, Pa.—The Philadelphia & West Chester Traction Company has presented a petition to the Media Council, asking for the passage of an ordinance granting it a franchise over certain streets. It is the intention of the company to make Media the terminus of a line running from State Street, across the townships of Nether Providence, Marple, Springfield and Upper Darby, and make direct connections with the elevated road at Sixty-ninth and Market Streets. It is also reported that the company intends to extend the line westward through Media, Lima and Gradyville, connecting with their main line on the West Chester pike in Edgmont.

Deadwood, S. D.—The County Board is reported to have granted a new franchise to the Black Hills Traction Company to construct an electric railway from Spearfish to the Northwestern tunnel.

Chattanooga, Tenn.—The War Department has granted S. W. Divine a franchise to construct an electric railway for freight and passenger service from the corporation line at Long Street to Fort Oglethorpe. It is stated that Mr.

Divine will soon apply to the General Council for a franchise to build a loop system in Chattanooga. [E. R. J., Oct. 24, '08.]

Waco, Tex.—The City Council has passed an ordinance granting to Max Elser and his associates a 35-year franchise to construct and operate an electric interurban railway through the city. [E. R. J., Jan. 30, '09.]

Charlestown, W. Va.—The County Court of Jefferson County has refused the application of the Winchester & Washington City Railway to build an electric railway over the road from Charlestown to Shenandoah Junction, but has permitted it to build a line from Shenandoah Junction to Kearneysville by the way of Bardane, and in addition to this also granted a franchise to build from Kearneysville to the Berkeley County line. [S. R. J., May 9, '08.]

TRACK AND ROADWAY

***Decatur, Ala.**—It is reported that W. H. Morris, Russellville, is interested in a plan to build an interurban electric railway from Decatur, via Moulton, to Russellville, about 45 miles.

Crow's Nest & Prairie Electric Railway, Pincher Creek, Alta.—This company advises that the building of this proposed electric railway has been abandoned, for the present at least. The line would extend from near the western end of Crow's Nest Lake easterly through or near to Coleman, Blairmore, Frank, Bellevue, Lundbreck and Cowley. James H. Schofield, Pincher Creek, is one of the promoters of this project. [E. R. J., Sept. 26, '08.]

Mesa, Ariz.—Dr. A. J. Chandler, president and general manager of the Consolidated Canal Company, who recently applied for a franchise for a street railway in Mesa, writes that he has not as yet perfected any plans for the proposed railway, neither has a company been organized or incorporated. [E. R. J., Feb. 23, '08.]

Central California Traction Company, San Francisco, Cal.—It is stated that this company contemplates extending its electric railway from Lodi to Woodbridge.

Atlanta, Ga.—Judge J. T. Pendleton has refused to appoint a receiver for the Georgia Securities Company and the Atlanta, Griffin & Macon Electric Railway, which propose to build and operate an interurban electric railway between Atlanta and Macon. [E. R. J., Oct. 17, '08.]

Chicago, Blue Island & Joliet Traction Company, Chicago, Ill.—This company announces that it will place contracts during the next two months for the building of 17 miles of new track and the electrification of 2½ miles of steam road. W. H. Conrad, 1145 First National Bank Building, Chicago.

Chicago (Ill.) Railways.—An expenditure of \$4,000,000 for roadbed rehabilitation, including the immediate purchase of rails, ties, cement and other construction materials, has been authorized by the Board of Supervising Engineers to be applied on the improvement of the system of the Chicago Railways. The purchase includes all the items called for by the company's program to lay 112.16 miles of track this year, with the exception of the special work. On the details of that the Board now is at work, and orders, it is announced, will be placed at an early date. Everything included, the plans to be adopted call for the expenditure of \$12,000,000 during the spring, summer and fall months. Contracts are to be placed for 22,453 gross tons of 9-in. steel rails, 208,053 ties, 101,212 tie rods, 416,106 tie plates, 832,212 screw spikes, 832,212 lag screws, 21,306 rail joints, etc.

Springfield, Beardstown & Quincy Railway, Petersburg, Ill.—G. L. Harnsberger writes it is the intention of this company to construct an electric railway from Springfield to Quincy. Capital stock, \$150,000. Officers: H. H. Colby, president; C. W. Houghton, vice-president; R. E. Bone, secretary and treasurer, all of Pittsburg; G. L. Harnsberger, Springfield, chief engineer.

Mattoon, Shelbyville, Pana & Hillsboro Traction Company, Mattoon, Ill.—W. R. Patton writes that this company has secured franchises to build an electric railway in and between Mattoon, Shelbyville, Tower Hill, Nokomis, Windsor and Irving. Hillsboro and Pana have not yet granted franchises. Capital stock, \$5,000. Officers: W. R. Patton, Charleston, president; J. B. Craig, Mattoon, secretary; J. W. Yantis, Shelbyville, treasurer. [S. R. J., April 18, '08.]

Winona Interurban Railway, Winona Lake, Ind.—Announcement is made by this company that work will begin on the line from Warsaw to Fort Wayne, by way of Columbia City, as soon as the Peru extension is completed. The section between Warsaw and Columbia City will be completed first and put in operation, and then the section between Columbia City and Fort Wayne will follow. The

funds will be raised by the sale of 5 per cent bonds. The estimated cost is \$30,000 per mile.

Keokuk & Columbus Junction Transit Company, Keokuk, Ia.—Theo. A. Craig writes that this company has not yet decided when contracts will be awarded for the construction of this proposed 75-mile electric railway which is to connect the following cities: Keokuk, Summitville, New Boston, Charleston, West Point, Lowell, New London, Winfield and Columbus Junction. The company expects to furnish power for lighting. Capital stock, \$10,000. Office, 28 North Fifth Street, Keokuk. Officers: J. E. Peterson, New London, president; D. B. Hamill, Keokuk, vice-president; Theo. A. Craig, Keokuk, secretary; Ira W. Wills, Keokuk, treasurer. [E. R. J., June 6, '08.]

***Clarinda, College Springs & Southern Railway, College Springs, Ia.**—The Engineering Construction & Securities Company, Chicago, has secured a contract for the financing and construction of an 18-mile electric railroad from Clarinda, on the Chicago, Burlington & Quincy Railroad, via College Springs, to Blanchard, Ia., or Elmo, Mo., on the Wabash Railway. Active work on the financing will be begun at once, the work to be in charge of C. B. Judd, chief engineer, and C. A. Ross.

***Lawrence, Kan.**—It is stated that Albert Emanuel and W. R. Sullivan, Dayton, Ohio, are considering the construction of a street railway in Lawrence.

Kent Traction Company, Baltimore, Md.—Alva A. Lamkin, 611 Equitable Building, Baltimore, general manager of this company, announces that plans have been made for beginning construction on the proposed 12-mile overhead electric railway between Tolchester and Chestertown this spring. The line will also reach Tolchester Beach, an amusement resort. The company expects to purchase 10 cars. The power station and repair shops will be located in Chestertown. [E. R. J., Dec. 12, '08.]

***Guadalajara, Jalisco, Mex.**—George Mitchell, New York, is at the head of a syndicate of Americans and Mexicans who have applied to the State Governments of Jalisco and Zacatecas for concessions to build an electric railway between Guadalajara and Mezquital del Oro, a distance of about 65 miles. The line will do a freight as well as a passenger business. E. D. Cruise is chief engineer with headquarters at Guadalajara.

***Mexico City, Mex.**—It is reported that the British firm of S. Pearson & Son, Ltd., who are operating the National Tehuantepec Railroad under lease from the Mexican Government, are interested in the proposed railroad that is to be built from the station of San Geronimo, on the National Tehuantepec line, to the city of Merida. The federal government recently granted a concession for the construction of the mountain division of 80 miles of the proposed line. It is provided in this concession that the 80 miles which it covers is to be operated by electricity. The electric division of the road will run between San Cristobal and Tuxtla. From San Geronimo to Merida by the route of the proposed road is more than 450 miles.

Rochester & Manitou Railroad, Charlotte, N. Y.—This company announces that it will build 1 mile of track, largely relaying old rails. It will also construct a 2000-ft. concrete viaduct and a 600-ft. wood-piled trestle.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—This company is said to have decided upon a definite route for its proposed 25-mile extension from Port Byron to Syracuse. The line will provide direct service from Syracuse to Rochester. It is the intention of the company to have the extension completed and ready for operation by the first of next January.

Findlay-Marion Railway & Light Company, Columbus, Ohio.—This company announces that it will begin on April 1 the construction of the proposed overhead electric railway which is to connect Findlay, Mount Blanchard, Forest, Marseilles, Meeker and Marion, a distance of 46 miles. The company expects to purchase 12 cars. A contract has already been awarded to furnish the company with power. Capital stock authorized, \$250,000, to be increased to \$1,250,000. Headquarters, 535 Columbus Savings & Trust Building, Columbus. Officers: R. P. Hankey, 57 Smith Avenue, Detroit, Mich.; William Bishop, Mount Blanchard, vice-president; G. W. Meeker, Columbus, secretary and treasurer. [E. R. J., Nov. 21, '08.]

Painesville & Youngstown Railroad, Windsor, Ohio.—At a recent meeting of the promoters of this projected electric railway which is to extend through Leroy, Windsor and possibly Warren, an organization was effected for the purpose of placing the project before the public. The organization as formed consists of H. E. Hammer, chairman; O. A. Bartlett, Leroy, president and F. H. Murray, Painesville, trustee. [E. R. J., Jan. 9, '09.]

People's Railway, Toronto, Ont.—Announcement is made that this company has not yet awarded any contracts for

the construction of the proposed overhead electric railway which is to connect Stratford, Berlin, Guelph and Woodstock, by way of New Hamburg, Berlin, Fergus and Elora. The system will have about 88 miles of single track. It is the intention of the company to begin construction in April. Power will be purchased from the Hydro-Electric Commission. The repair shops will probably be located at New Hamburg. The company has already applied for a charter. The capitalization will be \$1,000,000. Bonding powers to the extent of \$20,000 per mile are asked. Headquarters, 428 Traders' Bank Building, Toronto, Ont. Provisional directors: N. R. Bugg, Bright, Ont.; W. A. Bugg, Joseph McNeil, A. N. Warfield and J. H. Wood, Toronto; W. J. C. Madden, Calgary, Alta.; R. E. McNeil, Delphi, Ind. R. T. Gough, B. of B. N. A. Chambers, Toronto, chief engineer. [E. R. J., Jan. 9, '09.]

Philadelphia & Garrettford Street Railway, Philadelphia, Pa.—This company is planning to make two extensions to its lines. The first extension will be made from the company's terminus in Upper Darby to Springfield Township, and will enter Media at State Street and the Providence Road, and will run along State Street beyond Orange. The other extension will be from the Upper Darby terminus to the Lansdowne railway station.

Greenville, S. C.—A. E. Sussex, Greenville, writes that the plan of building an electric railway from Greenville to the summit of Paris Mountain is still in a preliminary stage. No company has been formed up to the present time and no details arranged. Mr. Sussex states that the entire matter is in the hands of the Chicago Development Company, which will construct the railway, provided the people of Greenville will subscribe the sum of \$30,000. [E. R. J., Feb. 6, '09.]

***Seneca, S. C.**—Capt. W. A. Thompson, of Seneca, is reported to be interested in a proposition to build an electric railway from Walhalla to Seneca.

Gainesville, Tex.—It is stated that E. S. Alnutt will begin the construction of a street railway in Gainesville on March 1. Contracts have already been placed for material. The line will be equipped with six-cylinder motor cars. [E. R. J., Jan. 2, '09.]

Mount Pleasant, Tex.—H. W. Peterman has begun the grading for the proposed gasoline motor railway which is to extend from Mount Pleasant to Red Springs Lake and Delwood Park, about a mile from the city. [E. R. J., Aug. 8, '08.]

Southern Traction Company, Fort Worth, Tex.—This company plans to build a gasoline motor line between Fort Worth, Everman, Burleson, Joshua and Cleburne. The permanent location surveys will be made at once. Connections will be made with the International & Great Northern Railway at Fort Worth and Everman; with the Houston & Texas Central Railway between Fort Worth and Everman; with the Missouri, Kansas & Texas Railway at Burleson, and with the Gulf, Colorado & Santa Fé at Cleburne. The company has not yet decided when contracts will be awarded for material and equipment. Headquarters, Room 28, Dundee Building, Fort Worth, Tex. Trustees: S. B. Hovey, H. H. Cobb and T. Yarbrough, all of Fort Worth.

Montgomery Traction Company, Christiansburg, Va.—E. S. Hagan announces that this company proposes to build an electric railway from Christiansburg to Cambria. It has not yet been decided when contracts will be awarded. Capital stock, authorized, \$25,000. Officers: C. A. Johnston, Christiansburg, president; E. S. Hagan, vice-president and general manager; C. X. Wade, secretary and treasurer, all of Christiansburg.

Winchester & Washington City Railway, Winchester, Va.—It is announced that this company, which at present operates a power plant, will build an electric railway to connect Winchester and Washington, D. C. Capital stock, authorized and issued, \$175,000. Bonds, authorized and issued, \$125,000. Officers: S. H. Hansbrough, president; Chas. Millikin, vice-president; Shirley Carter, secretary and treasurer; D. M. Swink, superintendent, all of Winchester. [S. R. J., May 9, '08.]

Big Bend Transit Company, Spokane, Wash.—This company announces that it has practically completed its financial arrangements and active construction will begin early in the spring. The company has acquired some 45 miles of right of way. Part of the proposed construction involves a line to Davenport, Wash., some 15 miles in length, projected from the river route. Several extensions have been surveyed, and most recently a line from the junction of the rivers down the Columbia, about 6 miles, to Peach. The surveyed route follows the valley of the Spokane River from Spokane west about 60 miles to Miles. The company now owns about 7 miles of right of way on the Indian and Military Reserves, all of which has been graded; also a terminal grant adjoining the right of way along the Colum-

bia River, providing several thousand feet of river frontage. From this terminal steamboat service will be provided to take care of the tonnage and passenger traffic up the valley of the Columbia River for a distance of 65 miles. The company also owns a water power site on the Spokane River, 2 miles from its mouth, capable of developing 25,000 hp. Directors: W. A. Nicholls, president; F. E. Goodall, vice-president; F. J. Finneque, I. W. Anderson, J. W. Sawyer and I. W. Fry, all of Spokane.

Seattle, Snohomish & Everett Railway, Seattle, Wash.—Charles M. Kimball writes it is probable that within three months this company will begin the construction of its proposed overhead electric railway which is to connect Seattle, Bothell, Snohomish and Everett, a distance of about 32 miles. Capital stock, authorized and issued, \$500,000. The company expects to purchase from six to ten cars. Headquarters, 443 New York Block, Seattle, Wash. Officers: Clyde C. Chittenden, president; Joseph R. McLaughlin, vice-president; Charles W. Kimball, secretary and treasurer. [E. R. J., Aug. 22, '08.]

POWER HOUSES AND SUBSTATIONS

Shore Line Electric Railway, New Haven, Conn.—This company, which contemplates the construction of an electric railway from Stony Creek east to the Connecticut River and north to Essex, is said to have awarded a contract to the New Haven Rigging Company, New Haven, for the driving of the piles in connection with laying the foundation for the power plant to be erected at Saybrook.

Chicago, Blue Island & Joliet Traction Company, Chicago, Ill.—This company advises that it will place contracts during the next two months for a 500-kw rotary converter and the construction of a substation. W. H. Conrad, 1145 First National Bank Building, Chicago, Ill.

East St. Louis & Suburban Railroad, East St. Louis, Ill.—It is announced that this company contemplates enlarging its power station at East St. Louis which will necessitate the purchase of new machinery. Charles F. Hewitt, general superintendent.

People's Gas & Electric Company, Burlington, Ia.—C. H. Walsh, manager of this company, announces that orders have just been placed with the Jeffrey Manufacturing Company for coal and ash handling apparatus, and with the Murray Iron Works Company, Burlington, for new water-tube boilers. [E. R. J., Aug. 1, '08.]

Parsons Street Railway & Electric Company, Parsons, Kan.—This company, which holds a franchise for a street railway in Parsons, has purchased the power plant of the Parsons Electric Light & Power Company. It is announced that the company will expend about \$50,000 in improving the power station. Albert Emanuel, Dayton, Ohio, president.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—This company is said to have purchased a plot of ground adjoining its power plant on the south for the plant's enlargement. Boilers and turbine engines will be added to the plant to handle extra business and an addition to the station will be built.

Toledo Railways & Light Company, Toledo, Ohio.—The armature of one of the 3000-kw turbines in the power plant of this company burned recently. A duplicate unit has furnished energy since.

Oklahoma (Okla.) Railway.—It is announced that this company is in the market for coal and ash handling apparatus.

Pittsburg (Pa.) Railways.—This company has awarded the contract for furnishing a 5000-kw generator for the Brunots Island power plant to the Westinghouse Electric & Manufacturing Company. The contract for furnishing and installing all steam and exhaust piping in connection with setting up this generator has been awarded to the Pittsburg Valve, Foundry & Construction Company.

SHOPS AND BUILDINGS

Atlantic Shore Line Railway, Kennebunkport, Maine.—The car house of this company, a one-story brick building, was destroyed by fire on Feb. 7. It is reported that seven semi-convertible cars were also burned. The loss is estimated at about \$50,000, covered by insurance.

Boston & Northern Street Railway, Boston, Mass.—Fire on Feb. 6 destroyed this company's car house, situated on Green Street, Melrose Highlands, together with three open and four closed cars. The loss is said to be in the neighborhood of \$100,000.

Ohio Electric Railway, Cincinnati, Ohio.—It is stated that this company has closed a deal for a depot site in Lima. The depot will be located on East Market Street, occupying 100 ft. in frontage and extending 300 ft. on Central Avenue and 400 ft. through to Union Street.

Manufactures & Supplies

ROLLING STOCK

Rochester & Manitou Railroad, Charlotte, N. Y., expects to purchase 20 recording fare registers.

Atlantic Shore Line Railway, Kennebunkport, Maine, lost three open cars and a closed car in a fire which destroyed its barn at Kennebunkport on Feb. 6. They will be replaced before summer.

Boston & Northern Street Railway, Boston, Mass., lost three open cars and four closed cars in a fire which destroyed its car barns at Melrose Heights on Feb. 6. It does not expect to replace these cars.

Oklahoma Railway Company, Oklahoma City, has purchased from the American Car Company, St. Louis, six single-truck closed cars 20 ft. long and four 30-ft. semi-convertible double-truck cars.

Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis., has purchased four 10-bench cars and 41 motors from the Dorner Railway Equipment Company, Chicago, Ill. These equipments will be delivered at once.

Miami (Fla.) Electric Railway, which is in the hands of H. C. Roomes, receiver, has decided to abandon electricity as motive power and will operate gasoline motor cars. At present the company operates three cars.

Rochester & Sodus Bay Railway, Rochester, N. Y., has placed an order for four interurban car bodies with the G. C. Kuhlman Car Company, Cleveland. This order was referred to in the ELECTRIC RAILWAY JOURNAL of Jan. 30, 1909.

Ashland (Wis.) Light, Power & Street Railway, has purchased five motor and five trailer 10-bench single-truck cars for immediate delivery from the Dorner Railway Equipment Company, Chicago, Ill. The order also included 20 motor equipments.

Eastern Pennsylvania Railway, Pottsville, Pa., has awarded a contract to the Cincinnati Car Company for two semi-convertible cars. The contract for the electrical equipment was awarded to the General Electric Company, but no decision has been reached regarding the trucks.

Helena Light & Railway Company, Helena, Mont., has placed an order with the Cincinnati Car Company for two single-truck closed city cars. The electrical equipment for these cars will be supplied by the General Electric Company. The order for the trucks has not yet been placed.

Chicago (Ill.) Railways Company will receive bids on Feb. 15 for 350 pay-as-you-enter cars. They will be of practically the same dimensions as the cars ordered about a year ago, but will probably be somewhat lighter. Later the company will probably increase the order to 550 cars.

Findlay-Marion Railway & Light Company will soon be in the market for 12 interurban cars for its new line from Findlay to Marion, Ohio, 46 miles. Construction work on the line will be begun in April. G. W. Meeker, 535 Columbus Savings & Trust Building, Columbus, Ohio, is secretary of the company.

Ohio & Michigan Southern Railroad, Toledo, Ohio, will order three interurban cars within the next 30 days. This is a preliminary order and the company will need additional equipment for its projected lines as they are completed. W. E. Niles, 122 Monroe street, Chicago, Ill., is secretary of the company.

Conestoga Traction Company, Lancaster, Pa., which was reported in the ELECTRIC RAILWAY JOURNAL of Feb. 6, 1909, to be in the market for 20 interurban cars, will probably buy about 18 new cars this spring, but has not definitely decided on the exact number. If 18 cars are purchased, six will be double-truck closed cars measuring 40 ft. over all, six will be single-truck closed cars measuring 30 ft. over all, and six will be double-truck open cars measuring 40 ft. over all.

Salt Lake & Ogden Railroad, Salt Lake City, Utah, will soon purchase several motor cars for use on its line between Salt Lake City and Ogden, which line is to be electrified immediately. In addition to the motor cars to be purchased, the company will rebuild upward of 40 of its steam passenger cars and equip them for operation by electricity. The motor cars will each be equipped with four 100-hp motors, multiple-unit control, automatic air brakes, and will be geared to run 60 miles an hour.

TRADE NOTES

Chandler Bros. & Company, Philadelphia, Pa., announce that L. W. Ffoulkes has become associated with them in their bond department.

Ottawa Car Company, Ottawa.—This company is build-

ing 10 additional pay-as-you-enter cars, under license of the Pay-As-You-Enter Car Corporation, for the Ottawa Electric Railway Company.

Dorner Railway Equipment Company, Chicago, Ill., reports it has sold four Westinghouse motors and a wheel press to the Hutchinson Interurban Railway Company, Hutchinson, Kan.

Westinghouse Machine Company, builder of the Roney stoker, reports that the Public Service Corporation, Jersey City, N. J., has adopted this type of stoker as the result of detailed competitive tests between Westinghouse and other makes, 15 equipments being ordered for the present.

Standard Roller Bearing Company, Philadelphia, Pa., announces the appointment of F. M. Germane, formerly sales manager, as assistant general manager of the company; T. J. Heller as sales manager, and F. W. Lawrence as Western representative, the latter with headquarters at Chicago.

Crocker-Wheeler Company, Ampere, N. J., has closed a contract to equip with motor drive the new woodworking factory of the John Hofman Company, Rochester, N. Y. The order includes a generator, three lighting transformers and 40 induction motors ranging from 1 hp to 30 hp, with a total capacity of about 200 hp.

M. P. Paret has resigned as chief engineer of the Kansas City, Mexico & Orient Railroad to enter into partnership with E. J. Beard as consulting engineer, with main offices at Kansas City, Mo. Mr. Beard was formerly principal assistant engineer of the Chicago, Rock Island & Pacific Railroad, and for the last two years has been chief engineer of J. G. White & Company, New York.

Archer & Rollins, Kansas City, Mo., have formed a partnership for carrying on a general engineering business in their section of the country. These gentlemen have each been engaged in engineering work for several years past. The offices are at 536-537 Beals Building, Kansas City, where Mr. Archer has maintained an engineering office for some time past. The new firm would like to receive catalogs from manufacturers descriptive of their material.

American General Engineering Company, New York., has recently made arrangements to handle the repair work of the Watson-Stillman Company on all classes of the latter company's machinery and equipment in and about New York. The central location of the American Company's shop on West Street, and its reputation for good workmanship and quick delivery will enable the Watson-Stillman Company to give prompt and efficient service on all its repair work in New York City.

Lord Electric Company, New York, has appointed the Monroe Brass & Wire Company, of Cincinnati, its exclusive territorial agent in the Cincinnati territory; the W. R. Garton Company, of Chicago, exclusive agents in the Chicago territory, and T. C. White, of St. Louis, exclusive agent in the St. Louis territory. These agents will handle the various products of the Lord Electric Company, which include Earll retrievers and catchers, laminated soldered rail bonds, Shaw lightning arresters, auto-discharge, laminar and vertical unit choke coils, together with other specialties now being placed on the market.

I. R. Nelsen & Company, Newark, N. J., announce that besides the regular repair work done at their shops in Newark, an experienced force of men is employed on special emergency work which a railway company may want done in its own shops. This applies particularly to overhauling and painting summer and winter cars in the seasons when such work is usually done. Several contracts for painting summer cars have recently been closed by this company with electric railways in the Eastern States. Some work has already been commenced although it is early in the season. Experienced painters are employed by the company and contracts are taken to do this work at the railway companies' shops and according to their specification.

Allis-Chalmers Company, Milwaukee, Wis., has obtained a gas engine contract from the Pittsburg Plate Glass Company for additional equipment at Crystal City, Mo., which already contains the famous unit of 3500-kw. capacity, exhibited at St. Louis Exposition in 1904. The new apparatus consists of two a.c. generators of 3000-kw. combined capacity, each driven by a 34-in. x 48-in. horizontal twin-tandem gas engine. For the Kokomo, Ind., plant of the same company there are being built three gas engines and generators with an aggregate capacity of 2250 kw. Additional contracts for gas engines, at present pending, involve 30,000 hp.

ADVERTISING LITERATURE

O. M. Edwards Company, Syracuse, N. Y., has issued catalog B, describing its latest types of window fastenings.

Westinghouse Traction Brake Company, Pittsburg, Pa., has issued an instruction pamphlet describing electric pump governors.

Walch & Wyeth, 87 Lake Street, Chicago, Ill., have issued an illustrated booklet describing the Erwood straightway swing gate valve.

The Franklin Electric Manufacturing Company, Hartford, Conn., is sending to the trade a circular calling attention to the quality of the line of tungsten lamps which it makes.

Dean Bros.' Steam Pump Works, Indianapolis, Ind., have issued a 56-page catalog describing their condensing machinery, together with tables of dimensions, capacities, etc.

Ferracute Machine Company, Bridgeton, N. J., describes in catalog No. 16, dated Jan. 1, 1909, the full line of stamps, presses and metal working machinery of other kinds which it makes.

Industrial Instrument Company, Foxboro, Mass., with offices in New York and Chicago, has issued bulletin No. 16, illustrating and describing revolution counters, tachometers, tachographs and similar instruments made or imported by it.

Archbold-Brady Company, Syracuse, N. Y., is distributing three folders which contain some interesting views of the steel towers and poles erected by that company for Niagara power transmission and catenary steel bridges for the Syracuse, Lake Shore & Northern Railroad.

Rhodes, Curry & Company, Amherst, Nova Scotia, are sending out a large calendar with a view of their extensive works for the manufacture of cars and car parts.

Wood Drill Works, Paterson, N. J., has issued a 12-page booklet entitled "Wood Rock Drills," showing their adaptability to tunnel driving, drilling in concrete, and open-cut work, with detailed costs of driving the Tieton tunnel at North Yakima, Wash., U. S. Reclamation service and on other engineering works.

Westinghouse Electric & Manufacturing Company, Pittsburg, Pa., has published in pamphlet form court decisions relating to the following patent litigation: Tesla polyphase system, patents Nos. 381,968, 382,279, 382,280; spring-ring armature, Nolan patent No. 582,481; edgewise circuit-breaker, Wright & Aalborg patent No. 633,772.

Joseph Dixon Crucible Company, Jersey City, N. J., has recently published a 24-page pamphlet with the title "Lubricating Motors," which discusses the application of graphite for lubricating automobiles, motor boats and motor cycles. The February number of "Graphite," published by this company, contains an article by W. H. Wakeman on corrosion in steam boilers.

Fred T. Ley & Company, Inc., Springfield, Mass., are sending out a booklet which contains photographs of a number of installations for which they have been contractors. Among the contracts were the following: line building construction for the Connecticut River Power Company; cable work for the Connecticut Company; concrete abutments for the Boston & Albany Railroad; track and retaining wall construction for the Shelburne Falls & Colrain Street Railway Company, and track work for the Springfield Street Railway Company.

NEW PUBLICATIONS

Die Fortschritte auf dem Gebiete der Elektrischen Fernbahnen (Progress in the Field of Long Distance Electric Railroad). By O. C. Roedder, Wiesbaden; C. W. Kreidel, 1909; 324 pages (7 in. x 10½ in.); 172 illustrations. Paper, 12.6 marks.

The author of this work has set himself the task of summing up the characteristic operating features of all the d.c. and a.c. systems which are applicable to long-distance railway electrification. In this he has admirably succeeded. His understanding of American railway affairs, partly through former residence in the United States, has made his chapters on the electric railways of this country unusually accurate and interesting. In fact, it would be difficult to find anywhere a better résumé of all the operating statistics and descriptions which have been published in this paper or presented in recent years before the American Institute of Electrical Engineers, the New York Railroad Club and other bodies. Undoubtedly, this portion of the work will be especially valuable to the German railway world. Mr. Roeder has summarized European practice in like manner. The drawings and curves apparently were redrawn for reproduction and add much to the comfort of the reader. Another striking feature of the work is the series of tables giving the fundamental data on 77 important electric railways of high-tension d.c. and a.c. types.